



September 9, 2013

Windward Real Estate Services, LLC  
335 Park Place Center, Suite G111  
Kirkland, WA 98033

RE: City of Kirkland / Watershed Company review comments for 9757 (9900) 124<sup>th</sup> Avenue NE.

This letter and the accompanying Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013 are intended to provide the information requested by the Watershed Company in their July 30, 2013 comment letter for the above site (Watershed Company Reference Number: 100714.17). The recommendations provided by the Watershed Company in their comment letter are included below in bold italics. Kirkland Code citations are in plain italics and descriptions of how the recommendations were addressed are in plain text.

July 30, 2013 Watershed Company Recommendations:

- 1. Submit a detailed buffer mitigation plan that includes a planting plan, plant schedule, installation notes, monitoring and maintenance plans all in one document. Also submit an itemized bond quantity worksheet to cover plan components.***

A detailed buffer mitigation plan titled Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013 has been prepared for this project. This plan includes all of the requested components, including a bond quantity worksheet.

**2. Include a response to applicable stream buffer modification criteria, as necessary.**

Per KZC 90.100.2 (Stream Buffer Modification), an improvement or land surface modification, including a stream buffer reduction shall be approved in a stream buffer only if:

- *It is consistent with Kirkland's Streams, Wetlands and Wildlife Study (The Watershed Company, 1998) and the Kirkland Sensitive Areas Regulatory Recommendations Report (Adolfson Associates, Inc., 1998);*

This project as proposed is consistent with the Kirkland Sensitive Areas Regulatory Recommendations Report in that the applicant has applied the required buffers and the allowed buffer reduction, as recommended by the above regulatory recommendations report, and allowed by the current Kirkland Zoning Code.

The wetlands on the subject site are not identified in Kirkland's Streams, Wetlands and Wildlife Study, but the Forbes Creek tributary which flows through the site is identified as a tributary of Wetland Forbes 14, located east of the project site. The proposed project is consistent with Kirkland's Streams, Wetlands and Wildlife Study in that it will provide permanent protection for the on-site wetlands located in the upper valley of the Forbes Creek Basin. Furthermore, the proposed buffer enhancement will serve to establish a vegetated buffer (in what is currently maintained yard) on the site, will remove invasive species and garbage, and will provide a vegetated travel corridor for wildlife travel.

- *It will not adversely affect water quality;*

By increasing the vegetative structure and species diversity within the buffer, this project is expected to have a beneficial effect on water quality.

- *It will not adversely affect fish, wildlife, or their habitat;*

By planting native species that are known to be beneficial to wildlife and providing habitat features, including snags and downed woody debris, this buffer enhancement project has been designed to improve habitat values within the on-site wetland and stream buffer, and to benefit fish and wildlife. As a result, it will not adversely affect fish, wildlife, or their habitat.

- *It will not have an adverse effect on drainage and/or storm water detention capabilities;*

The proposed project will not have an adverse effect on the above functions. Over time, as the vegetative structure and cover increases the hydrologic storage and infiltrative capacity of the site will improve.

- *It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;*

No changes to soil stability or the erosive potential of the site are anticipated as a result of this project.

- *It will not be materially detrimental to any other property or the City as a whole;*

The proposed project will not be materially detrimental to any other property or the City as a whole. Following the buffer enhancement, it is expected that the subsequent beneficial effects, including an increase in wildlife habitat, water quality, and aesthetic values will extend beyond the borders of the site.

- *Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat;*

No fill material is proposed to be placed in the buffer as a result of this project.

- *All exposed areas are stabilized with vegetation normally associated with native stream buffers, as appropriate; and*

The entire on-site buffer, including any exposed areas will be planted with the native species listed in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013, and seeded with the grass seed mixture recommended in that plan, as necessary.

- *There is no practicable or feasible alternative development proposal that results in less impact to the buffer.*

There is no feasible alternative development proposal that strikes a better balance between allowing for responsible residential development and associated infrastructure as allowed by the City of Kirkland code, while increasing the ecological functions provided by the subject site

**3. Propose use of woody debris as habitat features in the reduced buffer.**

Habitat features comprised of woody debris have been included in the buffer mitigation plan and are described in detail in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013.

**4. Detail how the sidewalk, dispersal trench, and retaining wall meet KZC requirements for wetland and stream buffers.**

The proposed sidewalk and retaining wall are part of the required frontage improvements for this project. It appears that this work is allowed under KZC 90.20.4 (General Exceptions). The proposed work will occur within the City right-of-way and will permanently impact a total of 640 square feet of stream buffer that is currently comprised of maintained lawn / pasture. The proposed sidewalk will connect to the existing city sidewalk that is located south of the subject site. Because the new sidewalk needs to be located within the right-of-way, adjacent to 124<sup>th</sup> Avenue NE and needs to connect to the existing sidewalk, there is no feasible alternative location for this feature that would result in less impact to the buffer. The retaining wall has been designed to eliminate the need for side slopes and minimize buffer impacts to the greatest extent possible. The proposed sidewalk and rock retaining wall will generate approximately 640 square feet of impervious surface. This quantity of impervious surface was accounted for by the site engineer when calculating the on-site detention system. As a result, the construction of this sidewalk and retaining wall will not increase the effective impervious area of the site or reduce flood storage capacity. The sidewalk and retaining wall will be installed prior to implementation of the buffer enhancement described in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013. Any impacts that result from the construction of the sidewalk and retaining wall will be restored to a better than pre-project condition during the buffer enhancement work carried out in accordance with the above plan.

