CRITERIA SHEET for Variances – Responses From Property Owner
Kirkland Townhouse Project (CGA#0641) 03.20.2007

PROPOSED VARIANCE

We are requesting a variance to the maximum horizontal façade requirements of KZC Section 20.08, General Regulation 2, which requires that for any portion of the structures that adjoin (property that touches or is directly across a street, other than a principal arterial, and within 100 feet to the boundary line) a low density zone, then one of the following would apply

1. The height of that portion of the structure shall not exceed 15 feet above average building elevation, or
2. The horizontal length of any facade of that portion of the structure which is parallel to the boundary and within 100 feet of the low density zone shall not exceed 50 feet in width.

Our proposal would request a variance along the east property line of the site, where structures would exceed a height of 15 feet above average building elevation, and exceed a total horizontal length of 50 feet.

VARIANCE CRITERIA QUESTION #1

1. **How would the Variance not be materially detrimental to the property or improvements in the area of the subject property or to the City in part or as a whole?**

Answer: This project **will not be materially detrimental** because:

a. The main issue involving the length of the proposed façade is how that volume will affect the surrounding neighborhood.
   i. The volumetric impact of this façade on the neighborhood is mitigated because of its relationship to the existing sidewalk elevation. Only one unit would be more than 15 feet above the sidewalk, and that unit is 28 feet wide. (See site sections and elevations)
   ii. Furthermore, the single family homes across the street from the proposal's east property line are uphill and at least 10 feet above the level of the sidewalk.
   iii. The landscape buffer between the street and the units will screen the building from pedestrians and uphill neighbors.
   iv. The south side meets the zoning criteria, but we still have placed the open area between the southwest downhill building and the southern neighbor. The southeast uphill unit will not be longer than 50 feet horizontally on the south side.
   v. The north and west do not have this limitation, and also have a 30 foot height limit. But, we have kept the height of the downhill units to 25 feet because it benefits both the townhouse owners and neighbors to the east by providing as much view as possible. And, it benefits the neighbors to the north by keeping the scale of the building down as much as possible.

b. The project is in keeping with the intent of the code because the volume of the building, as viewed from the public and neighboring property, is in scale with the neighborhood.
   i. In addition to the code requirements we will emphasize the individual units by aesthetic architectural means such as building modulation, materials and colors.

VARIANCE CRITERIA QUESTION #2

2. How is the Variance necessary because of special circumstances regarding the size, shape, topography, or location of the subject property; or the location of a pre-existing improvement on the subject property that conformed to the Zoning Code in effect when the improvement was constructed?

Answer: This project has several **special circumstances** to consider:

a. The location and size of the dedicated wetland creates a special circumstance.
   i. 39% of this site will become a dedicated wetland that is environmentally and aesthetically beneficial to all the neighbors and city as a whole. However, the sole burden of this falls on one owner. Not all properties have requirements this significant. This owner purchased this site long before the new wetland requirements were adopted. It would be reasonable to ask the city and neighbors to seriously consider the value and benefit of this wetland versus the variance request.
   ii. The zoning requirement does not limit a project's building length as long as it is buffered from the neighboring zone by 100 feet.
      a. The wetland area and its buffer essentially create a buffer with an average depth of 170 feet from the western property line. This pushes the proposed development 18 feet into the 100' foot buffer on the east side, triggering the necessity of this variance application (keeping in mind that the proposal is still multiple units under the maximum development allowed).
      b. The topography of the property to the east of this proposal is at roughly 10 feet above the street level thus creating a real, although not required, natural buffer that further mitigates the 18' intrusion into the 100 foot buffer.

b. The steep site creates a special circumstance.
   i. If the intent of the regulation is to limit the volume of buildings from the perspective of neighbors and public areas, we have to look at what is visible from the public areas and neighbors. Because the site is as steep as it is, the average elevation of each unit is far below the sidewalk so that, even by maxing out a 25 foot height limit; only one unit is more than 15 feet above sidewalk elevation. That one unit is only 28 feet wide and 19 feet above the sidewalk elevation. The 15 foot exception would apply to a lot that was level or even uphill from the sidewalk. We are able to remain 15 feet below the sidewalk level meeting the intent of the code but at risk of being penalized for having a down hill site.

VARIANCE CRITERIA QUESTION #3

3. How would the Variance not constitute a grant of special privilege to the subject property which is inconsistent with the general rights that this Code allows to other property in the same area and zone as the subject property?

Answer: This project will not **constitute a grant of special privilege** because:

a. The subject property is uniquely special and complicated.
   i. A search for any similar property in the area did not uncover other parcels that contain these unique and complex requirements that the City would have to address again.
      i. transitional nature
      ii. wetland dedication and mitigation
      iii. multiple zoning requirements
      iv. all of the above on a property this small
   ii. These conditions may be found on a number of parcels of much larger scale and scope of development, but such parcels would be more able to accommodate such regulations while maintaining the design intent of the City of Kirkland.
   iii. The proposal has a limited amount of developed square footage (due to the wetlands dedication), and thus the request for a variance in façade length would merely allow the proposal to pursue a similar design intent that has been used throughout the numerous PUD's in the same neighborhood.

May 5, 2009

AOA-0438

Jon Regala
City of Kirkland
Planning and Community Development
123 5th Ave.
Kirkland, WA 98033

SUBJECT: **Revised Wetland Mitigation and Monitoring Report for Abbott/Olson 11401 100th Ave. NE and 11254 98th Ave. NE, Kirkland, WA. ZON07-00014**

Dear Jon:

The purpose of this letter is to outline the revised wetland mitigation and subsequent monitoring that will be conducted as part of a wetland modification and wetland buffer reduction proposal for the subject property. This report and the associated plan have been modified per the findings outlined in the September 26, 2008 letter to you from Hugh Mortensen of The Watershed Company.

Under the current proposal, the amount of wetland fill has been further reduced to 99 s.f. of Type 3 wetland through construction of a retaining wall. In addition, the amount of Type 3 wetland that would be impacted through wetland buffer encroachment (i.e., paper fill) has also been further reduced to 2,091 s.f. by reconfiguring the project open space area in the southeast portion of the site. These wetland areas would continue to function as wetland, but without the required buffer width.

The total area of wetland impact (2,190 s.f.) equals about 41% of the total wetland area on the site (5,397 s.f.) and is therefore less than the maximum 50% threshold allowance. The project also proposes to reduce the standard 50-foot buffer by one third (to 33.5 feet) with the implementation of a buffer enhancement plan (per KZC 90.60.1).

1.0 AVOIDANCE AND MINIMIZATION

The proposed project has gone through several revisions over the past twelve years to avoid and minimize wetland impacts as much as possible. Under the current

proposal, the condominium units have been designed and reviewed specifically to avoid wetland impacts and have moved as far east as possible. Parking and access drives are the minimum necessary and all parking and other impervious areas have been moved outside of the 10-foot setback from the edge of the buffer.

Wetland impacts associated with the commercial property have also been reduced by moving the access drive further to the north and removing all parking from within the 10-foot setback. It is our understanding that the building size is the smallest that could be constructed and still have a viable project.

2.0 WETLAND MODIFICATION

The City of Kirkland regulates the modification of Type 3 wetlands under Chapter 90.55.3 of its Zoning Code. This section of the code stipulates that any City-approval of a request for a modification of a wetland must be based on specific criteria. A rationale for how the 99 s.f. of wetland fill and 2,091 s.f. of paper fill would satisfy these criteria is described below.

1. *It will not adversely affect water quality.* The current water quality function of the wetlands on the site is relatively low due to their small size, low emergent vegetation density, isolated condition, and primarily undeveloped basin. Since stormwater detention and water quality treatment are components of the proposed project, and no runoff from paved surfaces will be discharged into the wetlands (without treatment), there should be no significant change in water quality within the wetland following development.

2. *It will not adversely affect fish, wildlife, or their habitat.* Currently the wetlands on the site are not significant habitat areas due to their small size and isolation from larger habitat areas. The limited habitat functions of this area will, however, be enhanced as described in the *Mitigation for Wetland Impacts* section below.

3. *It will not have an adverse effect on drainage and/or stormwater detention capabilities.* Currently Wetland A has very limited stormwater detention capabilities and functions primarily as a small discharge area. As a small isolated topographic depression, Wetland B does provide some minor stormwater storage. However, no actual wetland fill is proposed within this wetland so this function should not diminish. Furthermore, following construction, stormwater from the developed site will be detained within the on-site stormwater facilities.

4. *It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions.* All improvements conducted within the vicinity of the wetlands will be subject to an erosion control plan that will be designed and implemented per City of Kirkland standards. Since the area of wetland fill is located in a flatter portion of the site, it is not anticipated that an erosion hazard will be created.

5. *It will not be materially detrimental to any other property or to the city as a whole.* All wetland impacts will occur on the subject property, and the wetlands modification will not be materially detrimental to any other property.

6. *It will result in land surface modification of no more than 50% of the wetland on the subject property.* Although the proposed project will only fill 99 s.f. of wetland, the total area of wetland impact will be 2,190 s.f. (actual fill plus buffer encroachment). This wetland impact equals about 41% of the total wetland area on the site.

7. *Compensatory mitigation is provided.* Mitigation for wetland impacts will occur through a combination of on-site wetland creation, wetland enhancement, and buffer enhancement. As required for Type 3 wetlands in a primary basin, a minimum 1.5:1 replacement-to-loss ratio will be used. See *Mitigation for Wetland Impacts* section below for a more complete description of the mitigation proposal.

8. *Fill material does not contain organic or inorganic material that would be detrimental to water quality or fish and wildlife habitat.* It is our understanding that fill material within the wetlands will not contain organic or inorganic material that could be detrimental to water quality or fish and wildlife habitat. If appropriate, this could be a condition of the permit authorizing the wetland fill.

9. *All exposed areas are stabilized with vegetation normally associated with native wetlands and/or buffers, as appropriate.* All temporarily exposed areas within the wetlands and their buffers will be stabilized and planted with native vegetation.

3.0 MITIGATION FOR WETLAND AND BUFFER IMPACTS

Mitigation for the 2,190s.f. of wetland impact (99 s.f. of wetland fill and 2,091 s.f. of paper fill) will occur through the on-site creation of a minimum of 2,190 s.f. of new wetland between the existing wetlands. In addition, 2,389 s.f. of existing wetlands and 17,484 of buffer will be enhanced. Mitigation is required by the City at a ratio of 1.5:1 (the ratio of the mitigated area to the impacted area). Also as required by the City, the total area of proposed wetland creation as part of the mitigation must be at least a 1:1 for all impacts including paper fill. The total area of wetland mitigation is greater than the required 1.5:1 replacement-to-loss ratio, with at least a 1:1 wetland creation component.

The minimum 2,190 s.f. of new wetland will be created between Wetlands A and B to create a larger wetland system. In no case will the buffer from the created wetlands create an expansion of buffer onto an adjacent property over existing conditions. Since the area proposed for wetland creation currently contains a mixture of trees and shrubs (both native and non-native), wetlands would be created through shallow excavation that would be integrated into the existing native vegetation to avoid the significant trees.

Explorations conducted by the project geotechnical engineer and hydrogeologist revealed variable layers of silty sand and silt and groundwater levels to be between 14" and 18" below the surface within the area of proposed wetland creation. Based on these findings, the mitigation plan was revised to grade into the groundwater levels. The geotechnical engineer will also review the subgrade to determine if a bentonite clay liner needs to be installed in the created wetland. See **Drawings W1.1-W3.1** of the revised mitigation that include the revised grading and detailed specifications related to implementation of the plan.

Supplemental hydrologic support to the created wetland would also occur by collecting and routing runoff from the stormwater vault into a dispersion trench located within the wetland buffer. An additional control structure has also been added that includes a gate valve to manually adjust flows to the wetland as necessary. See the Conceptual Drainage Plan prepared by Taylor Engineering Consultants.

Wetland and buffer enhancement will consist primarily of the removal of blackberry and other invasive plant species. The entire mitigation area (i.e., created wetland, enhanced wetlands, un-buffered wetlands, and enhanced upland buffers) would then be supplemented with a variety of native trees and shrubs. Stumps, and down logs obtained from the cleared portions of the site would also be strategically placed throughout the mitigation area to provide habitat features. Following implementation of the wetland and buffer mitigation plan, a split-rail fence would be installed along the buffer edge to prevent pedestrian intrusion.

The wetland mitigation plan is depicted on **Drawings W1.1**, **W2.1** and **W3.1**.

3.1 Tree Preservation and Ivy Removal in Wetland Mitigation Area
Under the current proposal no trees would be removed within the wetland mitigation area. As part of the new arborist report prepared by Greenforest Incorporated, all of the trees within the wetland mitigation area have been re-assessed. Based on the arborist assessment, the mitigation grading plan has been revised to show the root plates and 3xDBH measurements of all trees. Upon excavation of the subgrade, the project arborist will review the site to verify tree stability and determine if crown reduction of any trees is required resulting from excavation.

In addition, per the Greenforest Incorporated report recommendations ivy stems at the base of tree trunks will be cut and left to fall naturally from the affected trees.

3.2 Goal, Objectives, and Performance Standards for Mitigation Area
The primary goal of the mitigation plan is to replace the wetland functions lost from the proposed development. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the mitigation area.
Performance Standard: Following every monitoring event for a period of at least five years, the mitigation area will contain at least 14 native plant species. In addition, there will be 100% survival of all woody planted species throughout the mitigation area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate or areal cover of planted or recolonized native species of 15% at construction approval, 20% after Year 1, 30% after Year 2, 40% after Year 3, 50% after Year 4 and 60% after Year 5.

Objective B: Limit the amount of invasive and exotic species within the mitigation area.
Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 10% total cover in all planted areas. These species include, but are not limited to, Himalayan and evergreen blackberry, reed canarygrass, morning glory, Japanese knotweed, English ivy, thistle, and creeping nightshade.

Objective C: Increase the value of the area to wildlife by adding habitat features (i.e., stumps and downed logs) into the mitigation area.
Performance Standard: After construction and following every monitoring event for a period of at least five years, the mitigation area will contain at least one habitat feature per 1,000 s.f. of mitigation area.

