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# memorandum

date May 15, 2017

to Andrew Leon, Planner; City of Mercer Island

from Brooke Benson, Ecologist; ESA  
Aaron Booy, Natural Resources Specialist; ESA

subject Proposed 8316 Avalon Drive Residence Critical Areas Determination (CAO17-002) –  
Environmental Review

Environmental Science Associates (ESA) has prepared this memorandum on behalf of the City of Mercer Island, providing environmental peer review for the development proposal at 8316 Avalon Drive. The project (City permit number CAO17-002) proposes to expand and renovate the existing garage and residence, as well as to remove several trees. A stream flows through the site (Parcel 032110-0290), designated as a Type 2 watercourse and requiring a 50-foot standard buffer. The focus of this review is to confirm accuracy of the Critical Areas Study (CAS) and Stream Buffer Mitigation Plan, and consistency with City Critical Areas Requirements within Mercer Island City Code (MICC) Chapter 19.07.

## **Document Review**

We reviewed the following City-provided background files: Stream Delineation and Buffer Reduction for Platau Residence (the CAS, prepared by Altmann Oliver Associates, LLC, April 3, 2017), Stream Buffer Mitigation Plan (plan sheets W-1 – W-3, Altmann Oliver Associates, LLC, February 14, 2017), and project site plan set (Sturman Architects, February 2017). ESA also reviewed public-domain information for the study area. These sources include National Wetland Inventory maps, Washington Department of Fish and Wildlife web mapping tools (Priority Habitats & Species and SalmonScape), King County's GIS mapping website (iMap), and City of Mercer Island critical areas maps.

## **Site Visit**

Brooke Benson conducted a site visit along with City of Mercer Island Planner Andrew Leon to the proposed project site on April 27, 2017. Brad Sturman of Sturman Architects and the property owner were also present at the site, and provided project background information before ESA conducted the site reconnaissance. The site visit included visual observations of the stream and buffer area, the onsite pond (in-line with the stream to the east of the on-site driveway), trees to be removed under the proposal, the existing garage and gravel parking area, and the backyard area.

## **Review Comments**

*Stream Identification and Site Conditions:* Based upon our review, ESA agrees with the location of the onsite stream. It enters the property at the northwest corner through a one-foot perched culvert. From there it flows

south towards the residence then turns east, flows under the driveway and into a small pond, and then continues to flow east under the neighbors' driveway and offsite. We agree that per MICC 19.07.070, the stream should be designated a Type 2 watercourse and accordingly requires a 50-foot standard buffer. Furthermore, we agree with the CAS characterization of Type 2 watercourse buffer reduction allowances (per MICC 19.07.070.B.2), to a minimum 25-foot buffer when appropriate mitigation is employed that increases riparian functions over existing conditions. Therefore, we generally agree that the stream and associated buffers are correctly shown on the Stream Buffer Mitigation Plan.

During our site visit, most of the project site consisted of upland plant communities and bright, drier soil that did not suggest wetland conditions. However, in two relatively small areas adjacent to the on-site stream, dark, saturated soils containing redoximorphic features were observed. One of these areas was east of the stream between the stone-rimmed garden area and where the stream turns to the east. The other area was south of this turn, to the north of the gravel parking area. See Figure 1 (marked-up sheet from the Buffer Mitigation Plan) for approximate locations of wet areas. The dominant vegetation in these areas was field horsetail (*Equisetum arvense*). The Critical Areas Study did not identify any wetlands on site and it does not appear that Altmann Oliver Associates established any formal data plots to document existing conditions. Based on our observations, we recommend that the applicant's consultant provide additional information to document existing conditions in these areas. Depending on the findings, it may be appropriate to include these areas within the ordinary high water mark (OHWM) of the stream, or they may be identified as separate wetlands.

*Proposed Impacts and Mitigation Approach:* The north end of the existing garage and the gravel parking pad both encroach into the standard 50-foot watercourse buffer. The project proposes to reduce the buffer to 25 feet and expand the garage to the edge of the 25-foot buffer. The area proposed for the garage expansion is currently a gravel parking pad, which is not providing any buffer function to the stream. The gravel parking pad extends past the proposed garage expansion location and into the 25-foot buffer; the project proposes to leave this portion of the gravel area intact.