The site engineer has re-designed the dispersion trench in the southwest portion of the site so that it is no longer within the reduced 50-foot buffer.

**5. Provide details on erosion control and soil amendment for the poultry shed demolition area.**

Per the site engineer, prior to removal of the poultry shed interim silt fencing will be installed adjacent to the work area (approximately 10 to 15 feet away from the structure). Following removal of the shed, all disturbed soil will be seeded to the grass seed mixture recommended in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013. The shed will be removed prior to implementation of the buffer mitigation, and the disturbed area will be included in the buffer enhancement planting.

**6. Revise the planting plan list to utilize only proven mitigation site species and the use of suitable native groundcovers.**

The proposed native plants, including groundcover are described in detail in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013. All proposed species are native to the Puget Sound region and are included on the Kirkland Plant List. These have been selected for their benefits to wildlife and their proven success on past mitigation projects.

**7. Revise the goals and devise specific performance standards to measure success towards the goals.**

Specific project goals and performance standards have been included in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013.

**8. Revise the monitoring schedule.**

The monitoring schedule has been revised to include two site visits per year (in the spring and fall) for the five year monitoring period. This is described in detail in the Buffer Mitigation Plan for Cedarbrook Short Plat prepared by *Acre Environmental Consulting, LLC* and dated September 9, 2013.

**9. Address how the proposal is consistent with the studies in KZC 90.60.2.b.1.**

The following answer was included as a part of the response to Watershed Company recommendation #2, and has been included again here for ease of review.

- *MZC 90.60.2.b.1 - It is consistent with Kirkland's Streams, Wetlands and Wildlife Study (The Watershed Company, 1998) and the Kirkland Sensitive Areas Regulatory Recommendations Report (Adolfson Associates, Inc., 1998);*

This project as proposed is consistent with the Kirkland Sensitive Areas Regulatory Recommendations Report in that the applicant has applied the required buffers and allowed buffer reduction, as recommended by the above recommendations and allowed by the current Kirkland Zoning Code.

The wetlands on the subject site are not identified in Kirkland's Streams, Wetlands and Wildlife Study, but the Forbes Creek tributary which flows through the site is identified as a tributary of Wetland Forbes 14, located east of the project site. The proposed project is consistent with Kirkland's Streams, Wetlands and Wildlife Study in that it will provide permanent protection for the on-site wetlands located in the upper valley of the Forbes Creek Basin. Furthermore, the proposed buffer enhancement will serve to establish a vegetated buffer (in what is currently maintained yard) on the site, will

remove invasive species and garbage, and will provide a vegetated travel corridor for wildlife travel.

If there are any questions regarding this letter or the accompanying buffer mitigation plan, please contact me at 206.450.7746.

*Acre Environmental Consulting, LLC.*

A handwritten signature in black ink, appearing to read "Louis Emenhiser". The signature is fluid and cursive, with a long horizontal stroke at the end.

Louis Emenhiser  
Owner / Principal Wetland Ecologist  
Professional Wetland Scientist #1680

**Introduction and Site Description**

On September 6, 2013 Acre Environmental Consulting visited the approximately 1.58-acre site located at 9900 124th Avenue NE in the City of Kirkland, Washington. The site is further located as a part of Section 04, Township 25N, Range 5E, W.M. The parcel number is 123850-0890. The purpose of this site visit was to assess the existing condition of the sensitive areas and associated buffer on the subject site to assist in preparing this buffer mitigation plan.

Access to this site is from the north via a gravel driveway that extends from NE 100th Street. The site has a south aspect, sloping towards a tributary of Forbes Creek (Class A stream) and two associated Type 2 wetlands. A single-family residence and associated garage are located in the northwestern portion of the property. A chicken coop is located within the wetland and stream buffer in the southwestern part of the property. The majority of this property is occupied by maintained lawn / pasture with scattered trees. In the City of Kirkland, Class A streams receive 75-foot buffers while Type 2 wetlands in primary basins receive 75-foot standard buffers.