Objective D: Ensure continued wetland hydrology within the enhanced and created wetland.
Performance Standard: After construction and following every monitoring event for a period of at least five years, a minimum of 7,488 s.f. of wetland area (enhanced, created, and preserved wetland areas) will be seasonally inundated or saturated to within 10 inches of the surface for a continuous duration equal to or greater than 12.5% of the growing season. Note: There is a total of 5,397 s.f. of existing wetland on the site. To measure success, a wetland delineation will be conducted in the spring and a minimum of 6 piezometers will be installed within the existing and created wetland to document site hydrology.

3.3 Construction Management

Prior to commencement of any work in the mitigation area, the clearing limits will be staked and any existing vegetation to be saved will be clearly marked. A pre-construction meeting will be held at the site to review and discuss all aspects of the project with the landscape contractor and the owner.

A wetland consultant will supervise plan implementation during construction to ensure that objectives and specifications of the mitigation plan are met. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Kirkland and the consultant prior to their implementation.

3.4 Monitoring Methodology

The monitoring program will be conducted for a period of five years, with two monitoring site visits a year (in the spring and fall). An annual report would then be submitted to the City of Kirkland.

A wetland delineation will be conducted in the spring following construction and a minimum of 6 piezometers will be installed within the existing and created wetland to document site hydrology. These piezometers will be read on a bi-weekly basis from March 1st through the end of April for the first 2 years after construction to determine if the performance standard for wetland hydrology is met. The delineation will then be reviewed each spring during the five year monitoring period to verify the presence of wetland hydrology.

Although the entire mitigation area will be reviewed, permanent vegetation sampling plots will be established at selected locations to incorporate all of the representative plant communities. The same monitoring points will be re-visited each year with a record kept of all plant species found. Vegetation will be recorded on the basis of relative percent cover of the dominant species within the vegetative strata.

Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the enhancement area. Review of the photos over time will provide a visual representation of success of the mitigation plan.

3.5 Maintenance Plan

Maintenance will be conducted on a routine, year round basis. Additional maintenance needs will be identified and addressed following a twice-yearly maintenance review. Contingency measures and remedial action on the site shall be implemented on an as-needed basis at the direction of the wetland consultant or the owner.

Weed Control

Routine removal and control of non-native and other invasive plants (e.g., Scot's broom, reed canarygrass, Himalayan and evergreen blackberry, Japanese knotweed, English ivy, morning glory, thistle and creeping nightshade) shall be performed by manual means whenever possible. Chemical means (Rodeo or Roundup) will only be used if absolutely necessary. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the five-year monitoring period. The following outlines treatment for specific species.

Reed Canarygrass Control

Areas with reed canarygrass patches 3’ x 3’ or smaller need to be hand-grubbed. Patches greater than 3’x 3’ shall be treated with a two-step process.

1. Areas shall be weed-whacked and selectively sprayed with Round-up only in designated spray areas if absolutely necessary (non-ponded areas). Spraying shall be done at a time when a dry period of one week or more is forecasted.

2. Areas shall be staked with cuttings (see **Staking List** and **Staking Specifications** below). During April 1 through November 30, one-gallon plants (minimum height of 18”) shall be used in place of cuttings.

Himalayan and Evergreen Blackberry Control
Small patches (areas <3’ x 3’) need to be grubbed out, large areas (>3’ x 3’) need to be cut down. New shoots (approx. 6" in height) which reappear should be spot-sprayed with Round-up concentrate only under the supervision of a wetland consultant.

Staking List: Options for Planting (from wet to dry)

Wetter	Black twinberry	*Lonicera involucrata*
	Scouler willow	*Salix scouleriana*
Drier	Black cottonwood	*Populus trichocarpa*

Staking Specifications:
Cuttings can be purchased or gathered from approved mature sources. Cuttings shall be installed at 1’ O.C. spacing over the infested reed canarygrass areas and extending 2’ in each direction, unless otherwise specified. Cuttings shall be 2-year old wood, 4’ length, ½” diameter, with all side branches removed and installed to a minimum depth of 12 inches.

Irrigation
The owner shall ensure that all plants are irrigated from June 1 through October 31. During the first year after installation, irrigation should occur at a rate of 1/2" of water two to three times a week. During the second year after installation, irrigation should occur at a rate of 1/2" of water once a week. However, if more than 10% of plant replacement occurs, watering rates should be maintained at 1/2" of water twice a week.

General Maintenance Items
Routine maintenance of planted trees shall be performed. Measures include resetting plants to proper grades and upright positions. Tall grasses and other competitive weeds shall be weeded at the base of plants to prevent engulfment. Weed control should be performed by; hand removal, installation of weed barrier cloth with mulch rings, or selective weed-whacking. If weed-whacking is performed, great care shall be taken to prevent damage to desired native species either planted or re-colonized. Woody plants shall only be pruned at the direction of the wetland consultant or to remove pest infestations.

3.6 Contingency Plan
All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the mitigation plan. Plant material shall meet the same specifications as originally-installed material. Replanting will not occur until after reason for failure has been identified (e.g., moisture regime, poor plant stock,

disease, shade/sun conditions, wildlife damage, etc.). Replanting shall be completed under the direction of the wetland consultant, City of Kirkland, or the owner.

The project civil engineer, Taylor Engineering Consultants (TEC), has revised the conceptual drainage plan to add a valve control upstream of the detention outfall to the wetland. The system as currently proposed also includes a high flow bypass/overflow pipe connecting directly to the ditch along 98th Ave. NE. Per TEC, the amount of runoff reaching the wetland areas could be adjusted by manually adjusting the valve. This structure will provide flexibility in determining how much of the high flows drain to the wetlands and how much bypass them. As a final contingency, the specifications have been revised to include geotechnical review of subgrade excavation to determine whether or not incorporation of clay into the subsoils will be necessary in certain areas.

3.7 As-Built Plan
Following completion of construction activities, an as-built plan for the mitigation area will be provided to the City of Kirkland. The plan will identify and describe any changes in relation to the original approved plan.

If you have any questions please call me at (425) 333-4535.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann

John Altmann
Ecologist

May 5, 2009

AOA-0438

Jon Regala
City of Kirkland
Planning and Community Development
123 – 5th Avenue
Kirkland, WA 98033

Reference: Abbott / Olson PRE05-00106 & PRE 05-00107
Subject: Revised Drawings and Reports per Watershed 09/26/08 Letter

Dear Jon,

It is our understanding that you are re-managing this project again and we look forward to working with you through its approval process.

The purpose of this letter is to summarize the attached revised drawings and reports that our design team has prepared in response to Watershed's 09/26/08 letter to you and concerns that the City brought up during our 10/28/08 site meeting with Lauri Anderson & Deb Powers from the City, our project arborist at the time Zsophia Pasztor, Hugh Mortensen of The Watershed Company, Lorna Taylor the project civil engineer, our client Jim Olson, and me.

RESPONSE TO WATERSHED'S 09/26/08 LETTER

First, let's respond to Watershed's comments from the 09/26/08 letter. In the findings portion of their letter, the following are their recommendations and our responses that refer to the attached specific portions of our submittal. Our responses are in italics.

1. The arborist report mentions that several trees be removed in the wetlands and buffers due to ivy infestation, defects and other problems. It does not discuss if there are any alternatives to complete removal with less impact on the wetland or buffer. For instance, could ivy removal improve tree stability? Could limbing or

pruning address stability problems without complete removal? Couldn't most of the trees be snagged at a relatively safe height to provide perching and nesting habitat?

The project arborist at the time, Zsophia Pasztor has been replaced with Favero Greenforest of Greenforest Incorporated. He has met with Deb Powers regarding this project and has prepared a Wetland Tree Assessment, dated 4/29/09, attached, summarizing his review of the trees, our revised mitigation plan, the ivy infestation and grading around the trees. Please refer to Page 5 of his report for his opinion on how to remove the ivy from the trees and our attached revised ***Drawing W3.1*** *for specifications regarding ivy removal and arborist review.*

Additionally, we have dealt with ivy removal in mitigation sites many times on previous projects. We've always cut the ends and removed the ivy at the ground, allowing the ivy on the tree to die and fall off overtime. We have never seen this jeopardize the tree in any way and agree with Favero's recommendations to do the same.

2. The arborist report discusses procedures to follow to protect remaining trees during construction of the infrastructure and the created wetland. The letter states: "Re-grading within the wetland and buffer should be limited to a minimum in order to protect tree roots and soil health. Raising or lowering the grade more than 2" should be avoided within an area of twice the size of the canopy of any given tree." The entire wetland grading area is entirely beneath tree canopy, rendering adherence to this recommendation impossible. Therefore, damage to tree roots and ultimately the trees themselves, from such grading is likely should the grading plan be implemented.

   We completely agree with Watershed's concerns and apologize for the lack of team coordination. It was apparent that the previous arborist made many recommendations that are not common in the arboriculture profession. Please see the 4/29/09 Wetland Tree Assessment, page 4 for Favero's recommendations regarding wetland grading and disturbance within the canopy of the existing trees in the mitigation area.

   Based on our site review last fall with the City and our design team, the mitigation plans were revised to reduce some of the paper fill in the SE corner (see the revised mitigation plans ***Drawings W1.1-W3.1*** *& the revised site plan prepared by Curtis Gelotte* ***Sheet A1.1*** *that reflects the reconfiguration of the open space area) to thus reduce the area of created wetland. We also revised the mitigation plans to incorporate the project arborist review after sub-grade excavation is complete to determine if any existing trees should be crown reduced, see* ***Drawing W3.1****.*

   Lastly, we have completed many mitigation projects within the driplines of existing cottonwoods and have found that the higher water levels and increased saturation of soils near the trees have had little, if any negative effect on this species. We

would be happy to provide the City with addresses of mature mitigation sites where grading occurred within the driplines of cottonwood trees resulting in no negative impacts to the trees. We've also included some photos of a mitigation site we completed in 2002 in Lynnwood that consisted of excavating wetland creation areas in an existing upland area dominated by mature cottonwoods and blackberries.

3. The mitigation report has been amended to measure wetland hydrology (Objective D) using wetland delineation, and "if necessary" a minimum of six piezometers. In my last review letter, I indicated that use of piezometers was necessary. This language should be changed to require the use of piezometers or other groundwater measuring devices to verify adequate hydrology in the created wetland.

   Please see the attached revised mitigation report, dated May 5, 2009 that incorporates the installation of piezometers or other groundwater measuring devices to determine that the wetland hydrology objective is met post-construction.

4. Despite being listed in Objective D, there is no mention at all of hydrology measurement in the monitoring methods section (3.3 on page 5).

   Please see the attached revised mitigation report; dated May 5, 2009 that incorporates the method for monitoring hydrology in the wetlands post-construction.

5. Though it is mentioned in the TEC letter, a discussion of contingencies for wetland hydrology problems in not included in the contingencies section of the report (3.5 on page 7).

   The contingencies section has been revised in our mitigation report to discuss how the valve control, as conceptually designed by Taylor Engineering Consultants (see attached letter, Conceptual Drainage Plan and flow control sketch) can be manipulated to ensure adequate flow to the wetlands from the vault. The mitigation drawings have also been modified to show the high-flow diversion pipe as discussed in Taylor's letter and depicted on the revised Conceptual Drainage Plan.

6. The TEC letter states they will work closely with AOA to ensure proper hydrology and they can provide flexibility to the discharge system to allow future adjustments of hydrology. However, the specific mechanisms or practices to implement such adjustments is not provided or discussed.

   Please see our response to Item 5 above. Additionally, the final engineering plans will include specific details that are in the conceptual stage of development at this point in the project approvals.

RESPONSE TO 10/28/08 CITY & TEAM SITE MEETING

As stated above, our team met with Lauri Anderson and Deb Powers of the City along with Hugh Mortensen of Watershed to review the concerns outlined in Watershed's 09/26/08 letter.

During this meeting, an additional concern of adequate hydrologic supply to the wetlands was brought up during this site review. A large tree had fallen over in the area between the two wetlands exposing some compact fine sandy soils immediately under the layer of organic topsoil. Since no previous geotechnical exploration had been completed in the mitigation area, this raised concern that perhaps the introduced hydrology from the storm water system may infiltrate into the fine sand, not allowing wetland to be established in this area.

In order for us to feel comfortable that the wetland creation area will be wetland, we requested the assistance of the project geotechnical engineer in addition to a hydrogeologist. They completed explorations in the mitigation area. These explorations found variable layers of silty sand and silt and groundwater levels to be between 14" and 18" deep within the area of wetland creation. Please see the attached **Technical Memorandum** prepared by the hydrogeologist, **Paris Geosciences, LLC** and the **Wetland Hydrology & Mitigation** report prepared by the project geotechnical engineer, **Gary A. Flowers, PLLC** for detail regarding the existing soils and groundwater and it's relation to the wetland mitigation work.

Based on their findings, the mitigation plans was revised to grade into the groundwater levels and avoid the areas dominated by sand. We also revised the specifications to include geotechnical review of subgrade excavation to determine whether or not incorporation of clay into the subsoils will be necessary in certain areas.

SUMMARY

We anticipate that the tree assessment, revised conceptual drainage plan, geotechnical report, hydrogeologist report and revised mitigation plans provide enough detail to address all of the City's concerns regarding this project. Upon further review of the documents, if you have any questions or concerns, please phone me at 425.333.4535 or email me at simone@altoliver.com. We look forward to seeing this project through to completion.

Thank you Jon,

ALTMANN OLIVER ASSOCIATES, LLC

Simone Oliver
Landscape Architect

Attachments

Photos from Center 5000 Wetland Mitigation Area – taken in October 2006.
Revised Wetland Mitigation & Monitoring Report – dated May 5, 2009
Revised Wetland Mitigation Plan – Drawings W1.1-W3.1 – dated 4/28/09
Wetland Tree Assessment – Greenforest Inc. – dated 4/29/09
Site Plan – Curtis Gelotte – Drawing A1.1
Conceptual Drainage Plan (dated 4/24/09) & Response Letter – Taylor Engineering – dated 3/12/09
Wetland Hydrology & Mitigation Geotechnical Report – Gary A. Flowers – dated 3/17/09
Technical Memorandum (Hydrogeologist Report) – Paris Geosciences – dated 2/3/09

CC: Deb Powers – City of Kirkland
Hugh Mortensen – The Watershed Company
Jim Olson & Kathy Abbott
Scott Hommas – Curtis Gelotte
Favero Greenforest – Greenforest Incorporated
Lorna Taylor – Taylor Engineering Consultants
Gary Flowers – Gary A. Flowers Geological and Geotechnical Consulting
Otto Paris – Paris Geosciences, LLC
John Altmann – Altmann Oliver Associates, LLC

Photo of created wetland constructed in cottonwood forest – note the large cottonwoods at the top of the pond. These photos were taken after the fourth year after construction and the trees are alive and healthy.