The proposed mitigation for the buffer reduction includes removal of noxious weeds replanting with native vegetation and five-year monitoring (consistent with option (iii) under MICC 19.07.070.B.2). During the site visit, we observed high cover of English ivy (*Hedera helix*) in the understory of the buffer west of the stream. There was also a patch of reed canarygrass (*Phalaris arundinacea*) observed on the stream bank. Removing these and other invasive species and planting with native species would improve the habitat function of the stream buffer. We agree that the chosen mitigation option is appropriate; however, we recommend that it be combined with the mitigation option to permanently remove impervious surfaces and replacement with vegetation (MICC 19.07.070.B.2(i)), by removing and replanting the gravel area that is outside of the new garage footprint and within the reduced 25-foot buffer. Per MICC 19.07.070.C, impervious surfaces, including gravel parking areas, are not permitted within a watercourse buffer.

The applicant additionally proposes to construct a cedar chip trail and remove several existing trees within the reduced stream buffer. The cedar chip trail would loop through the buffer area on both sides of the stream, crossing the stream at an existing stone bridge (which will not be altered) and linking to the driveway. The proposed trail is consistent with allowed critical areas alteration provided by MICC 19.07.030.9. We agree that the trails should encourage stewardship of the enhanced buffer area.

Trees within a watercourse or its buffer are part of a "Critical Tree Area, per MICC 19.16.010 (Title 19 Definitions). A tree permit is required to cut any large tree in a Critical Tree Area, per MICC 19.10.020B.3 (City Tree regulations). According to MICC 19.16.010, a large (regulated) tree is any conifer that is six feet tall or greater and any deciduous tree with a diameter greater than six inches. Several of the trees proposed for removal are large trees, so a tree permit will be required for removal. Based on assessment by the applicant's arborist report and verification by the City, tree removal would only be authorized for large trees that are diseased or dead, are a short-lived "weedy" tree species (i.e., alder, bitter cherry, or black cottonwood), or where their

removal and replacement would enhance the ecosystem (MICC 19.10.040). Based on our review of trees proposed for removal within the watercourse buffer area, we do not believe any removal could be warranted to enhance the riparian ecosystem. For any permitted removal, tree replacement may be required at a ratio ranging from 0:1 to 4:1, as determined by the City arborist (MICC 19.10.080.B).

*Buffer Mitigation Plan:* ESA landscape architect Allisona Greenberg completed review of the Stream Buffer Mitigation Plan. We generally agree that the proposed Mitigation Plan approach is consistent with MICC 19.07.040 and .070 standards. The plant schedule should support achieving identified objectives and corresponding performance standards, resulting in increased structural and plant species diversity and reduced extent of invasive and exotic plant species across the enhancement area. We have specific recommendations for updates to the proposed Buffer Mitigation Plan, intended to improve opportunity for success. These recommendations are provided below.

### Summary and Recommendations

Based on our site visit and review of project materials, we agree that the Type 2 watercourse is accurately located on the proposed project parcel and characterized by the CAS. The on-site stream requires a 50-foot standard buffer. Buffer reduction may be allowed to a minimum of 25 feet with mitigation that increases riparian functions over existing conditions. We have the following recommendations for updates to the CAS and Buffer Mitigation Plan to ensure consistency with Mercer Island Critical Areas requirements:

- Based on our observations of site conditions, we recommend that two relatively small areas adjacent to the on-site stream be further investigated for wetland indicators, with documentation provided in an updated CAS. Based on this investigation, if any wetland area is identified or the stream OHWM is expanded, we recommend that project materials be updated to reflect conditions and associated MICC Chapter 19.07 requirements.
- In addition to proposed invasive species removal and buffer enhancement within the reduced buffer area, we recommend that the City require removal of the gravel parking area that would be within the 25-foot reduced buffer. This area should be incorporated into the buffer mitigation plan, including restoration of underlying soils and planting with native species. Removing the impervious surface within the 25-foot buffer combined with removing invasive species and replanting with native species is appropriate mitigation for the proposed buffer reduction.
- We recommend that an arborist report be developed, as required when removing large trees from a critical tree area.
- We recommend the following updates to the Stream Buffer Mitigation Plan in order to maximize opportunity for mitigation success:
  - Update the planting plan to include Sections 3.0 through 6.0 from the CAS.
  - We recommend increasing the spacing of the western red cedars (*Thuja plicata*) to at least 15 feet apart to give them room to grow.
  - On the planting plan, sword fern (*Polystichum munitum*) does not have a corresponding letter in the plant schedule. Confirm if “M” corresponds to sword fern and revise the plant schedule accordingly.
  - If wetland areas are identified on the site (or the OHWM is expanded to include wetter areas along the stream corridor), soil and hydrology conditions should be taken into account for plants

selected for these areas. For the areas noted on Figure 1, we recommend the following plant changes to species more appropriate for wet conditions:

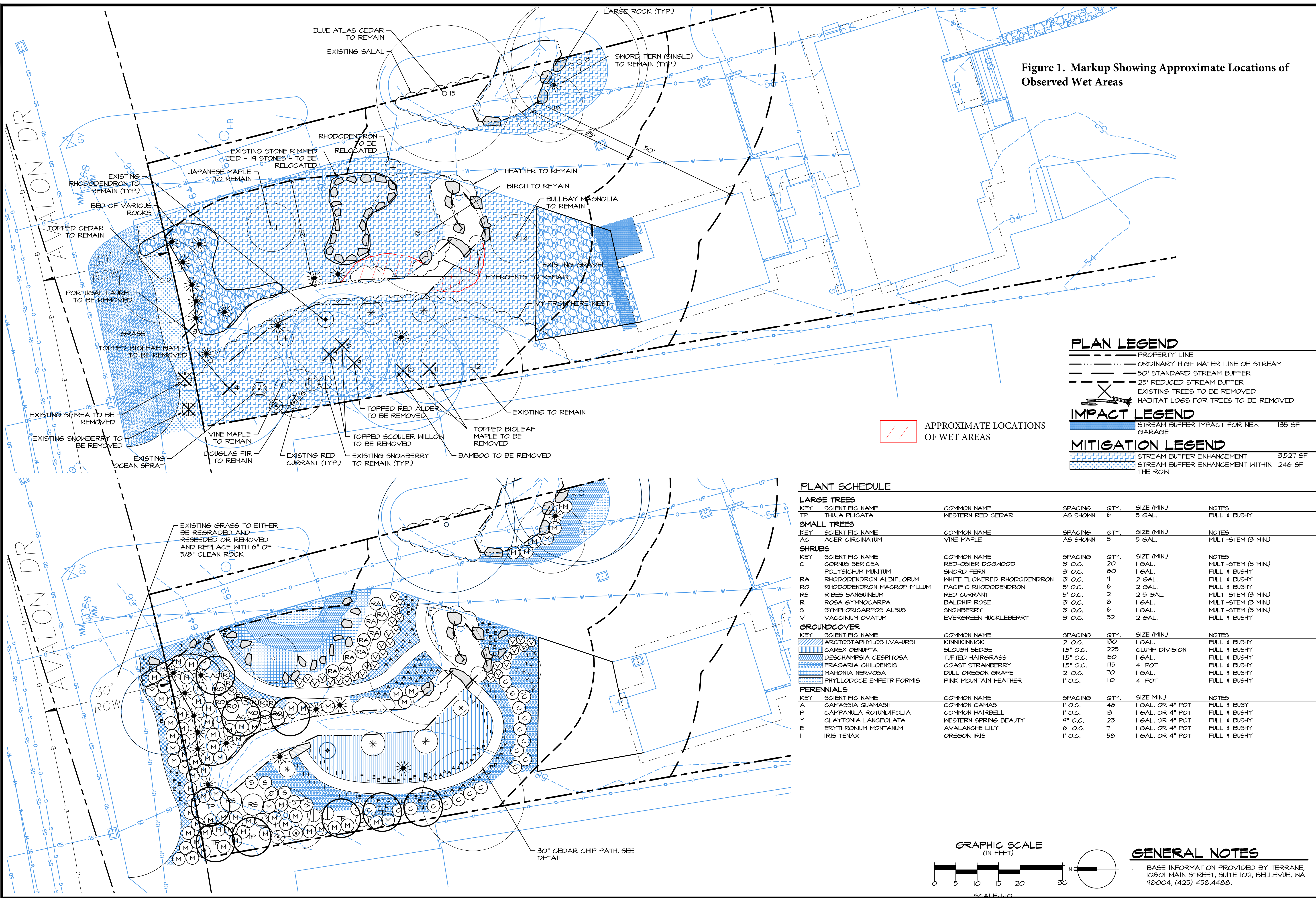
- Substitute sword fern with Labrador tea (*Ledum groenlandicum*)
  - Substitute coast strawberry (*Fragaria chiloensis*) with bunchberry (*Cornus canadensis*)
  - Substitute common camas (*Camassia quamash*) with western columbine (*Aquilegia formosa*)
- The Construction Specifications should specify that pesticides are not permitted within the enhancement area.