The wetlands and stream on the subject site were delineated by the Watershed Company on July 6, 2011. The Watershed Company also prepared an accompanying sensitive area study in the form of a letter dated July 13, 2011 and titled 9757 124th Ave. NE (Gerde Property, King County parcel number: 123850-0890). Wetland & Stream Delineation Study, The Watershed Company Reference Number: 100714.17. The field delineation was subsequently revised by B & A Inc. in 2013. This delineation revision resulted in minor modifications to the on-site wetland boundary. Using the sensitive area study prepared by the Watershed Company to determine wetland and stream classifications and buffers, B & A Inc. prepared a letter dated March 25, 2013 and titled Wetland Delineation Amendment at 9757 124th Ave. NE Gerde Property, King County parcel number: 123850-0890 which described their findings and the revision of the wetland boundary. B & A Inc. also prepared a conceptual buffer mitigation plan dated March 25, 2013 and titled Buffer Enhancement Reduction at 9757 124th Ave. NE Gerde Property, King County parcel number: 123850-0890.

To accommodate the proposed development as well as to increase the level of functions provided by the on-site wetland and stream buffer, the applicant is proposing to reduce the standard 75-foot wetland and stream buffer to 50 feet (1/3 of the standard buffer width) through buffer enhancement pursuant to KZC 90.60.2.a.2 and 90.100.B. This buffer mitigation plan is intended to supersede the March 25, 2013 buffer mitigation plan prepared by B & A Inc. as well as to provide the additional information requested by the Watershed Company in their July 30, 2013 comment letter for the subject site (Watershed Company Reference Number: 100714.17).

**Buffer Enhancement**

To accommodate the proposed development as well as to increase the level of functions provided by the on-site wetland and stream buffer, the applicant is proposing to reduce the standard 75-foot wetland and stream buffer to 50 feet (1/3 of the standard buffer width) through buffer enhancement pursuant to KZC 90.60.2.a.2 and 90.100.B. The buffer proposed to be enhanced is 15,383 square feet in size and is dominated by maintained lawn / pasture with patches of invasive blackberry and scattered trees. Buffer enhancement is proposed to consist of removing all invasive species and planting native trees, shrubs, and groundcover. Plant quantities and spacing is determined using the King County Critical Areas Mitigation Guidelines. All proposed species are native to the Puget Sound region and are included on the Kirkland Plant List. These species have been selected for their benefits to wildlife and their proven success on plant mitigation projects. While removing invasive species, care shall be taken not to harm any existing native trees or shrubs.

Buffer Enhancement - (15,383 square feet)

Common Name	Latin Name	Size	Spacing	Quantity
Red alder	<i>Alnus rubra</i>	2 gallon	9'	92
Douglas fir	<i>Pseudotsuga menziesii</i>	2 gallon	9'	92
Cobweb	<i>Oemleria cerasiformis</i>	1 gallon	6'	144
Noddy rose	<i>Rosa rubra</i>	1 gallon	6'	144
Shruberry	<i>Symphoricarpos albus</i>	1 gallon	6'	144
Oregon grape	<i>Berberis nervosa</i>	4" pot	4"	323
Salal	<i>Gaultheria shallon</i>	4" pot	4"	323
Sword fern	<i>Polystichum munitum</i>	4" pot	4"	323

**Grass Seeding**

Any disturbed soil in sensitive areas or buffers shall be seeded to the recommended grass seed mixtures below, or similar approved mixtures.

Common Name	Latin Name	lbs/1,000 s.f.
Tall fescue	<i>Festuca arundinacea</i>	0.4
Colonial bentsgrass	<i>Agrostis tenuis</i>	0.4
Annual ryegrass	<i>Lolium multiflorum</i>	0.5
Red clover	<i>Trifolium repens</i>	0.2

**Large Woody Debris**

To improve habitat values for wildlife within the subject wetland and stream buffer, as well as to comply with KZC 90.60.2.a.2 and KZC 90.100.B, the applicant is proposing to install a minimum of two snags and four pieces of downed woody debris within the buffer. Material to be used for large woody debris should be salvaged from the cleared areas of the site and should be approved by the project biologist prior to installation. Large woody debris shall consist of logs from Douglas fir (*Pseudotsuga menziesii*) or Western red cedar (*Thuja plicata*). Snags should be as large as possible, but a minimum of twelve inches in diameter and thirty feet long. Approximately one third (10 feet) of the log should be buried in the ground with the remaining portion to serve as a snag. Rooting sites should be installed in the upper portion of these snags to provide habitat for bats and songbirds. The snags should be oriented to the south and should be at least eight inches deep, one or more inches wide, and angled sharply upward. Branches on the snags should be retained as perches for birds. Downed woody debris should be as large as possible, but a minimum of ten inches in diameter and ten feet long. If root wads are available, they should be set aside for this purpose. Installation of the snags and downed woody debris should be completed prior to installation of the buffer enhancement plantings, and should be supervised by the project biologist or other qualified person.

**Project Success and Compliance**

**Goals and Objectives of the Proposed Mitigation:** The primary goals of the proposed mitigation area are as follows:

- 1) Increase the water quality and habitat functions within the buffer;
- 2) Remove non-native vegetation from the mitigation area;
- 3) Increase the quantity and diversity of native vegetation within the on-site wetland and stream buffers; and
- 4) Allow for responsible residential development and associated infrastructure, while maintaining the ecological functions provided by the subject site.