Paris Geosciences, LLC

TECHNICAL MEMORANDUM

DATE: February 3, 2009

TO: Jim Olson, Olson Real Property

FROM: Otto Paris

PROJECT: Olson Townhomes Site, Kirkland, Washington

PROJ. NO. 109-001

SUBJECT: Potential Impacts to Wetland Hydrology

This memorandum provides my evaluation of potential hydrologic impacts to the existing and proposed wetlands on the Olson Townhomes site located in Kirkland, Washington. Groundwater conditions pertaining to wetland hydrology is the focus of this evaluation. It is my understanding that additional analyses and information concerning subsurface soil conditions, wetland hydrology, and stormwater runoff will be provided by other members of the project team.

Two small wetlands, Wetland A and Wetland B, are located in the western portion of the Olson Townhomes site. Wetland A is a slope wetland located east of Wetland B near the base of a relatively steep slope. The proposed townhomes development will occur in the eastern portion of the site above Wetland A. The proposed wetland mitigation includes the construction of a new wetland in an area located between Wetlands A and B.

Based on information provided by you and other project team members, it is my understanding that the City of Kirkland will not proceed with the permit approval process until some concerns regarding potential wetland hydrology impacts are addressed. Specifically, the two remaining concerns associated with wetland hydrogeologic issues are as follows:

1. Will the proposed development impact the existing hydrology that currently supports Wetland A?
2. Will the new wetland area proposed as a mitigation measure have sufficient water to function as a wetland after the site is developed?

The following sections summarize the results of my hydrogeologic evaluation as it pertains to these two wetland hydrology concerns.

14906 NE 198th Street, Woodinville, WA 98072
Email oparisgeo@comcast.net
Phone 425-489-3838
Fax 425-489-0685

Existing Hydrogeologic Conditions

My understanding of existing hydrogeologic conditions at the site is based primarily on the following:

- Review of the Geological / Geotechnical Assessment report dated August 1, 2007, prepared by Gary A. Flowers, PLLC.
- Discussions with Mr. Flowers concerning subsurface geologic and groundwater conditions beneath the site.
- Review of additional correspondence between Mr. Flowers, the City of Kirkland, and other members of the project team.

As summarized in previous documents prepared by Mr. Flowers, the eastern upland portions of the site are underlain by dense to very dense glacially-consolidated sediments. Exploration pits logged in the eastern portion of the site did not encounter flowing groundwater, except for two thin discontinuous low-flow water-bearing zones (seams) within the dense unsaturated glacial sediments observed in two of the explorations.

A greater amount of shallow groundwater seepage was observed within one exploration pit (EP-2) excavated about 40 feet east and upslope from Wetland A. The groundwater encountered in EP-2 was flowing in a sand (outwash) layer underlain by a hard silt at a depth of about 5 feet below ground surface. The groundwater encountered in EP-2 appears to be the primary water-bearing zone that provides recharge to Wetland A based on site topography and subsurface information obtained from the exploration pits.

Two test pits excavated in the western (lower) portion of the site adjacent to the wetland areas encountered shallow groundwater at depths of about 2.5 feet below ground surface. Sediments encountered in the western portion of the site consisted of variable interbedded layers of silt and silty sand interpreted as non-glacial alluvial deposits.

Hand-auger borings completed in the proposed wetland mitigation area encountered variable types of sediments comprised primarily of silty sand and silt. Groundwater was encountered in the four hand-auger borings at depths ranging from about 14 to 17 inches below ground surface. The variable subsurface stratigraphy encountered over relatively short distances in the western (lowland) portion of the site appears to result in some variability in shallow groundwater depths. Based on hydrologic criteria for wetland delineation, this variability in shallow groundwater depths appears to be the primary explanation for why the area between Wetlands A and B is not considered a wetland.

Potential Impacts to Existing Wetland A Hydrology

Wetland A is a slope wetland that appears to be supported primarily by groundwater flowing at

shallow depths based on site topography and the observed groundwater seepage observed in exploration pit EP-2. Potential adverse impacts to the wetland hydrology from the proposed development include (1) upgradient interception of groundwater, and (2) a reduction in upgradient groundwater recharge.

Based on information provided by the project engineer and the exploration pit logs, the stormwater detention vault would likely be the only structure that would extend at depths below the shallow water-bearing zone that recharges Wetland A. The excavation for the detention vault would extend to a depth of about 10 feet below ground surface, and might possibly extend into the shallow groundwater flow interval observed in pit EP-2. The detention vault will be surrounded with gravel backfill, allowing groundwater to flow downgradient around the vault and towards Wetland A. Construction of the detention vault as planned should not adversely impact existing hydrology beneath Wetland A.

Potential changes to groundwater recharge and surface water runoff volumes have previously been addressed by other members of the project team. As stated by Mr. Gary Flowers in his letter dated November 2, 2007:

> *"As currently planned, all storm water and ground water that is currently entering the wetland area from this site will continue to do so after project development. In other words the volume of water reaching the wetland area will be not reduced by the development and may actually be increased."*

To further clarify: With respect to maintaining the existing hydrology beneath Wetland A, any relatively minor decrease in ground water recharge that might occur as a result of developing the upland portion of the site will be more than offset by the additional stormwater runoff volumes that will be discharged upgradient of Wetland A. This opinion is based on the following:

- The upland area of the site is underlain by low-permeability glacial till and/or consolidated silt, which provides very low infiltration capacity for precipitation falling on the site to recharge the groundwater observed in pit EP-2.
- The groundwater flowing in the area of pit EP-2 and beneath Wetland A receives recharge from a much larger catchment area upgradient of the project site to provide the baseflow that appears to sustain the Wetland A hydrology.
- Based on information provided by the project engineer, the developed project will result in about three times the average runoff volumes relative to existing surface water flows. All of this additional runoff will be routed to a lateral spreader located immediately upgradient of Wetland A.

Therefore, there should be no adverse impacts to groundwater recharge relative to existing hydrologic conditions beneath Wetland A.

Proposed Wetland Mitigation Area Hydrology Concerns

The proposed wetland mitigation includes some shallow excavation and regrading in the area located between Wetlands A and B. The primary purpose of the proposed excavation and regrading is to decrease the depth interval between ground surface and the shallow groundwater flow zone, thereby providing sufficient hydrologic conditions to support a new wetland area. Details concerning wetland mitigation area construction and monitoring will be provided by the project wetland biologist.

There is some uncertainty regarding specific excavation depths and regrading needed to construct the proposed wetland because of the variable soil conditions and groundwater depths observed in this area of the site. However, subsurface information obtained from the hand-auger borings indicate that total excavation depths will likely be about one foot or less across most of the mitigation area. The exact configuration of the constructed wetland will likely be determined during construction activities.

As noted earlier, there will be a significant increase in the amount of available water to the wetland area as a result of the additional stormwater runoff. This water will be discharged immediately upslope of Wetland A, and will migrate downgradient across Wetland A and into the subsurface soils beneath the proposed wetland mitigation area. Some parts of the mitigation area are probably underlain by a stratigraphic sequence similar to that observed in exploration pit EP-2. In these areas, it appears likely that the resulting groundwater elevations will be sufficient to support the wetland give the combination of (1) decreasing the ground surface elevation in the proposed mitigation area, and (2) the additional groundwater flow volumes resulting from the discharge of stormwater runoff.

It is possible that a thicker sequence of unsaturated unconsolidated silty sand, observed in some of the hand-auger borings, could result in some localized variability in hydraulic characteristics for groundwater flowing towards and across the wetland mitigation area. Although flows will be augmented by the upgradient infiltration of additional stormwater runoff, this variability might result in some areas having groundwater depths lower than needed to sustain the wetland hydrology. It is my understanding that one or more contingencies will be included in the wetland mitigation construction plans to account for this scenario. The contingencies might include one or more of the following: (1) adjusting the final configuration of the constructed wetland to avoid areas underlain by a thick sequence of unsaturated sand; (2) additional excavation of unsaturated intervals to greater depths; and/or (3) lining portions of the wetland with impermeable materials to minimize the downward infiltration of groundwater flowing beneath this part of the site. Deciding which contingency might be needed will be determined during wetland construction activities to allow for direct observation of subsurface conditions.

If constructed as planned, the hydrologic conditions beneath the proposed wetland area should be adequate to maintain the needed hydrologic conditions based on: (1) the additional groundwater flow volumes into the wetland mitigation area from the increase in stormwater runoff; and (2) the contingencies anticipated to be included in the wetland construction plan.

Gary A. Flowers, PLLC
Geological & Geotechnical Consulting
19532 12th Avenue NE
Shoreline, WA 98155-1106

March 17, 2009
Project No. 07-026

James Olson & Kathlyn Abbott
12222, # 1- 19th Ave SE
Everett, WA 98208

Subject: Wetland Hydrology & Mitigation
Olson Townhouse Project
11401 100th Ave NE, Kirkland, Washington

Dear James and Kathlyn:

As requested and as required by the City of Kirkland Planning Department, we have completed a further evaluation of the potential hydrologic impacts to the existing and proposed wetlands on the above noted subject site. This further evaluation includes a hydrogeologic evaluation by Otto Paris, LG, LHG with Paris Geosciences. A copy of Mr. Paris' technical memorandum titled *Potential Impacts to Wetland Hydrology, dated February 3, 2009* is attached.

On January 16, 2009 we placed a series of 4 hand auger explorations in the area of the proposed new wetland. The location of the hand auger explorations is shown on AOA (Altman Oliver Associates, LLC) drawing no. W2.1. The purpose of these explorations was to characterize the shallow soil and ground water conditions present in the area between the upper existing Wetland A and the lower existing Wetland B in order to better understand the hydrology of the area. This information will be used by AOA, together with the technical memorandum by Paris Geosciences, to develop the mitigation plan to create a new wetland in this area.

The soils logs indicate that the shallow soils definitely change from sand on the southern portion of the site to much more fine grained organic silt on the northern portion of the site. Slightly further north, on the commercial site along the north side of the proposed wetland, deeper explorations previously conducted on the site indicated interbedded silt, silty sand and sandy silt. We anticipate that similar conditions underlie the wetland area.

The soil logs also indicate the presence of ground water at shallow depth throughout the lower area of the site. Ground water was observed at 14 to 18 inches below existing grade. In the more silty soils this shallow ground water provided for wet to saturated conditions to within 8 inches of existing grade. In the sandier areas wet to saturated conditions were observed below a depth of about 14 inches.

Due to the potential variability in the soils it is important to have as much flexibility as possible during the minor grading operation in order to focus on areas underlain at shallow depth by more silty soils. The current proposed plan by AOA provides this flexibility and also has provided a contingency for lining portions of the new wetland area with impermeable materials to limit downward infiltration of water flowing into this portion of the site.

As presented earlier in documents by this office and from Taylor Engineering Consultants, a substantial increase in the amount of available water to the wetland area will be available due to an increase in storm water runoff. This increase in water, together with careful excavation to utilize the areas with the most appropriate soils and to vary the depth of excavation as needed to remove unsaturated materials to a greater depth, should be adequate to maintain the needed hydrologic conditions for the wetland. If needed, the contingency to line portions of the new wetland area with more impermeable soils and limit downward infiltration of water provides a reasonable alternative.

Respectfully submitted,

Gary Flowers

Gary A. Flowers, P.G., P.E.G.
Principal Engineering Geologist

EXPLORATION PIT LOGS

Olson Townhomes
11401 100th Ave NE
Kirkland, Washington

HA-1

0" – 8"	organic topsoil and forest duff
8" – 32"	medium dense to dense, moist to saturated, gray with some mottling, silty fine to medium SAND
	Ground water observed at a depth of 17"