If you have any questions, please call me at (206) 789-9658.



Revisions	Date	By

**Figure 1. Markup Showing Approximate Locations of Observed Wet Areas**



**PLAN LEGEND**

- PROPERTY LINE
- ORDINARY HIGH WATER LINE OF STREAM
- 50' STANDARD STREAM BUFFER
- 25' REDUCED STREAM BUFFER
- X EXISTING TREES TO BE REMOVED
- X HABITAT LOGS FOR TREES TO BE REMOVED

**IMPACT LEGEND**

- STREAM BUFFER IMPACT FOR NEW GARAGE 135 SF

**MITIGATION LEGEND**

- STREAM BUFFER ENHANCEMENT 3,527 SF
- STREAM BUFFER ENHANCEMENT WITHIN THE ROW 246 SF

APPROXIMATE LOCATIONS OF WET AREAS

**PLANT SCHEDULE**

LARGE TREES						
KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
TP	THUJA PLICATA	WESTERN RED CEDAR	AS SHOWN	6	5 GAL.	FULL & BUSHY
SMALL TREES						
KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
AC	ACER CIRCINATUM	VINE MAPLE	AS SHOWN	3	5 GAL.	MULTI-STEM (3 MIN.)
SHRUBS						
KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
C	CORNUS SERICEA	RED-OSIER DOGWOOD	3' O.C.	20	1 GAL.	MULTI-STEM (3 MIN.)
A	POLYSGIUM MUNIUM	SWORD FERN	3' O.C.	80	1 GAL.	FULL & BUSHY
RA	RHODODENDRON ALBIFLORUM	WHITE FLOWERED RHODODENDRON	3' O.C.	4	2 GAL.	FULL & BUSHY
RO	RHODODENDRON MACROPHYLLUM	PACIFIC RHODODENDRON	5' O.C.	6	2 GAL.	FULL & BUSHY
RS	RIBES SANGUINEUM	RED CURRANT	5' O.C.	2	2-5 GAL.	MULTI-STEM (3 MIN.)
R	ROSA GYMNOCARPA	BALDHIP ROSE	3' O.C.	8	1 GAL.	MULTI-STEM (3 MIN.)
S	SYMPHORICARPOS ALBUS	SNOWBERRY	3' O.C.	6	1 GAL.	MULTI-STEM (3 MIN.)
V	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3' O.C.	32	2 GAL.	FULL & BUSHY
GROUNDCOVER						
KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
	ARCTOSTAPHYLOS UVA-URSI	KINKINNICK	2' O.C.	130	1 GAL.	FULL & BUSHY
	CAREX OBNUPTA	SLOUGH SEDGE	1.5' O.C.	225	CLUMP DIVISION	FULL & BUSHY
	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	1.5' O.C.	150	1 GAL.	FULL & BUSHY
	FRAGARIA CHILOENSIS	COAST STRAWBERRY	1.5' O.C.	175	4" POT	FULL & BUSHY
	MAHONIA NERVOSA	DULL OREGON GRAPE	2' O.C.	70	1 GAL.	FULL & BUSHY
	PHYLLODOCE EMPETRIFORMIS	PINK MOUNTAIN HEATHER	1' O.C.	110	4" POT	FULL & BUSHY
PERENNIALS						
KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
A	CAMASSIA QUAMASH	COMMON CAMAS	1' O.C.	48	1 GAL. OR 4" POT	FULL & BUSHY
P	CAMPANULA ROTUNDIFOLIA	COMMON HARBELL	1' O.C.	13	1 GAL. OR 4" POT	FULL & BUSHY
Y	CLAYTONIA LANCEOLATA	WESTERN SPRING BEAUTY	4" O.C.	23	1 GAL. OR 4" POT	FULL & BUSHY
E	ERYTHRIONUM MONTANUM	AVALANCHE LILY	6" O.C.	71	1 GAL. OR 4" POT	FULL & BUSHY
I	IRIS TENAX	OREGON IRIS	1' O.C.	58	1 GAL. OR 4" POT	FULL & BUSHY

GRAPHIC SCALE (IN FEET)



**GENERAL NOTES**

- BASE INFORMATION PROVIDED BY TERRANE, 10801 MAIN STREET, SUITE 102, BELLEVUE, WA 98004, (425) 458.4488.