**Definition of Success:** The planting areas shall meet the following performance standards:

- a) Year 1: 100 percent survival of newly planted species,
- b) Year 3: at least 80 percent survival of installed plant species,
- c) Year 5: at least 80 percent survival of installed plant species,

This mitigation plan shall support at least 80% of the native plants set forth in the approved mitigation plan by the end of five years. The species mix should resemble that proposed in the planting plans, but strict adherence to obtaining all of the species shall not be a criterion for success.

**Performance Standards:**

**Performance Standard 1:** There shall be 100 percent survival of all the plantings after Year 1 or the installation contractor shall replace the material. At least 80 percent of the plant material installed shall survive in Year 5 after installation.

**Performance Standard 2:** There shall be a minimum of 30 percent cover of woody species (shrub and tree canopy layers considered together) in the buffer after the first year post-installation, and a minimum of 50 percent cover by woody material after the third year post-installation, and a minimum of 80 percent cover by woody material after the fifth year post-installation. Naturally occurring, native plants shall be included in the calculation of vegetation cover.

**Performance Standard 3:** There shall be no more than 10 percent cover of weedy/invasive species in the mitigation areas at any time throughout the monitoring period.

If the project meets all of the criteria for success at the end of the five-year monitoring period, no further action will be required and the financial guarantee will be returned to the applicant in full. If the definition of success is not met for any reason at the end of the five-year monitoring period, the maintenance and monitoring period will be extended for one year at a time until the site meets the stated performance standards. If the definitions of success and the accompanying performance standards are met in less than five years, the monitoring may be terminated and the bond released at that point. This mitigation plan and the accompanying maintenance and monitoring will not be considered fully complete until written confirmation is received from the City of Kirkland.

**Project Monitoring Program**

- Requirements for monitoring project:
1. Initial compliance/as-built report.
  2. Semi-annual site inspection (twice yearly in the spring and fall) for each monitored year.
  3. Annual reports (one report submitted in the fall of each monitored year).

**Criteria for Success:** Upon completion of the proposed mitigation project, an inspection by a qualified professional will be made to determine plant compliance. A compliance report will be prepared by the qualified biologist and supplied to the City of Kirkland within 30 days after the completion of planting. The monitoring period will begin once the City receives written notification confirming the mitigation plan has been implemented and City staff inspects the site and issues approval of the installation.

A qualified professional will perform condition monitoring of the plantings semi-annually in the spring and fall throughout the monitoring period. A written report describing the monitoring results will be submitted to the City of Kirkland and other agencies with jurisdiction after the fall inspection for each monitored year. Final inspection will occur five years after completion of this project, or when the definitions of success and performance standards have been met. The purpose for monitoring this mitigation project shall be to evaluate its success. Success will be determined if monitoring shows at the end of five years that the definitions of success and the accompanying performance standards described in this report are being met. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscaper and/or wetland specialist and the City of Kirkland during the period of the bond or until the project is evaluated as successful.

**Vegetation Monitoring:** Sampling points or transects will be established for vegetation monitoring and photo points will be established from which photos will be taken throughout the monitoring period. Photographs shall be taken from the same photo points during each subsequent monitoring visit to provide visual documentation of the evolution of the mitigation areas over time. Permanent sampling points must be identified on the mitigation site plans in the final monitoring report.

Following each monitoring visit, the contracted biologist will make recommendations for maintenance to the mitigations areas.

**Maintenance**

The mitigation areas will require periodic maintenance to remove undesirable species and replace plant material. Maintenance may include, but will not be limited to, removal of competing grasses and invasive species (by hand if necessary), removal of trash, irrigation, replacement of plant mortality, and the replacement of mulch for each maintenance period.

**Contingency Plan**

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

**Planting Notes**

Wetland and buffer mitigation projects are typically more complex to install than can be described in plans. Careful monitoring by a professional wetland scientist for all portions of this project is strongly recommended. Timing and sequencing is important to the success of this type of project.

Plant in the early spring or late fall. Order plants from a reputable nursery. Care and handling of plant material is extremely important to the overall success of the project. All plant materials recommended in this plan should be available from local and regional sources, depending on seasonal demand. Some limited species substitution may be allowed, only with the agreement of the consulting wetland professional.

The plants shall be arranged with the appropriate numbers, sizes, species, and distribution to achieve the required vegetation coverage. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area.

**Colored surveyors ribbon**, or other approved marking device shall be placed next to each planted tree and shrub to assist in locating the plants while removing the competing non-native vegetation and to assist in monitoring the plantings.

**Wood chips** or other suitable material shall be used for mulching in the planting areas. Any existing vegetation is to be removed from a two-foot diameter area at each planting site. Mulch is to be placed in this two-foot diameter area at a depth of three to four inches. A four-inch diameter ring around the base of each plant shall be kept free of mulch.

**Water** should be provided during the dry season (July 1 through October 15) for the first two years after installation to insure plant survival and establishment. A temporary above ground irrigation system and/or water truck should provide water. Water should be applied at a rate of 1 inch of water twice per week for year one and 1 inch per week during year two. An inspection during the Year one, spring monitoring visit will be conducted to ensure that the mitigation has established.