HA-2

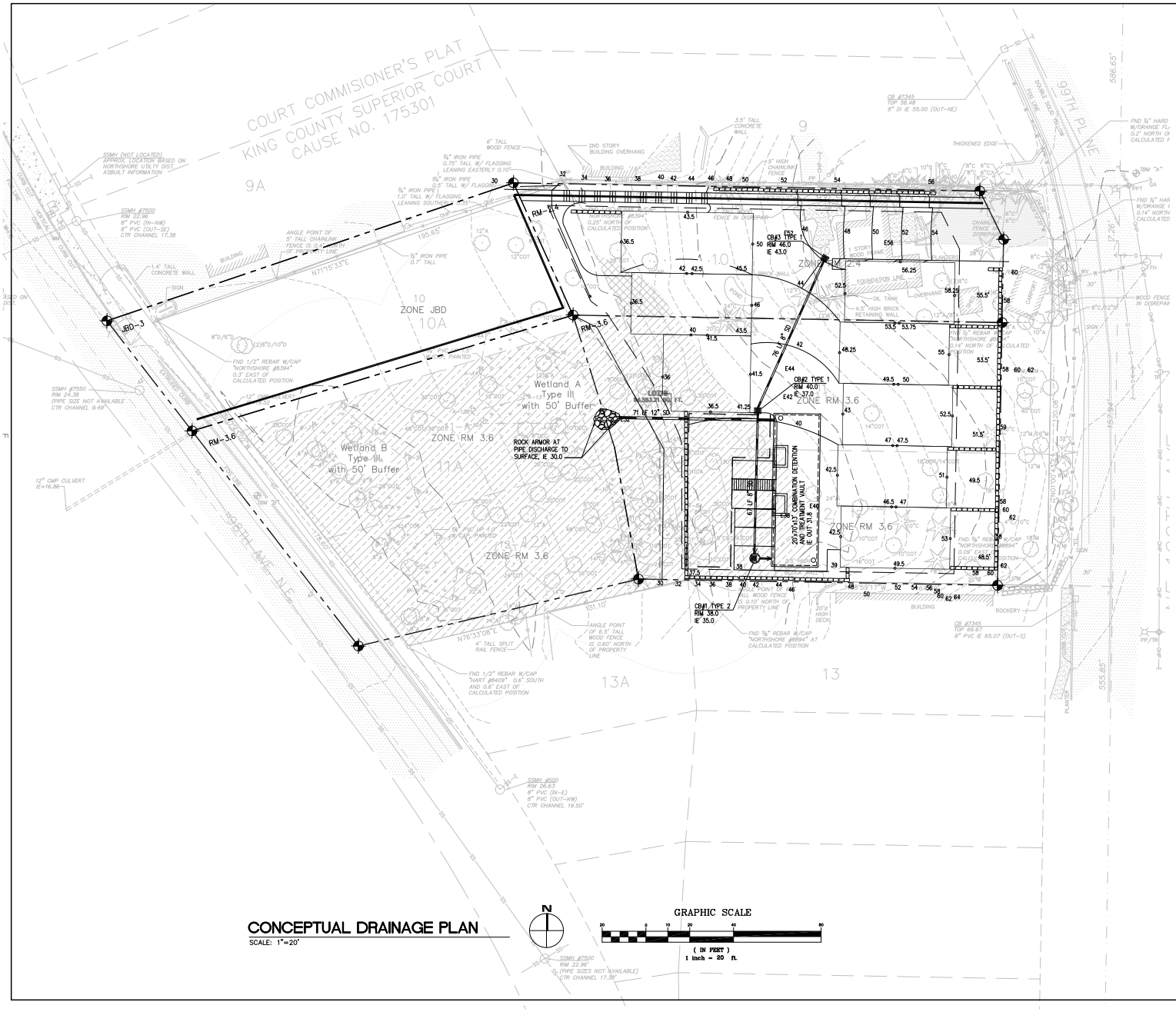
0" – 8"	organic topsoil and forest duff
8" – 17"	soft, wet, gray and black organic SILT
17" – 24"	medium dense to dense, saturated, gray, highly mottled, silty fine SAND
24" – 30"	stiff, wet, gray SILT
	Ground water observed at 14"

HA-3

0" – 24"	medium stiff, wet to saturated, black, organic SILT with abundant rootlets
	Ground water observed at 17"

EP-4

0" – 8"	organic topsoil and forest duff
8" – 28"	medium dense to dense, moist to saturated, gray (with some mottling) silty fine to medium SAND
	Ground water observed at 18"



CONCEPTUAL DRAINAGE PLAN

SCALE: 1"=20'

CALL BEFORE YOU DIG
1-800-424-5555
FOR FIELD LOCATION OF UNDERGROUND UTILITIES

SCHEMATIC DESIGN

Taylor Engineering Consultants
205 Front St. S.
P.O. Box 1787
Issaquah, WA 98027
tel. 425-391-1415
fax 425-391-1551

Project:
OLSON
KIRKLAND
TOWNHOMES

Developer:
Mr. James Olson
12222 #1 - 19th Avenue S.E.
Everett, WA 98208

Job Data:

TEC Job #:	433 -JO
Designed:	WNT
Drawn:	RP
Checked:	LMT

Authorized Use:
This drawing is issued for use in the titled project only. It shall not be used for any other purpose without the express authorization and/or adaptation by TEC.

Permit Agency:
CITY OF KIRKLAND
PERMIT #: pending

WILLIAM N. TAYLOR
STATE OF WASHINGTON
20196
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6/10/07

Issued for:
PRELIMINARY 3/27/07

Rev.	Date
.	.

Sheet Title:
CONCEPTUAL DRAINAGE PLAN

Sheet No:
1.1

Sheet ____ of 89

Greenforest Incorporated

Consulting Arborist

4/29/2009

James Olson
12222 – 19th Ave SE, #1
Everett, WA

RE: Wetland Tree Assessment at Kirkland Condos, Olson Real Property, Inc.

Dear Mr. Olson:

You contacted me on October 28th, 2008 and contracted my services as a consulting arborist. You are currently working to develop a site in City of Kirkland at 11409 – 100th Ave NE.

The western portion of this parcel contains two isolated wetlands. The proposed project will create a single wetland system by altering the grades of a portion of the wetlands, and the area between them.

I met with you on site 11/03/2008, and again with landscape architect Simone Oliver of Altmann Oliver Associates on 11/10/2008. My assignment is to assess the current condition of the existing trees, and determine the limits of soil and root disturbance around specific trees that could be impacted by the proposed alterations.

Summary: proposed clearing and grading close to four significant trees may injury roots and negatively affect their health or stability. A post-grading inspection will assess any injury, and recommend mitigation if needed.

Limiting Conditions

1) A field examination of the site was made 11/10/2008. My observations and conclusions are as of that date.
2) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/arborist can neither guarantee nor be responsible for the accuracy of information provided by others.
3) Unless stated other wise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection

4547 South Lucile Street, Seattle, WA 98118 Tel. 206-723-0656

is limited to visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied that problems or deficiencies of the subject tree may not arise in the future.

4) This assessment is for determining the limits of construction disturbance, and is not a *risk* or *hazard* assessment.

5) All trees possess the risk of failure. Trees can fail at any time, with or without obvious defects, and with or without applied stress. A complete evaluation of the potential for this (a) tree to fail requires excavation and examination of the base of the subject tree.

Observations & Discussion

The trees I inspected are native species, predominately black cottonwood (*Populus balsamifera ssp. trichocarpa*) and red alder (*Alnus rubra*). These deciduous trees dominate the plant canopy of the wetlands. Indian plum, Oregon grape and redtwig dogwood provide understory and groundcover, along with Himalayan blackberry and English ivy.

The proposed disturbance that is of primary significance to the existing trees includes grade changes from one wetland to the next. The proposed areas of cut are necessary to create the single wetland. This report specifically addresses the limits to which root and soil disturbance can occur from the base of an existing tree.

At my 11/10/2008 site inspection, I measured the trunk diameters of the trees that either border or are within the area of soil disturbance. These trees are indicated by number in boldface type in the attached table, and on the wetland mitigation grading plan (revised 3/5/09).

Using the field-measured DBH, I calculated the rootplate[1] for each tree, and the minimum distance from each tree for potential root loss (3 X DBH)[2,3].

The rootplate is a structural feature comprised of roots and soil equal in mass to that of the aboveground portion of the tree. It is generally disk-shaped, and in the event of windthrow, this disk rotates as the tree falls. Disturbance or encroachment into the rootplate can cause whole-tree failure. This formula calculates the size of an average rootplate diameter based on the tree's DBH.

This site has two trees that are windthrown within the last couple years. Many standing trees have roots visible at the soil surface, and the site is naturally wet, it being a wetland.

---

[1] Coder, Kim D. 2005. *Tree Biomechanics Series*. University of Georgia School of Forest Resources.
[2] E. Thomas Smiley, Ph. D. *Assessing the Failure Potential of Tree Roots, Shade Tree Technical Report*. Bartlett Tree Research Laboratories.
3 Fite, Kelby and E. Thomas Smiley. 2009. *Managing Trees During construction; Part Two*. Arborist News. ISA.

I used the dimensions of the rootplates of the windthrown trees, and adjusted the calculated sizes of the rootplates of each tree increasing them 30% from the Coder calculation based on my field observations, and because the site has wet soils.

Three times a tree's DBH, as the distance in feet from the center of the trunk, is the distance at which root loss or injury can impact tree stability, assuming the excavation occurs in a straight line past the tree's rootplate.

The distance from the center of each tree's trunk for the rootplate and 3 X DBH are listed for each tree in the attached table, and are used as the limits of root and soil disturbance around each impacted tree. Where soil disturbance curves or arcs around a tree, the rootplate marks the minimum distance for excavation. Where soil disturbance occurs in a linear direction past a tree, or a group of trees, the 3X DBH marks the minimum distance for excavation.

Grading and Landscape Plans

I received and reviewed the revised wetland mitigation plans from landscape architect Simone Oliver of Altmann Oliver Associates. Clearing limits are indicated for the wetland and buffer. Rootplates, DBH and "3 x DBH" are indicated for each tree. Based on the diameters of the tree's rootplates and DBH, and on the proposed clearing limits, it is my opinion that there is potential for three trees to be negatively impacted.

> Tree **7009**; 12" DBH cottonwood. The clearing limits pass the west side of this tree 4 feet from center of trunk. Excavation will occur at or outside the rootplate radius, and beyond the 3xDBH distance. This is a smaller-diameter tree: protected by the surrounding larger trees.
>
> Tree **7014**; 45" DBH cottonwood. Clearing limits circle this tree on three sides, and are 6 feet from the center of trunk at the nearest. Excavation on this side of the tree could be as much as 1.5 feet.
>
> Tree **7042**; 20" DBH cottonwood. Clearing limits circle two-thirds of this tree, and come as close as 4.25 feet from center of trunk. No grading is proposed inside the rootplate of this tree.
>
> Tree **7024**; 31" DBH cottonwood. Clearing limits are 6 feet from this tree, and are inside the rootplate. Current plans do not indicate what disturbance will occur near this tree as part of the office building development to the north of the wetland complex.

It is my opinion that that the proposed grading is sufficient distance from the retained trees to have no net negative effect on their health or stability, except for the three trees identified.

I recommend that these three trees be inspected after grading and the impact to their roots assessed at that time. Based on the outcome, the trees will either remain standing, reduced in height as wildlife trees, or removed completely.

The proposed new wetland will lower the grade in areas, and create a dam for surface water retention. The volume of water in the wetland is not expected to increase, though the lower grade may cause an increase in visible water at the soil surface. The native trees and shrubs currently on site are facultative wetland species, and are adapted to the expected surface water.

Previous Arborist Report

A report authored in July 2008 by Zsofia Pasztor provides three specific recommendations or opinions with which I disagree. They also lack the foundation of research or common practice within arboriculture. (Pasztor's report lacks page numbers and contains three separate summary pages.)

Limits of Root Disturbance

Without question, soil disturbance during construction, whether fill or cut, has potential to injure tree roots. The construction proposed within the wetland will lower the grade in certain areas to create a single contiguous wetland.

Pasztor's report recommends "*Raising or lowering the grade more than 2" should be avoided within an area of twice the size of the canopy of any given tree*."

Using a tree's dripline to establish a tree protection zone is a common practice for many municipalities, and in most cases provides ample undisturbed rooting area for trees. Yet there is no association between the horizontal reach of a tree's branch and the length of its roots. A tree's dripline is heavily influenced by genetics, and tree stand density. Rooting distance is heavily influenced by soil texture and water table.

Using driplines to establish protected areas is useful as a quick and convenient general rule, yet when construction is necessary near the base of trees, the proximity of soil disturbance or root loss can be evaluated more precisely using industry-based research and thresholds. The rootplate calculation provided by Coder, and the 3XDBH threshold for straight-line trenching near trees is industry taught and accepted methods for determining the limits of disturbance of retained trees. These are based on the actual size of the tree (DBH) rather than branch extension.

Additionally, I measured existing rootplates from trees on this site and modified the calculation by increasing the rootplate size by 30%, based on my observations, and on the fact that this site is a wetland and the trees will likely have more shallow and spreading root systems.

The maximum cut required to create the new wetland is 1.5 feet below existing grade, and only in limited areas.

Significant Root Diameter
Current literature cites roots greater than 1-inch diameter to be of significant size to warrant attention during excavation.[4] And the immediate attention warranted is to prune the damaged end, leaving a flat surface with adjacent bark firmly attached.

Pasztor's report recommends a ½" root diameter injury limit, which, given the site is a managed wetland, and that potential root injury is limited to less than on-half the circumference of any one tree, is unnecessary and burdensome.

Ivy Growing on Tree Trunks
Pasztor lists several reasons why ivy is detrimental to a tree's health, and recommends several trees be removed because of it. I agree ivy can add additional load, especially in high winds, and that excessive ivy foliage competes for sunlight. Yet in my experience, in most cases killing the ivy is all that is necessary to remedy the situation. Tree removal is seldom necessary based solely on the presence of ivy.

Based on my site observations, the presence of ivy on the trees is inadequate reason to condemn the trees.

I recommend cutting the ivy stems at the base of the tree trunks, and leaving the vines to die and fall from the tree trunks of the affected trees.

Conclusion

The grading required for the proposed new wetland system will excavate near and around the roots of several significant trees. Three significant trees (#7009, 7014, 7042) that stand in the center of the wetland are at greatest risk of having their roots injured because of their proximity to the grading or clearing. These trees are not only protected because of their location within the wetland, they are also further from existing or potential targets.

A fourth significant tree (#7024) stands in the NW corner of the parcel, and the clearing limit is close to the base of its trunk.

[4] Ibid.

I recommend that if any of these trees are compromised from root injury or loss during clearing or grading, that crown reduction and/or wildlife tree creation be considered as mitigation.

Sincerely,

GreenForest, Inc.

By Favero Greenforest, M. S.

ASCA Registered Consulting Arborist #379
ISA Certified Arborist # PN -0143A

Attachments
1. Assumptions
2. Table of Tree Data
3. Grading Plan

Attachment No. 1 - Assumptions

1) Construction activities can significantly affect the condition of retained trees. A qualified ISA Certified Arborist should inspect all retained trees after construction is completed, and then inspected regularly as part of routine maintenance.

2) Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural report of surveys unless expressed otherwise. The reproduction of any information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Favero Greenforest as to the sufficiency or accuracy of said information.

3) The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made.

4) Loss or alteration of any part of this report invalidates the entire report.

5) Unless required by law otherwise, possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.

6) This report and any values/opinions expressed herein represent the opinion of the consultant/appraiser, and the consultant's/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

7) Ownership and use of consultant's documents, work product and deliverables shall pass to the Client only when ALL fees have been paid.

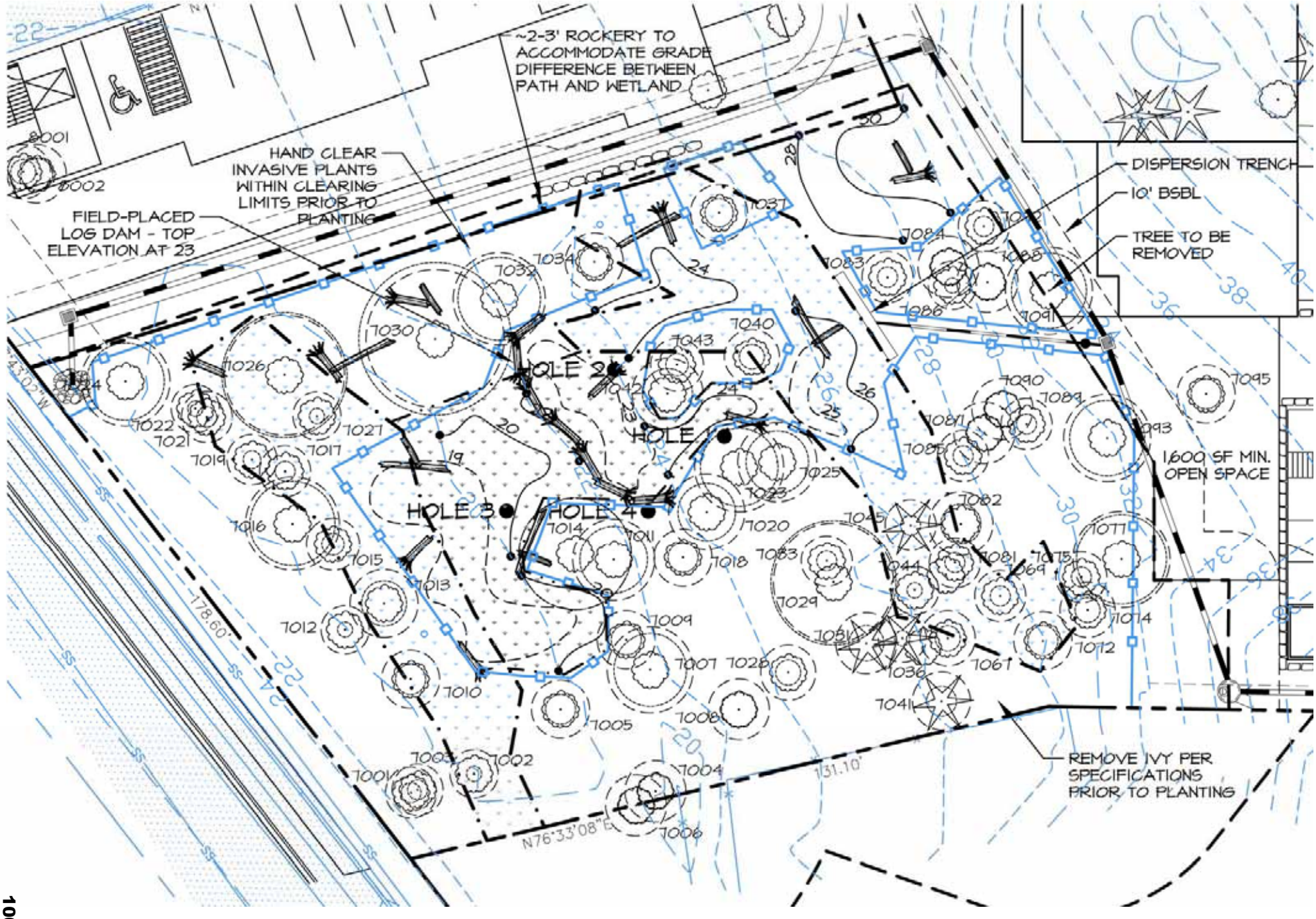
8) Unless required by law otherwise, neither all nor any part of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media without the prior expressed written or verbal consent of the consultant/appraiser, particularly as to value, conclusions, identity of the consultant/appraiser, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant/appraiser as stated in his qualifications.

Attachment No. 2

Tree No	DBH (In.)	Rootplate Radius (Ft.)	Adjusted Rootplate (Ft.)	3 X DBH (Ft.)
7001	8	4.0	5.1	2.00
7002	6	3.7	4.8	1.50
7003	8	4.0	5.1	2.00
7004	14	4.7	6.1	3.50
7005	12	4.5	5.8	3.00
7006	14	4.7	6.1	3.50
7007	29	6.6	8.6	7.25
7008	14	4.7	6.1	3.50
7009	12	4.5	5.8	3.00
7010	12	4.5	5.8	3.00
7011	27	6.3	8.2	6.75
7012	6	3.7	4.8	1.50
7013	18	5.2	6.8	4.50
7014	45	8.6	11.2	11.25
7015	9	4.1	5.3	2.25
7016	34	7.2	9.4	8.50
7017	8	4.0	5.1	2.00
7018	12	4.5	5.8	3.00
7019	7	3.8	5.0	1.75
7020	23	5.8	7.6	5.75
7021	8	4.0	5.1	2.00
7022	6	3.7	4.8	1.50
7023	31	6.8	8.9	7.75
7024	31	6.8	8.9	7.75
7025	25	6.1	7.9	6.25
7026	50	9.2	12.0	12.50
7027	6	3.7	4.8	1.50
7028	10	4.2	5.5	2.50
7029	50	9.2	12.0	12.50
7030	32, 52	10.6	13.8	15.25
7031	14	4.7	6.1	3.50
7032	33	7.1	9.2	8.25

Tree No	DBH (In.)	Rootplate Radius (Ft.)	Adjusted Rootplate (Ft.)	3 X DBH (Ft.)
7033	8	4.0	5.1	2.00
7034	12	4.5	5.8	3.00
7036	6	3.7	4.8	1.50
7037	8,8	4.4	5.7	2.83
7040	10	4.2	5.5	2.50
7041	12	4.5	5.8	3.00
7042	20	5.5	7.1	5.00
7043	9	4.1	5.3	2.25
7044	6	3.7	4.8	1.50
7045	8	4.0	5.1	2.00
7068	10	4.2	5.5	2.50
7069	8	4.0	5.1	2.00
7072	12	4.5	5.8	3.00
7074	8,6	4.2	5.5	2.50
7075	8	4.0	5.1	2.00
7077	36	7.5	9.7	9.00
7081	8	4.0	5.1	2.00
7082	16	5.0	6.4	4.00
7083	8	4.0	5.1	2.00
7084	10,10	4.7	6.1	3.53
7085	8	4.0	5.1	2.00
7086	6	3.7	4.8	1.50
7087	10,10	4.7	6.1	3.53
7088	14	4.7	6.1	3.50
7089	8	4.0	5.1	2.00
7090	14	4.7	6.1	3.50
7091	30	6.7	8.7	7.50
7092	8	4.0	5.1	2.00
7093	30	6.7	8.7	7.50
7095	12	4.5	5.8	3.00
8000	8,10	4.6	5.9	3.20
8001	8,6	4.2	5.5	2.50

Boldface indicates DBH field measurement by Favero Greenforest.


~2-3' ROCKERY TO ACCOMMODATE GRADE DIFFERENCE BETWEEN PATH AND WETLAND
HAND CLEAR INVASIVE PLANTS WITHIN CLEARING LIMITS PRIOR TO PLANTING
FIELD-PLACED LOG DAM - TOP ELEVATION AT 23
DISPERSION TRENCH
10' BSBL
TREE TO BE REMOVED
1,600 SF MIN. OPEN SPACE
HOLE 2
HOLE
HOLE 3
HOLE 4
REMOVE IVY PER SPECIFICATIONS PRIOR TO PLANTING
178.60'
131.10'
N76°33'08"E

Taylor
Engineering
Consultants

205 Front St. S.
P.O. Box 1787
Issaquah, WA 98027
phone (425) 391-1415
fax (425) 391-1551
www.teccivil.com

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

March 12, 2009

Attn: Mr. Jon Regala

Re: **Olson Abbott/Olson revised wetland mitigation plan review** – The Watershed Company Review letter dated September 26, 2008

Dear Jon:

TEC is the civil engineer working on this project and this letter is in response to Finding #6 from Hugh Mortensen's wetland mitigation plan review letter dated, September 26, 2008. Finding 6 is repeated below for clarity.

6. *The TEC letter states they will work closely with AOA to ensure proper hydrology and they can provide flexibility to the discharge system to allow future adjustments of hydrology. However, the specific mechanisms or practices to implement such adjustments is not provided or discussed.*

Response: We have revised the Conceptual Drainage Plan, and the revised layout shows a valve control upstream of the detention outfall to the wetland areas. As currently envisioned, the entire detained runoff from the site will flow to the existing and created wetland areas (uphill of both). However, the proposed system includes a high flow bypass/overflow pipe connecting directly to the ditch along 98th Avenue NE. The inlet for this overflow pipe will be set above the crown of the pipe draining to the wetland areas and the amount of runoff reaching the wetland areas could be adjusted by partially closing the valve and forcing runoff into the bypass/overflow pipe. This scenario will allow all low flows to drain to the wetlands and provides flexibility in determining how much of the high flows drain to the wetlands and how much bypass them. Of course, if it is determined that the wetlands can accommodate all the flows, the valve can be left fully open.

If you have any questions, please feel free to call or email me.

Sincerely,

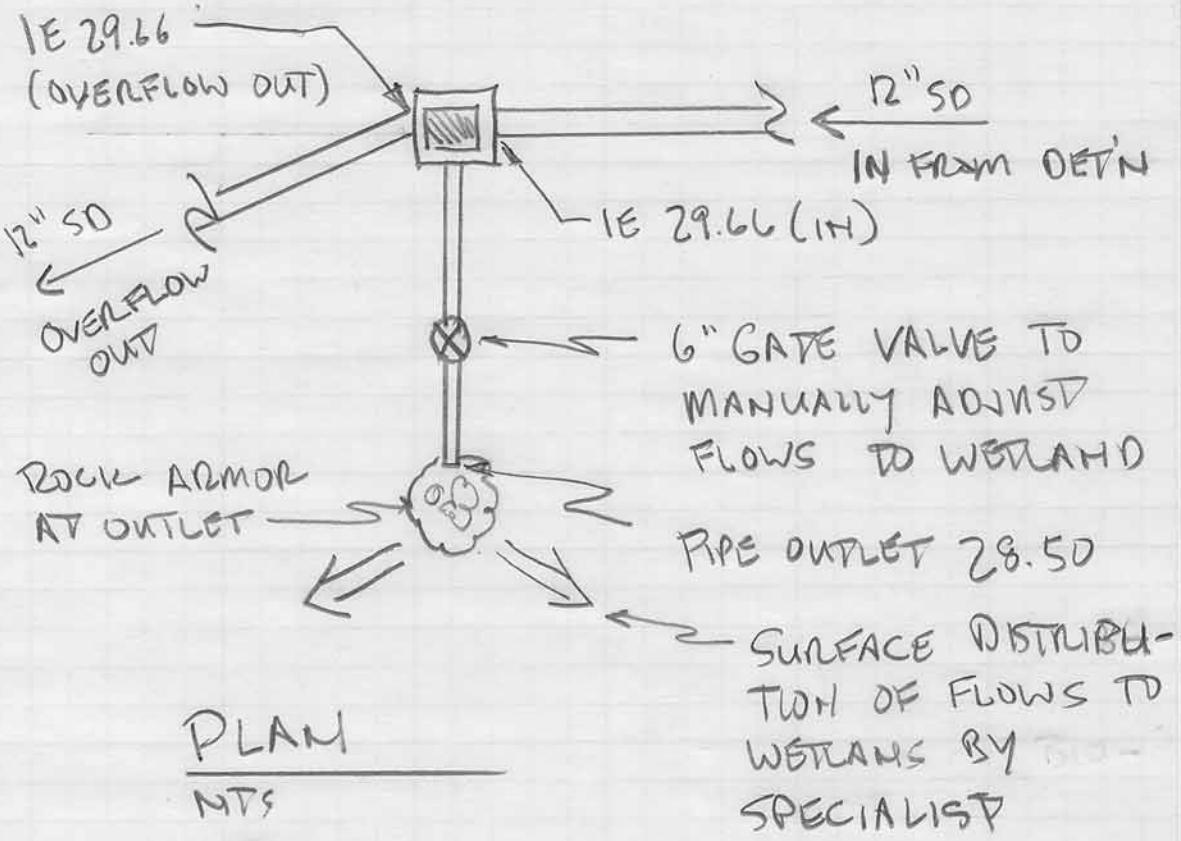
Taylor Engineering Consultants, Inc.