**Required Financial Guarantee**

The City of Kirkland requires a performance bond or other financial guarantee in order to ensure that the proposed mitigation efforts meet the performance standards outlined in this report. Pursuant to KZC Chapter 90.145, a performance or maintenance bond is required to assure that all work or actions are satisfactorily completed or maintained in accordance with the approved plans, specifications, permit or approval requirements, and applicable regulations, and to assure that all work or actions not satisfactorily completed or maintained will be corrected to comply with approved plans, specifications, requirements, and regulations to restore environmental damage or degradation, protect fish and wildlife habitat and protect the health, safety, and general welfare of the public. The security for performance shall be for a period of five years and the amount of the performance security equals 125 percent of the of the estimated cost, as approved by the Planning Official, of conformance to plans, specifications, and permit or approval requirements under this chapter, including corrective work and compensation, enhancement, mitigation, maintenance, and restoration of sensitive areas.

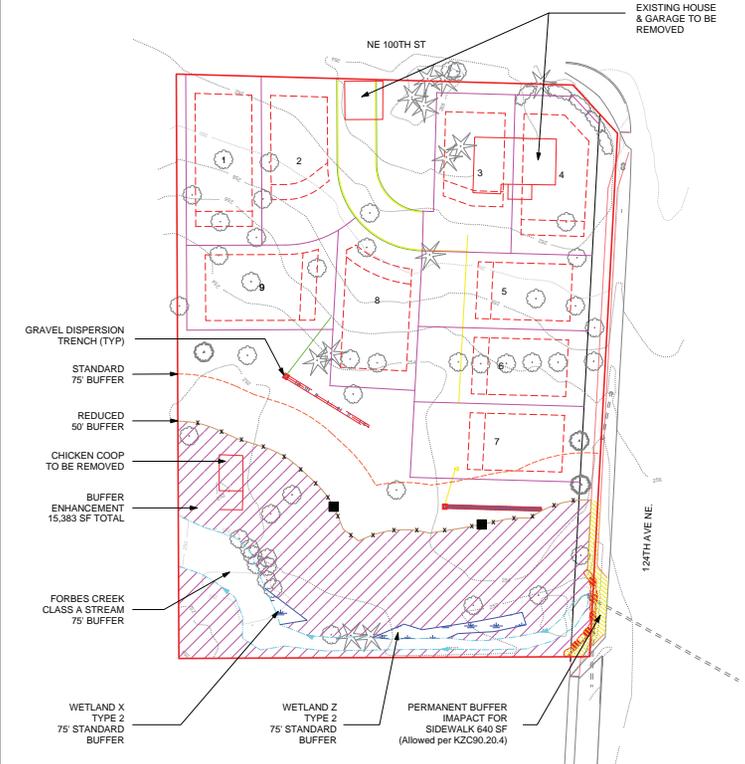
In an effort to determine the estimated cost of the installed mitigation project and future monitoring / maintenance costs associated with the project over a 5-year period, the King County Critical Areas Bond Quantity Worksheet was completed, as requested by the Watershed Company. Please view the project-specific Bond Quantity Worksheet completed by Acre Environmental Consulting, LLC which is attached to this report. Per the calculations shown on the Bond Quantity Worksheet for this project, the bond amount required to be paid to the City of Kirkland equals \$46,281.30.

**Use of this Report**

This buffer enhancement plan is supplied to Windward Real Estate Services, LLC as a means of mitigating for buffer impacts as required by the City of Kirkland Sensitive Areas Regulations. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the regulations currently in effect. The work for this report has been conformed to the standard of care employed by professional ecologists in the Pacific Northwest. No warranty representation or warranty is made concerning the work or this report. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. If such conditions arise, the information contained in this report may change based upon those conditions. Please note that Acre Environmental Consulting, LLC did not provide detailed analysis of other permitting requirements not discussed in this report (i.e. structural, drainage, geotechnical, or engineering requirements).

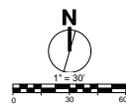
The laws applicable to Critical Areas are subject to varying interpretations. While Acre Environmental Consulting, LLC upheld professional industry standards when completing this review, the information included in this report does not guarantee approval by any federal, state, and/or local permitting agencies. Therefore, all work on this property shall not commence until permits have been obtained from all applicable agencies.

Acre Environmental Consulting, LLC.



**LEGEND**

- WETLAND
- PERMANENT BUFFER IMPACT
- BUFFER ENHANCEMENT
- ESA SIGN
- FENCE (Spot rail or other type as approved by Kirkland)
- EXISTING VEGETATION



Acre Job: 19043  
 Watershed Co. Ref # 100714.17  
 Drawn By: L. Emmerich  
 Date: 03/09/2013  
 Revision No.