Lorna M. Taylor, P.E.
Principal

c: Simone Oliver, AOA

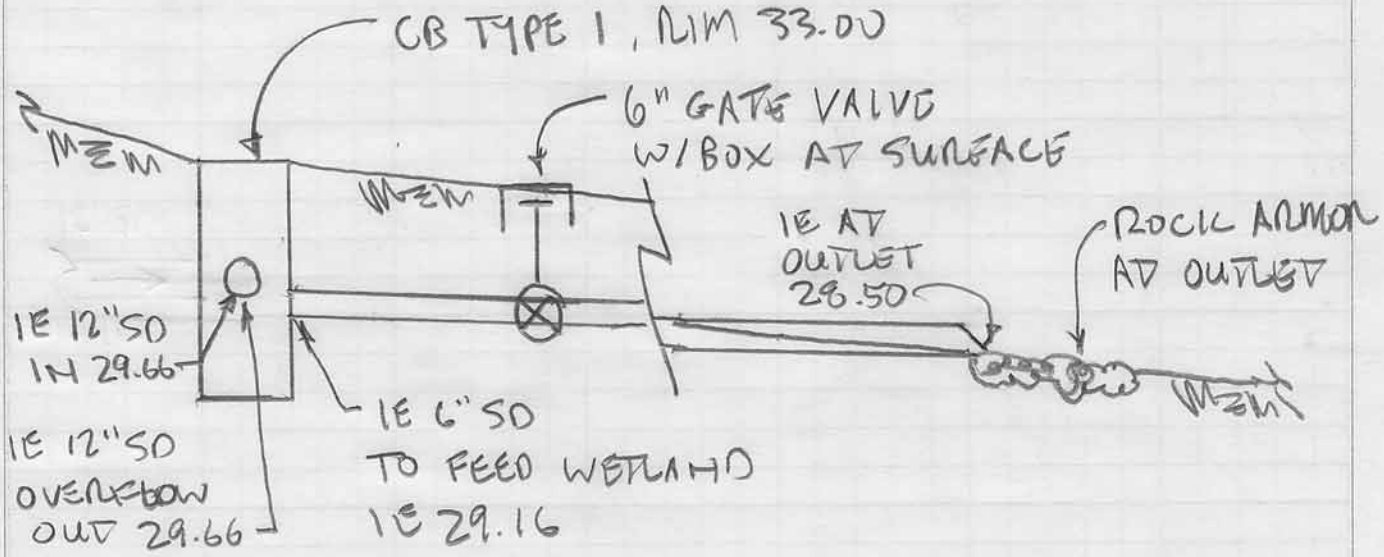
\jobs\433-JO\Admin\LETTER_Jon Regala.doc

FLOW CONTROL TO WETLAND



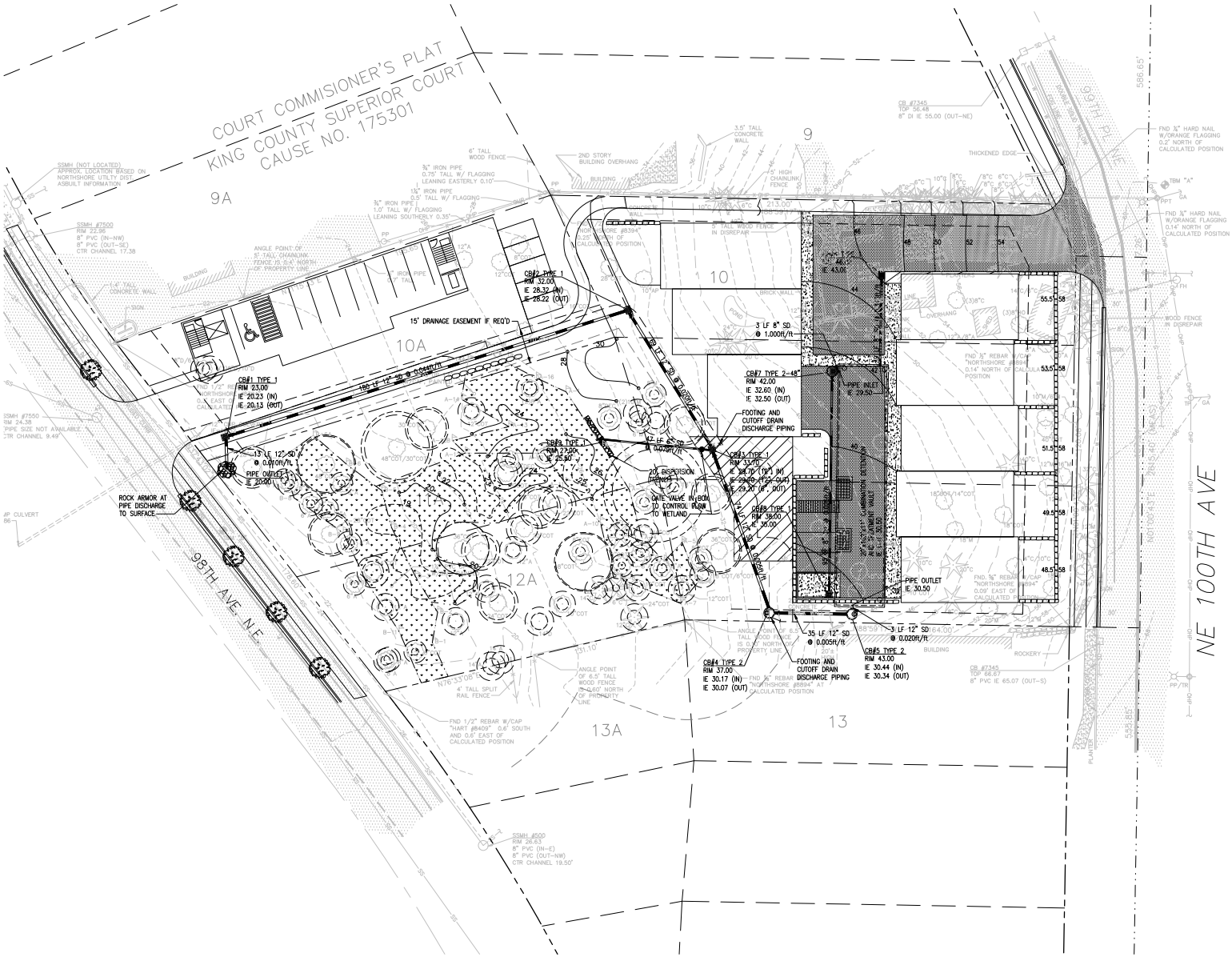
PLAN

NTS



ELEVATION

NTS



CONCEPTUAL DRAINAGE PLAN

SCALE: 1"=20'

N

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CALL BEFORE YOU DIG
1-800-424-5555
FOR FIELD LOCATION OF UNDERGROUND UTILITIES

SCHEMATIC DESIGN

Taylor Engineering Consultants
205 Front St. S.
P.O. Box 1787
Issaquah, WA 98027
tel. 425-391-1415
fax 425-391-1551

Project:
OLSON KIRKLAND TOWNHOMES

Developer:
Mr. James Olson
12222 #1 - 19th Avenue S.E.
Everett, WA 98208

Job Data:

TEC Job #:	433 -10
Designed:	WNT
Drawn:	RP
Checked:	LMT

Authorized Use:
This drawing is issued for use in the titled project only. It shall not be used for any other purpose without the express authorization and/or adaptation by TEC.

Permit Agency:
CITY OF KIRKLAND
PERMIT #: pending

WILLIAM N. TAYLOR
STATE OF WASHINGTON
26198
REGISTERED PROFESSIONAL ENGINEER

Issued for:
PRELIMINARY 4/5/07

Rev.	Date
WETLAND COORD.	4/24/09

Sheet Title:
CONCEPTUAL DRAINAGE PLAN

Sheet No:
1.1

Sheet ____ of ____

THE WATERSHED COMPANY

SCIENCE & DESIGN

May 21, 2009

Jon Regala
City of Kirkland Planning
123 – 5th Avenue
Kirkland, WA 98033

Re: Abbott/Olson wetland mitigation plan review – Spring 2009 revised submittal

Dear Jon:

Thank you for the opportunity to review the revised wetland mitigation plan and accompanying documentation prepared for the Abbott/Olson project. The applicant and the project team presented these materials in a May 7, 2009 meeting at City Hall. I read the submittal, which included the following documents:

1) Wetland mitigation plan – three full size sheets, prepared by Altman Oliver Associates (AOA), dated March 29, 2007, revised April 29, 2009,

2) Wetland mitigation and monitoring plan letter report and response letter prepared by AOA, both dated May 5, 2009,

3) Stormwater outfall letter prepared by AOA, dated August 2, 2007,

4) Conceptual Drainage Plan and letter prepared by Taylor Engineering Consultants, dated March 12, 2009,

5) Technical memorandum prepared by Paris Geosciences, dated February 3, 2009,

6) Geological/Geotechnical Assessment letter prepared by Gary Flowers, dated March 17, 2009

7) Arborist Report prepared by Greenforest Incorporated, dated April 29, 2009,

Findings

The plan has minimized wetland impacts and therefore reduced the mitigation area required to meet code requirements. The smaller mitigation area is more appropriate to site conditions. Further, the applicant has successfully demonstrated the probable success of the mitigation site achieving the requisite hydrology for wetland creation. The tree assessment is much more thorough and accurate; the risk to trees on the site as a result of wetland creation grading is now more predictable and potential impact contingencies have been addressed.

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

The proposal satisfies the requirements of Kirkland Zoning Code Chapter 90. The planning department should consider adding only one permit condition not addressed in the submittal:

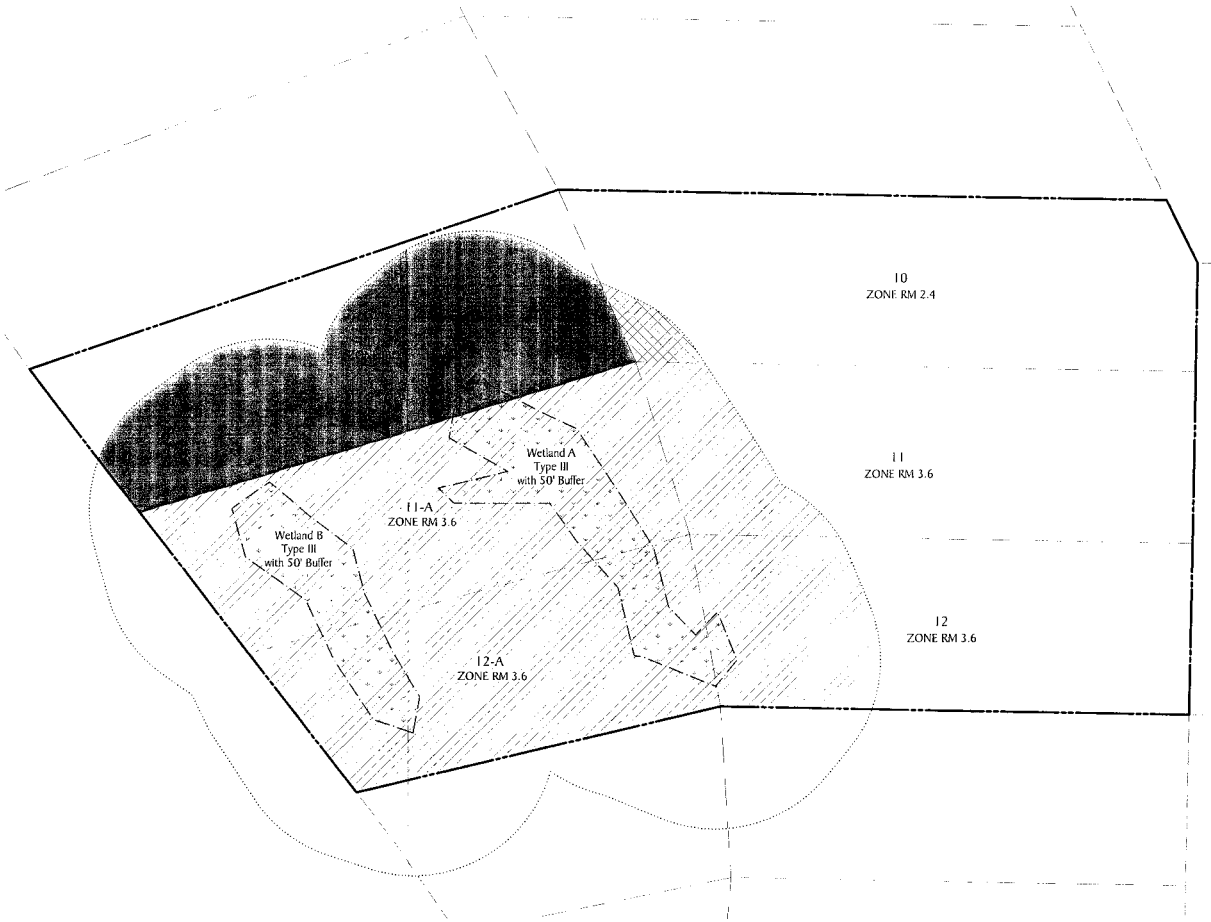
The box containing the adjustment valve controlling the stormwater volume to the wetland should be locked or otherwise secured against tampering.

Please contact me with any questions.

Sincerely,

Hugh Mortensen, PWS
Senior Ecologist

NE 1/4, SEC 31, TWP 26, N RGE 5 E,W.M.



BUILDABLE AREA CALCULATIONS:

Zone IBD
GSA = 11,862 SF
Sensitive Area = 160 SF
Sensitive Area Buffer = 8,657 SF
Buildable Area = 11,862 - 160 - 8,657 = 3,045 SF

Zone RM 3.6
GSA = 40,234 SF
Sensitive Area = 5,012 SF
Sensitive Area Buffer = 19,550 SF
Buildable Area = 40,234 - 5,012 - 19,550 = 15,672 SF

ZONE RM 2.4
GSA = 12,487 SF
Sensitive Area = 0 SF
Sensitive Area Buffer = 463 SF
Buildable Area = 12,487 - 463 = 12,024 SF

MAXIMUM DEVELOPMENT POTENTIAL PER KCC 90.135:

Maximum Dwelling Unit Potential = Buildable area/the prescribed minimum lot area per unit) + (buffer area/the prescribed minimum lot area per unit) x (development factor)

Zone IBD:
N/A - Office Space Proposed
Zone RM 3.6:
(15,672/3600) + [19,550/3600] X .6 = 7.61 or 7 units

ZONE RM 2.4:
(12,024/2400) + [46 1/2400] X 1 = 5.20 or 5 units

SCALE: 1" = 20'

0 10 20 40

© 2006 TRIAD ASSOCIATES

TRIAD ASSOCIATES
12112 115th Ave. NE
Kirkland, WA 98034-6929
425.821.8448
425.821.3481 fax
800.488.0758 toll free
www.triadassoc.com
Land Development Consultants

BUILDABLE AREA EXHIBIT
MAXIMUM DENSITY

OLSON REAL PROPERTY, INC.
KIRKLAND CONDOS

CITY OF KIRKLAND WASHINGTON

NO.	DATE	REVISION	BY	CK
	12/7/06	PER CITY COMMENTS	KC	JB

GREGORY T. KINEALY, PLS
PROJECT MANAGER
ZANE L. HALL, PLS
PROJECT SURVEYOR
PROJECT ENGINEER
PROJECT LANDSCAPE ARCHITECT
FIRST SUBMITTAL DATE: 8/24/06
SCALE: HORZ: 1"=20' VERT.:

DEC 21 2006

STAMP NOT VALID
UNLESS SIGNED AND DATED

JOB NO. 06-014

SHEET NO. 1 OF 1

ATTACHMENT 21
ZON07-00014

Arborist Tree | Service

Pruning and Removal-Disease and Insect Control
2810 236TH ST SW, Brier, WA 98036
425-787-3231/email:derek@arboristtree.com

REPORT

Date: 7-24-07

Subject: Jobsite at: 11401 100TH AV NE KIRKLAND, WA
Olson Townhomes file # ZON07-00014

Job Description: Tree Retention and removal plan

To: James Olson and Kathlyn Abbott

From: Derek Babcock

You have requested an arborist report for the above jobsite.
I have reviewed and identified and tagged all of the significant trees on the site.