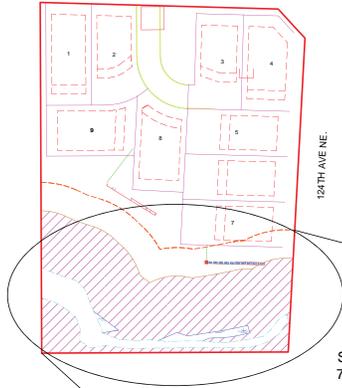
PREPARED BY:  
 Acre Environmental Consulting, LLC  
 9757 124th Ave NE  
 Lake Forest, WA 98156  
 Phone: (206) 450-7746  
 Email: lous@acreenvironmental.com

PREPARED FOR:  
 Windward Real Estate Services, LLC  
 335 Park Place Center, Suite G111  
 Kirkland, WA 98033

BUFFER MITIGATION PLAN  
**CEDARBROOK SP**  
 9757 124TH AVENUE NE  
 KIRKLAND, WA 98033  
 TAX PARCEL NO. 123850-0890

OVERVIEW MAP NTS

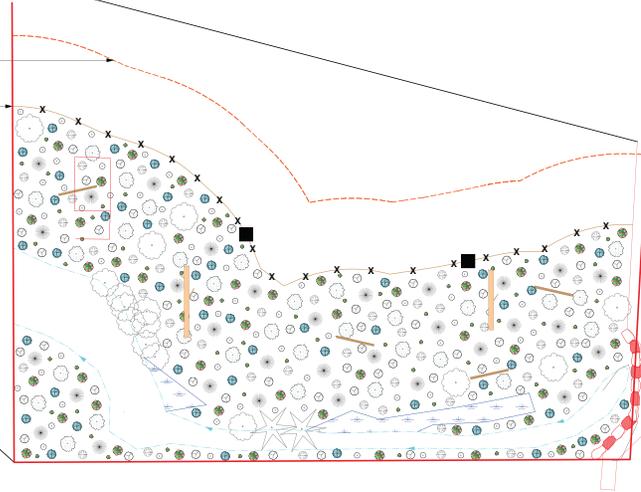
NE 100TH ST



123TH AVE NE.

STANDARD  
75' BUFFER

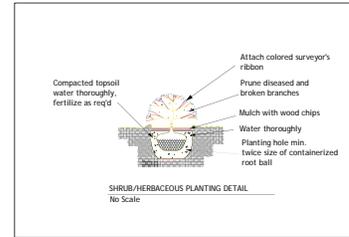
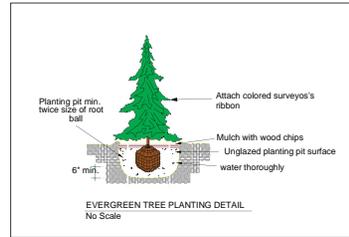
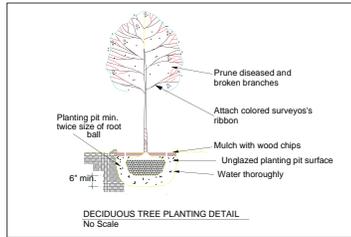
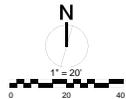
REDUCED  
50' BUFFER



124TH AVE NE.

**LEGEND**

- ESA SIGN
- x FENCE (dipst rail or other type as approved by Kirkland)
- DOWNED WOODY DEBRIS
- SNAGS
- Existing vegetation to remain.
- The following symbols represent clumps of three (3) like species.
  - *Pseudotsuga menziesii*
  - *Alnus rubra*
  - *Oemleria cerasiformis*
  - *Symphoricarpos albus*
  - *Rosa nutkana*
- The following symbols represent clumps of five (5) like species.
  - *Berberis nervosa*
  - *Gaultheria shallon*
  - *Polystichum munitum*



Acres: 130.43  
 Watershed Co. Ref # 100714.17  
 Drawn By: L. Emerhear  
 Date: 05.09.2013  
 Revision No.



PREPARED BY:  
 Acre Environmental Consulting, LLC  
 17715 28th Avenue NE  
 Lake Forest Park, WA 98155  
 Phone: (206) 450-7746  
 Email: toulis@acreenvironmental.com

PREPARED FOR:  
 Windward Real Estate Services, LLC  
 335 Park Place Center, Suite G111  
 Kirkland, WA 98033

**BUFFER PLANTING PLAN**  
**CEDARBROOK SP**  
 9757 124TH AVENUE NE  
 KIRKLAND, WA 98033  
 TAX PARCEL NO. 123850-0890

SHEET W-2

**Critical Areas Mitigation  
Bond Quantity Worksheet**

C24 Web date: 11/30/2012

**Project Name:** Cedarbrook Short Plat      **Date:**9/9/13      **Prepared by:** Acre Environmental Consulting, LLC  
**Project Number:**Watershed Ref # 100714. **Project Description:** Buffer reduction with enhancement  
**Location:**9900 124th Ave. NE Kirkland, WA      **Applicant:** Windward Ral Estate Services, LLC