Please find enclosed in Exhibit A a map showing the trees, tree conditions, driplines, and recommendations regarding preserving or removal of trees.

The issue of which trees to save beyond the initial chart that I am submitting may, of course, change depending on where the buildings are actually constructed.
There is on Exhibit A an construction envelope where a few trees are otherwise healthy but are too close to the buildings proposed.

I have reviewed the wetland mitigation report, and believe that the mitigation plan can be successfully implemented.
However the following requirements are necessary to complete the mitigation:
Area of trees in lower area by 100th ave should be thinned, to allow for healthier growth of larger trees. Also, several large cottonwood trees should be removed that are leaning over street.

I will also recommend to the Wetland biologist suggestions as to how best not to disturb tree roots while working within areas of

Finally, I will recommend that any work around saved trees be done according to King County and City of Kirkland fencing requirements.

Very Truly Yours,

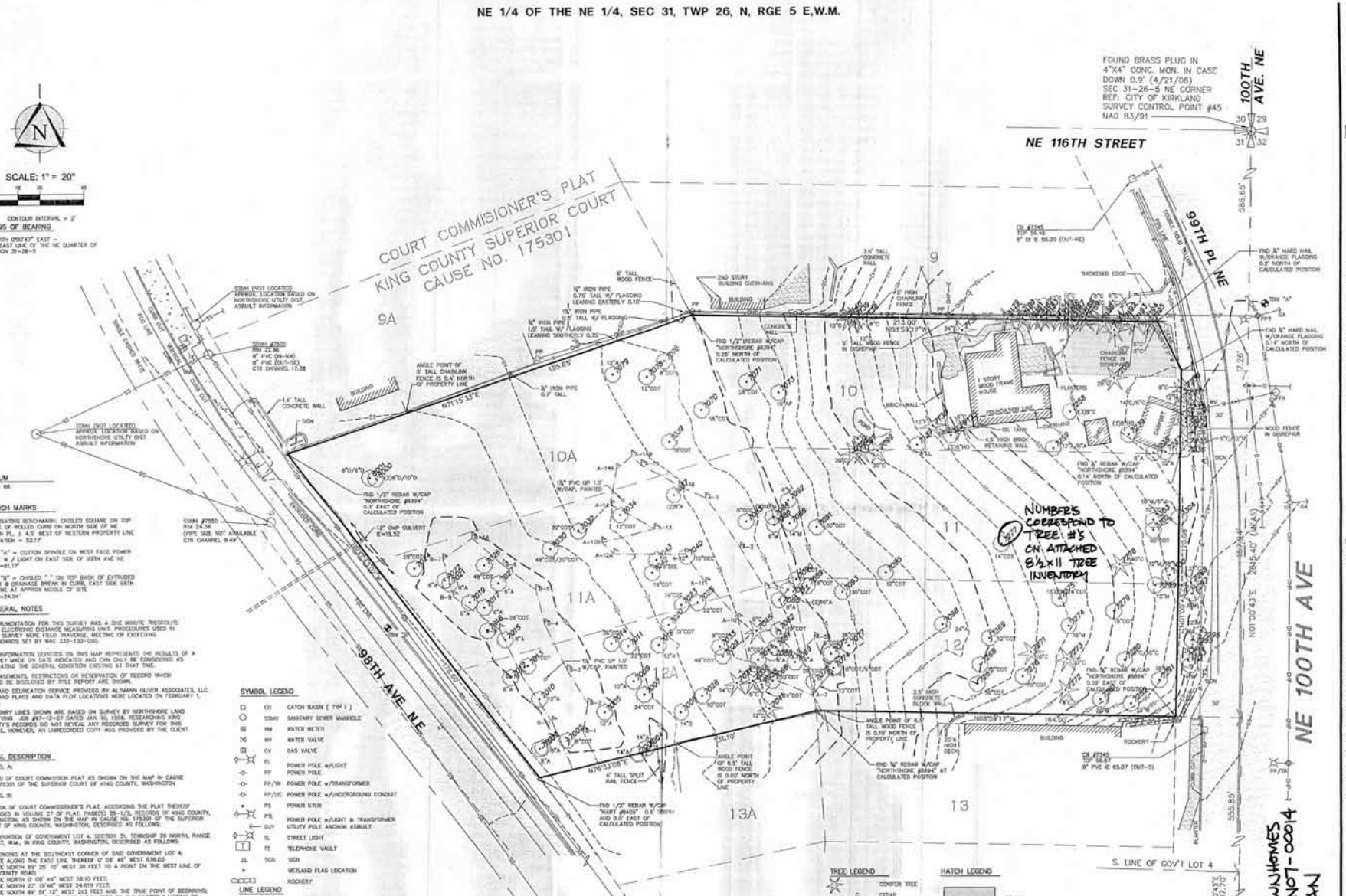
Derek Babcock
ISA Certification #2687-A

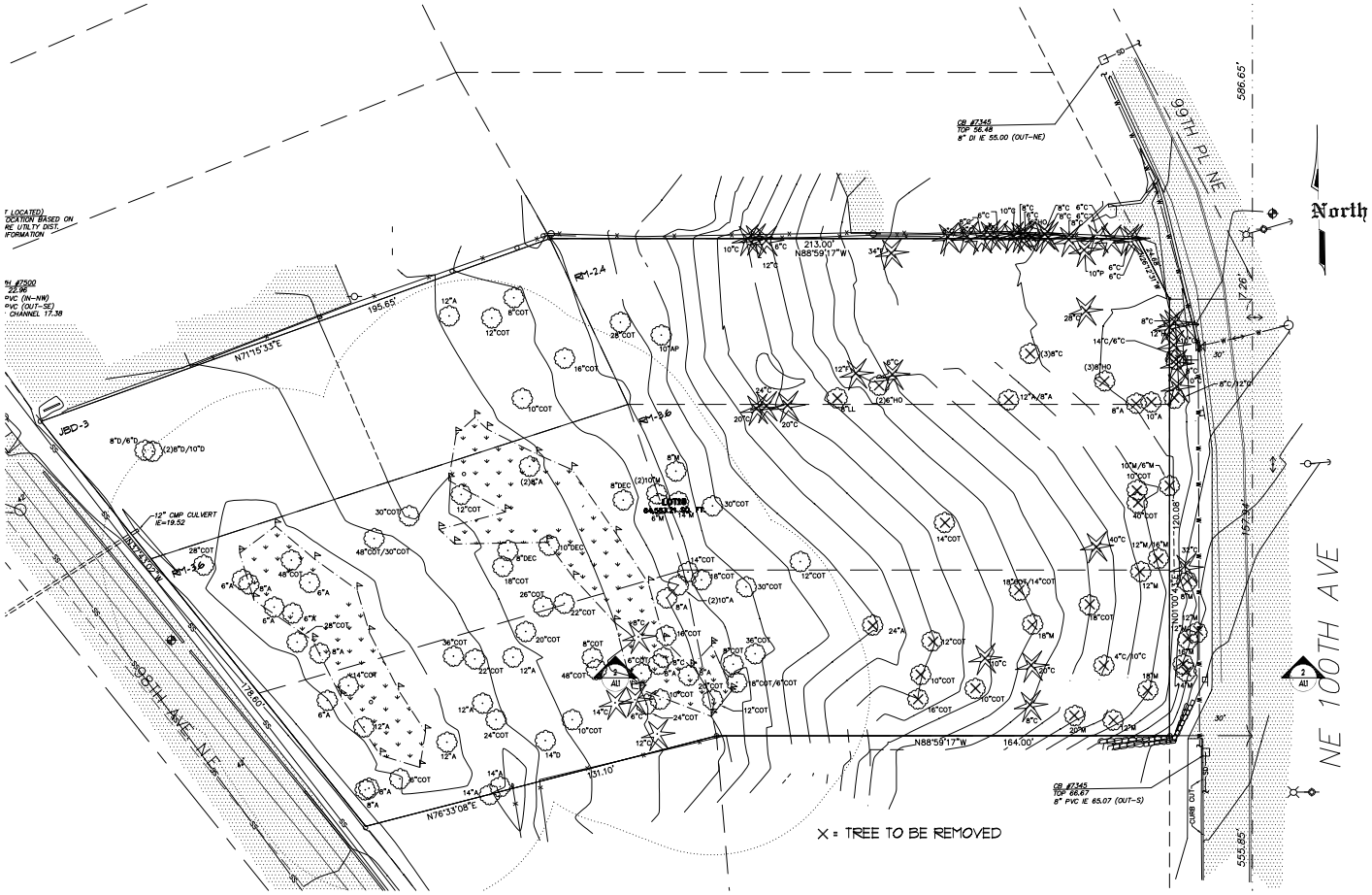
Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7001	Alder	8	40	20	Fair	Keep
7002	Cotton	6	40	12	OK	Keep
7003	Alder	14	70	20	Poor/trunks joined	Remove
7004	Alder	11	80	30	Poor	Remove
7005	Alder	9	40	25	Fair	Keep
7006	Alder	18	80	30	Fair	Keep
7007	Cotton	25	125	90	Fair	Keep
7008	Cotton	15	90	20	Fair	Keep
7009	Alder	10	50	25	Fair	Keep
7010 (A)	Alder	11	45	20	Fair	Keep
7010 (B)	Alder	10	15	8	Poor	Remove
7011	Cotton	28	125	40	Fair	Keep
7012	Alder	6	50	20	Fair	Keep
7013	Alder	18	100	20	Fair	Keep
7015 (A)	Alder	7	60	15	Fair	Keep
7015 (B)	Alder	12	60	5	Fair	Keep
7016	Cotton	35	150	35	Topped, very poor, joined together	Remove
7017	Alder	7	60	6	Fair	Keep
7019	Alder	7	60	20	Leaning	Remove
7020	Cotton	21	65	25	Fair	Keep
7021	Cotton	10	60	5	Poor	Remove
7023 (A)	Cotton	25	65	25	Fair	Keep
7023 (B)	Cotton	36	100	4	Fair	Keep
7024 (A)	Cotton	6	125	20	Good	Keep
7024 (B)	Cotton	28	100	40	Very poor	Remove
7025	Cotton	36	100	6	Fair	Keep
7026	Cotton	50	150	40	Fair	Keep
7027	Cotton	8	100	15	Fair	Keep
7029	Cotton	40	100	18	Poor,saw, Cut	Remove
7030	Cotton	75	150	40	Fair	Keep
7031 (A)	Cedar	14	60	28	Fair	Keep
7031 (B)	Alder	8	65	15	Fair	Keep
7032	Cotton	30	150	40	Fair	Keep
7033	Box Elder	7	60	20	Topped, very poor	Remove
7038 (A)	Cotton	26	100	20	Fair	Keep
7038 (B)	Cotton	48	100	15	Fair	Keep
7040	Cotton	9	40	0	Very poor, Topped	Remove
7041	Cedar	12	65	8	Good	Keep
7042 (A)	Cotton	9	100	10	OK	Keep
7042 (B)	Cotton	17	100	25	Fair	Keep
7045	Cedar	10	50	8	Good	Keep
7068	Cotton	12	70	6	Compacted roots/ poor	Remove
7069	Cotton	32	100	8	Fair	Keep
7072	Cotton	10	60	6	Fair	Keep
7074	Cotton	16	75	15	Fair	Keep
7082	Cotton	24	100	12	Fair	Keep
7086	Cotton	7	70	10	OK	Keep
7088	Cotton	15	70	10	OK	Keep
7089	Cotton	14	60	15	Crowded	Remove
7098	Cotton	18	100	25	Fair	Keep

Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7132	D. Fir	34	100	20	Very poor	Remove
7136	D. Fir	13	75	20	Very poor	Remove
7142	W.Red Cedar	5	35	7	Very poor	Remove
7143	W.Red Cedar	5	35	7	Very poor	Remove
7144	W.Red Cedar	7	35	7	Poor	Remove
7145	W.Red Cedar	7	35	7	Poor	Remove
7179	Cedar	6	30	10	Compacted roots/ poor	Remove
7180	Cedar	6	30	4	Compacted roots/ poor	Remove
7181	Cedar	8	35	11	Compacted roots/ poor	Remove
7182	Doug Fir	7	40	7	Poor	Remove
7183	Cedar	6	35	10	Compacted roots/ poor	Remove
7184	Cedar	11	35	12	Compacted roots/ poor	Remove
7185	Cedar	7	35	7	Compacted roots/ poor	Remove
7187	Holly	5	35	7	Compacted roots/ poor	Remove
7188	Cedar	9	35	7	Compacted roots/ poor	Remove
7189	Cedar	8	35	7	Compacted roots/ poor	Remove
7190	Cedar	5	35	7	Compacted roots/ poor	Remove
7192	W.Red Cedar	4	35	5	Compacted roots/ poor	Remove
7193	Cedar	5	35	5	Compacted roots/ poor	Remove
7194	Cedar	6	30	5	Compacted roots/ poor	Remove
7195	Cedar	6	30	5	Compacted roots/ poor	Remove

Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7202	Cedar	7	80	20	Very crowded, topped	Remove
7230	Big Leaf Maple	7	50	12	Compressed roots/suppressed/ crowded	Remove
7231	Grand Fir	11	65	12	Maple crowding fir	Remove
7232	W. Red Cedar	8	60	12	Compressed roots/suppressed/ crowded	Remove
7233	Cedar	18	60	12	Compressed roots/suppressed/ crowded	Remove
7234	Cedar	17	60	12	Compressed roots/suppressed/ crowded	Remove
7235	Pine	10	50	10	Compressed roots/suppressed/ crowded	Remove
7236	Cedar	10	50	10	Compressed roots/suppressed/ crowded	Remove
7238 (A)	Box Elder	7	8	7	Compressed roots/suppressed/ crowded	Remove
7238 (B)	Box Elder	12	65	24	Poor/crowded	Remove
7239	Holly	7	50	23	Poor/crowded	Remove
7267	Maple	14	80	20	Split, Very dangerous	Remove
7268	Cotton	15	60	20	Fair	Keep
7270	Cotton	8	40	20	Very crowded, very poor	Remove
7272	Cedar	9	60	20	Poor	Remove
7273 (A)	Cotton	27	100	40	Fair	Keep
7273 (B)	Cedar	21	90	30	Fair	Keep
7274	Maple	17	100	40	Poor	Remove
7275	Cotton	17	100	30	Crowded, poor/remove	Remove
7278	Cedar	43	100	40	Split	Remove
7279	Cotton	15	100	30	Crowded/suppressed,	Remove
7281	Maple	11	80	25	Very poor,supressed	Remove
7294 (A)	Cedar	24	60	16	Poor,topped,crowded A, B, C joined together	Remove
7294 (B)	Cedar	24	60	16	"	Remove
7294 (C)	Cedar	24	60	16	"	Remove
7296	Maple	12	60	20	Bark missing, split, diseased, remove	Remove
7297	Maple	7	60	20	Back damaged, diseased,very poor	Remove
7298	Cedar	38	80	40	Topped	Remove

NE 1/4 OF THE NE 1/4, SEC 31, TWP 26, N, RGE 5 E,W.M.