PLANT MATERIALS*						
Type	Unit Price	Unit	Quantity	Description	Cost	
PLANTS: Potted, 4" diameter, medium	\$5.00	Each	969		\$ 4,845.00	
PLANTS: Container, 1 gallon, medium soil	\$11.50	Each	432		\$ 4,968.00	
PLANTS: Container, 2 gallon, medium soil	\$20.00	Each	184		\$ 3,680.00	
PLANTS: Container, 5 gallon, medium soil	\$36.00	Each			\$ -	
PLANTS: Seeding, by hand	\$0.50	SY			\$ -	
PLANTS: Slips (willow, red-osier)	\$2.00	Each			\$ -	
PLANTS: Stakes (willow)	\$2.00	Each			\$ -	
PLANTS: Stakes (willow)	\$2.00	Each			\$ -	
PLANTS: Flats/plugs	\$2.00	Each			\$ -	
* All costs include installation					<b>TOTAL</b>	<b>\$ 13,493.00</b>

INSTALLATION COSTS ( LABOR, EQUIPMENT, & OVERHEAD)						
Type	Unit Price	Unit	Quantity	Description	Cost	
Compost, vegetable, delivered and spread	\$37.88	CY			\$ -	
Decompacting till/hardpan, medium, to 6" depth	\$1.57	CY			\$ -	
Decompacting till/hardpan, medium, to 12" depth	\$1.57	CY			\$ -	
Hydroseeding	\$0.51	SY			\$ -	
Labor, general (landscaping)	\$40.00	HR	128.00		\$ 5,120.00	
Labor, general (construction)	\$40.00	HR			\$ -	
Labor: Consultant, supervising	\$55.00	HR	6.00		\$ 330.00	
Labor: Consultant, on-site re-design	\$95.00	HR			\$ -	
Rental of decompacting machinery & operator	\$70.00	HR			\$ -	
Sand, coarse builder's, delivered and spread	\$42.00	CY			\$ -	
Staking material (set per tree)	\$7.00	Each			\$ -	
Surveying, line & grade	\$250.00	HR			\$ -	
Surveying, topographical	\$250.00	HR			\$ -	
Watering, 1" of water, 50' soaker hose	\$3.62	MSF			\$ -	
Irrigation - temporary	\$3,000.00	Acre	0.35		\$ 1,050.00	
Irrigation - buried	\$4,500.00	Acre			\$ -	
Tilling topsoil, disk harrow, 20hp tractor, 4'-6" deep	\$1.02	SY			\$ -	
	\$25.00	HR			\$ -	
					<b>TOTAL</b>	<b>\$ 6,500.00</b>

HABITAT STRUCTURES*						
ITEMS	Unit Cost	Unit	Quantity	Description	Cost	
Fascines (willow)	\$ 2.00	Each			\$ -	
Logs, (cedar), w/ root wads, 16'-24" diam., 30' long	\$1,000.00	Each			\$ -	
Logs (cedar) w/o root wads, 16'-24" diam., 30'	\$400.00	Each			\$ -	
Logs, w/o root wads, 16'-24" diam., 30' long	\$245.00	Each	4.00		\$ 980.00	
Logs w/ root wads, 16'-24" diam., 30' long	\$460.00	Each			\$ -	
Rocks, one-man	\$60.00	Each			\$ -	
Rocks, two-man	\$120.00	Each			\$ -	
Root wads	\$163.00	Each			\$ -	
Spawning gravel, type A	\$22.00	CY			\$ -	
Weir - log	\$1,500.00	Each			\$ -	
Weir - adjustable	\$2,000.00	Each			\$ -	
Woody debris, large	\$163.00	Each			\$ -	
Snags - anchored	\$400.00	Each	2.00		\$ 800.00	
Snags - on site	\$50.00	Each			\$ -	
Snags - imported	\$800.00	Each			\$ -	
					\$ -	
* All costs include delivery and installation					<b>TOTAL</b>	<b>\$ 1,780.00</b>

EROSION CONTROL						
ITEMS	Unit Cost	Unit	Quantity	Description	Cost	
Backfill and Compaction-embankment	\$ 4.89	CY			\$ -	
Crushed surfacing, 1 1/4" minus	\$30.00	CY			\$ -	
Ditching	\$7.03	CY			\$ -	
Excavation, bulk	\$4.00	CY			\$ -	
Fence, silt	\$1.60	LF	250.00		\$ 400.00	
Jute Mesh	\$1.26	SY			\$ -	
Mulch, by hand, straw, 2" deep	\$1.27	SY			\$ -	
Mulch, by hand, wood chips, 2" deep	\$3.25	SY	260.00		\$ 845.00	
Mulch, by machine, straw, 1" deep	\$0.32	SY			\$ -	
Piping, temporary, CPP, 6"	\$9.30	LF			\$ -	
Piping, temporary, CPP, 8"	\$14.00	LF			\$ -	
Piping, temporary, CPP, 12"	\$18.00	LF			\$ -	
Plastic covering, 6mm thick, sandbagged	\$2.00	SY			\$ -	
Rip Rap, machine placed, slopes	\$33.98	CY			\$ -	
Rock Constr. Entrance 100'x15'x1'	\$3,000.00	Each			\$ -	
Rock Constr. Entrance 50'x15'x1'	\$1,500.00	Each			\$ -	
Sediment pond riser assembly	\$1,695.11	Each			\$ -	
Sediment trap, 5' high berm	\$15.57	LF			\$ -	
Sediment trap, 5' high berm w/spillway incl. riprap	\$59.60	LF			\$ -	
Sodding, 1" deep, level ground	\$5.24	SY			\$ -	
Sodding, 1" deep, sloped ground	\$6.48	SY			\$ -	
Straw bales, place and remove	\$600.00	TON			\$ -	
Hauling and disposal	\$20.00	CY			\$ -	
Topsoil, delivered and spread	\$35.73	CY			\$ -	
	\$17.00	CY			\$ -	
Is-wks-sensareaBQ.xls    Is-wks-sensareaBQ.pdf					<b>TOTAL</b>	<b>\$ 1,245.00</b>





September 25, 2013

Tony Leavitt  
City of Kirkland  
Planning and Community Development  
123 Fifth Avenue  
Kirkland, WA 98033

**Re: 9757 124<sup>th</sup> Ave. NE (former Gerde Property)** The Watershed Company  
Reference Number: 100714.17

Dear Tony:

This letter provides review comments on the September 2013 mitigation plan submittal for this project prepared by Acre Environmental Consulting, LLC (Acre). Documents reviewed include a September 9, 2013 response letter, two-sheet buffer mitigation plan and bond quantity worksheet.

### **Findings**

The revised submittal materials provide much better detail and are generally acceptable. However, a few minor changes are recommended as detailed below.

The Acre letter successfully demonstrates there is no alternative location for the sidewalk. However, the sidewalk will represent an increase in impervious surfaces within the buffer. Consistent with past projects, the sidewalk should be constructed of pervious material to satisfy the requirements of KZC 90.20.4.

The diversity of tree species should be increased to include one more conifer and at least one more deciduous tree species. Also, since red alder readily volunteers and can form dense monocultures, the proposed quantity should be reduced or a different tree substituted entirely. Good candidates include bigleaf maple and bitter cherry.

The survivability of 4-inch pots on this site is a concern especially due to the dense pasture grasses currently dominating the buffer. Since the proposed quantity of the 4-inch species is quite high, substituting with a smaller number of 1-gallon plants would lower replacement costs in the future.

The success criteria and performance standards should be combined into one category since both phrasings describe how the site is judged over time. Also, a survival standard

is proposed in years three and five. As indicated in my first review letter, tracking survival of more than 1,500 individual plants is cumbersome, time consuming and not particularly useful in judging project success. A better standard is to require 100% survival in year 1, at least 80% in year two and then switch to a species diversity standard in subsequent years.

Also noted in my review letter but not addressed in the plan is the need to monitor the level spreaders to ensure stormwater is not causing channelization in the buffer or other detrimental erosion. The plan should include a monitoring requirement, performance standard and contingency/remedy recommendations should erosion begin.

The plan indicates that irrigation should be used and gives the option of providing water by truck. Water truck irrigation is unreliable and generally only permitted when municipal water is not available. The plan should be revised to require a temporary above-ground irrigation system with automatic timers to ensure system reliability.

The monitoring schedule requirements are vague. The plan should stipulate that twice-yearly monitoring and reports are required in *each* of the required five years (ten total site visits, five maintenance memos and five annual reports).

The split rail fence and signs are mentioned only on the legend of sheet W-1. To provide clarity to installation contractors, the fence and signs should be mentioned in the constructions sequence and a detail provided.

While erosion control details have been provided, the Acre plan contains no requirements for soil decompaction or amendments as requested in the earlier review letter. Especially in the area of the removed poultry shed, soil may need to be imported to match grade and/or improved if deficient.

Since snag and log material is readily available on-site, the plan should mention salvage and reuse of these trees. Similarly, the unit cost on the bond quantity estimate can be reduced since the material only needs to be moved into position and not purchased and imported to the site.

### **Recommendations**

1. Propose pervious sidewalk pavement.
2. Increase the diversity of proposed tree species and reduce the number of red alder trees.
3. Propose using 1-gallon container stock in place of 4-inch pots; reduce overall groundcover quantities.

4. Use either performance standards or success criteria but not both.
5. Substitute a plant species diversity performance standard instead of a survival standard in years 3-5.
6. Include monitoring, performance standards and contingency requirements for the level spreader stormwater outfalls.
7. Incorporate a requirement for a timer-operated temporary irrigation system supplied by the municipal water system for the development.
8. Clarify the monitoring schedule to stipulate site visits, memos and reports in each of the five monitoring years.
9. Add the split rail fence and signage to the work sequence and provide a detail drawing.
10. Include provisions to import or amend topsoil as needed.
11. Require re-used of salvaged trees from on-site cleared areas and reduce the bond unit price accordingly.

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



Hugh Mortensen, PWS  
Senior Ecologist