1 TREE PLAN
SCALE 1" = 20'
0 20 40

NO.	DATE	REVISION

CURTIS GELOTTE
Architects
160 Lake St. S.
Suite 200
Kirkland, WA 98033
P 425.828.3091
F 425.822.2152

OLSON TOWNHOUSES

11401 100th AVENUE NE
KIRKLAND, WA 98033

VARIANCE REQUEST

TREE PLAN

DATE: 03/16/07
JOB NUMBER: 0641
FILE: A1.1
SHEET NO: A1.1B

RECEIVED
AUG 18 2008
AM PM
PLANNING DEPARTMENT
BY

Zsofia Pasztor
Certified Arborist
425-210-5541

James Olson
11401 – 100th Ave NE
Kirkland WA 98033
425-239-8699
jolson8681@aol.com

Summary of tree report; July 16th 2008

I visited the above property on July 16th 2008 to inspect the trees on the site. The following is a summary of my findings.

1. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7021 on the tree plan dated 3/16/07. It is located in the buffer zone. The tree is 60 ft tall and has a dbh of 10". This tree is in poor condition and presents a safety hazard. I recommend removal.

2. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7028 on the tree plan dated 3/16/07. It is located in the buffer zone. The tree is 60 ft tall and has a dbh of 20". This tree has been chopped down in the past and has resprouted from the stump. The epicormic growth is week and presents a safety hazard. I recommend removal.

3. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7039 on the tree plan dated 3/16/07. It is located in the proposed construction area for the office building. The tree has a dbh of 10". I recommend removal.

4. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7071 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 28". I recommend removal.

5. *Alnus rubra* Red Alder
   The tree is identified as tree number 7073 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

6. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7075 on the tree plan dated 3/16/07. It is located in the proposed construction area for the office building. The tree has a dbh of 10". I recommend removal.

7. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7076 on the tree plan dated 3/16/07. It is located in the proposed construction area for the office building. The tree has a dbh of 8". I recommend removal.

8. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7077 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 14". I recommend removal.

9. *Populus trichocarpa* Black Cottonwood
   The tree is identified as tree number 7078 on the tree plan dated 3/16/07. It is located in the proposed construction area for the office building. The tree has a dbh of 12". I recommend removal.

10. *Alnus rubra* Red Alder
    The tree is identified as tree number 7079 on the tree plan dated 3/16/07. It is located in the proposed construction area for the office building. The tree has a dbh of 12". I recommend removal.

11. *Populus trichocarpa* Black Cottonwood
    The tree is identified as tree number 7082 on the tree plan dated 3/16/07. It is located in the wetland area. The tree is 100 ft tall and has a dbh of 16". This tree is weak, deformed and presents a safety hazard. I recommend removal.

12. *Acer macrophyllum* Big Leaf Maple
    These two trees are identified as tree number 7084 on the tree plan dated 3/16/07. They are located in the wetland area. The trees are about is 75 ft tall and have dbh of 10". These trees are in poor condition, crowding 2 other trees by being tied into a bundle by massive ivy cover. I recommend removal.

13. *Acer macrophyllum* Big Leaf Maple
    The tree is identified as tree number 7086 on the tree plan dated 3/16/07. It is located in the wetland area. The tree is 70 ft tall and has a dbh of 7". This tree is very weak, crowding 3 other maples by being tied into a bundle by massive ivy cover. I recommend removal.

14. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7088 on the tree plan dated 3/16/07. It is located in the buffer zone. The tree is 75 ft tall and has a dbh of 15". This tree is weak, deformed, and presents a safety hazard. I recommend removal.

15. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7089 on the tree plan dated 3/16/07. It is located in the buffer zone. The tree is 60 ft tall and has a dbh of 14". This tree is crowded, covered with excessive amounts of ivy, and presents a safety hazard. I recommend removal.

16. *Acer macrophyllum* Big Leaf Maple
The tree is identified as tree number 7092 on the tree plan dated 3/16/07. It is located in the buffer zone. The tree is 60 ft tall and has a dbh of 20". This tree was chopped down in the past and has resprouted from the stump. The epicormic growth is week and presents a safety hazard. I recommend removal.

17. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7095 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

18. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7097 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 24". I recommend removal.

19. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7098A on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 100 ft tall and has a dbh of 24". I recommend removal.

20. *Alnus rubra* Red Alder
The tree is identified as tree number 7098B on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 24". I recommend removal.

21. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7099 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 20". I recommend removal.

22. *Pseudotsuga menziesii* Doug Fir

The tree is identified as tree number 7132 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 100 ft tall and has a dbh of 34". This tree is in very poor condition and I recommend removal.

23. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7133 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

24. *Ilex aquifolium* Holly
The tree is identified as tree number 7134 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

25. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7135 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

26. *Abies grandis* Grand Fir
The tree is identified as tree number 7136 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

27. Ornamental Tree –Prunus spp.
The tree is identified as tree number 7137 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

28. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7138 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

29. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7139 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

30. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7140 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

31. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7142 on the tree plan dated 3/16/07. It is

located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 6". This tree is in very poor condition and I recommend removal.

32. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7143 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 5". This tree is in very poor condition and I recommend removal.

33. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7144 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 7". This tree is in poor condition and I recommend removal.

34. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7145 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 7". This tree is in poor condition and I recommend removal.

35. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7179 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

36. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7180 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 30 ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend removal.

37. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7181 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 8". This tree is in poor condition with compacted roots and I recommend removal.

38. *Pseudotsuga menziesii* Doug Fir
The tree is identified as tree number 7182 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 40 ft tall and has a dbh of 7". This tree is in poor condition with compacted roots and I recommend removal.

39. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7183 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend

removal.

40. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7184 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 11". This tree is in poor condition with compacted roots and I recommend removal.

41. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7185 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 7". This tree is in poor condition with compacted roots and I recommend removal.

42. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7186 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

43. *Ilex aquifolium* Holly
The tree is identified as tree number 7187 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend removal.

44. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7188 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 9". This tree is in poor condition with compacted roots and I recommend removal.

45. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7189 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 8". This tree is in poor condition with compacted roots and I recommend removal.

46. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7190 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 5". This tree is in poor condition with compacted roots and I recommend

removal.

47. *Pinus spp.* Pine
The tree is identified as tree number 7191 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is has a dbh of 10". I recommend removal.

48. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7192 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 4". This tree is in poor condition with compacted roots and I recommend removal.

49. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7193 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 5". This tree is in poor condition with compacted roots and I recommend removal.

50. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7194 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 30 ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend removal.

51. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7195 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

52. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7196 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 35 ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend removal.

53. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7197 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 30 ft tall and has a dbh of 6". This tree is in poor condition with compacted roots and I recommend removal.

54. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7202 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 80 ft tall and has a dbh of 28". This tree is very crowded and has been topped. I recommend

removal.

55. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7230 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

56. *Abies grandis* Grand Fir
The tree is identified as tree number 7231 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 65ft tall and has a dbh of 11". I recommend removal.

57. *Ilex aquifolium* Holly
The tree is identified as tree number 7232 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

58. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7233 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 14". I recommend removal.

59. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7234 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

60. *Pinus spp.* Pine
The tree is identified as tree number 7235 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

61. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7236 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 50 ft tall and has a dbh of 12". I recommend removal.

62. *Alnus rubra* Red Alder
The tree is identified as tree number 7237 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

63. *Alnus rubra* Red Alder

The tree is identified as tree number 7238 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 8". I recommend removal.

64. *Ilex aquifolium* Holly
The tree is identified as tree number 7239 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 50 ft tall and has a dbh of 7". I recommend removal.

65. *Thuja plicata* Western Red Cedar
These three trees are identified as tree number 7258 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. The trees each have a dbh of 8". I recommend removal.

66. *Alnus rubra* Red Alder
These two trees are identified as tree number 7259 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. The trees have dbhs of 12"/8". I recommend removal.

67. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7267 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 80 ft tall and has a dbh of 14". I recommend removal.

68. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7268 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 60 ft tall and has a dbh of 15". I recommend removal.

69. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7269 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

70. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7270 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 40 ft tall and has a dbh of 8". I recommend removal.

71. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7271 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

72. *Thuja plicata* Western Red Cedar

The tree is identified as tree number 7272 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 60ft tall and has a dbh of 9". I recommend removal.

73. *Thuja plicata* Western Red Cedar
These two trees are identified as tree number 7273 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. They are about 90ft tall and have dbhs of 8"/20". I recommend removal.

74. *Populus trichocarpa* Black Cottonwood
These two trees are identified as tree number 7275 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. The trees are about 100 ft tall and have dbhs of 18"/14". I recommend removal.

75. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7277 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 14". I recommend removal.

76. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7280 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

77. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7281 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 80ft tall and has a dbh of 11". I recommend removal.

78. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7282 on the tree plan dated 3/16/07. It is located in the residential construction area. The tree has a dbh of 12". I recommend removal.

79. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7291 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 18". I recommend removal.

80. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7292 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 6". I recommend removal.

81. *Acer maccrophyllum* Big Leaf Maple

The tree is identified as tree number 7293 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 14". I recommend removal.

82. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7295 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

83. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7296 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 60 ft tall and has a dbh of 12". I recommend removal.

84. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7297 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 60ft tall and has a dbh of 7". I recommend removal.

85. *Thuja plicata* Western Red Cedar
The tree is identified as tree number 7298 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree is 80 ft tall and has a dbh of 32". I recommend removal.

86. *Acer maccrophyllum* Big Leaf Maple
The tree is identified as tree number 7299 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 12". I recommend removal.

87. *Acer maccrophyllum* Big Leaf Maple
These two trees are identified as tree number 7300 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. The trees have dbhs of 12"/16"". I recommend removal.

88. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7302 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 40". I recommend removal.

89. *Populus trichocarpa* Black Cottonwood
The tree is identified as tree number 7303 on the tree plan dated 3/16/07. It is located in the proposed residential construction area. The tree has a dbh of 10". I recommend removal.

90. *Acer maccrophyllum* Big Leaf Maple

These two trees are identified as tree number 7304 on the tree plan dated 3/16/07. They are located in the proposed residential construction area. The trees have dbhs of 10"/6". I recommend removal.

91. *Pseudotsuga menziesii* Doug Fir
These two trees are identified as tree number 8000 on the tree plan dated 3/16/07. They are located in the proposed construction area for the office building. The trees have dbhs of 8"/6". I recommend removal.

92. *Pseudotsuga menziesii* Doug Fir
These two trees are identified as tree number 8001 on the tree plan dated 3/16/07. They are located in the proposed construction area for the office building. The trees have dbhs of 8"/10". I recommend removal.

The rest of the trees as identified on the tree plan dated 3/16/07, were either not considered a serious danger, or were not inside the proposed construction areas. Some of the trees in the wetland and buffer areas are not in great condition but were left as habitat for wildlife.

I recommend that the wetland area be restored and the Client has hired a contractor already for this task. In order to improve the habitat, native trees, shrubs, perennials and groundcovers should be planted.

If any equipment is necessary to create the wetland I recommend using small track –type machinery because they are light weight such as a Bob Cat 322 or similar. The main access for any restoration work should be from the North between the trees 7026 and 7030.

The staging areas will be confined to the office building and residential clearing limits as shown on sheet A1.3. No staging will be allowed in the wetland area. During the wetland creation if material or other staging becomes necessary, I recommend using the proposed construction areas for such activities.

In preparation for the construction, I recommend removing the trees in the proposed construction areas before the wetland and buffer areas. The trees in the wetland area should be removed in sections unless they are on the edges and it is possible to safely lay them down toward the proposed and cleared construction site.

Re-grading within the wetland and buffer areas should be limited to a minimum in order to protect tree roots and soil health. Raising or lowering the grade more than 2" should be avoided within an area of twice the size of the canopy of any given tree. The soil should be protected from compaction by placing woodchips from the removed trees, and/or straw or gravel in layers on the paths to be used by equipment. Straw bales tied around the trunks of trees will be necessary to protect the bark of any tree adjacent to the path of the equipment.

To successfully protect the trees to be preserved, I recommend that a minimum 4 foot high temporary chain link fence be placed at the outer edge of the buffer zone. The fence should encircle the area completely. Do not cut or damage roots by installing permanent fence posts.

Placing silt fencing or compost socks at the outside base of the chain link fence will help stop or at least filter any silt moving toward the wetland area. Using woodchips from the removed

trees, straw or compost blankets over the cleared construction site will help stop any erosion, especially in rainy weather.

Any roots ½" or larger in diameter damaged during the construction will need immediate attention. The damaged part should be cut off with a sharp saw creating a clean cut. The new cut should be covered with a damp fabric such as burlap and kept moist to prevent it from drying out. The roots should be covered with soil as soon as possible.

Do not store any materials in the wetland area. No machinery should be driven over the protected root zone within the fenced area once the wetland creation is complete and all track machinery is removed from the site.

This report is based largely on readily observable conditions. Trees can fail for no obvious reason as they are part of nature. There are several factors affecting a tree's health that are pre-existing and cannot necessarily be ascertained with surface analysis. These conditions include root damage which may be hidden beneath the soil. In addition, certain circumstances can cause rapid deterioration of a tree's condition. While I have used every reasonable means to examine the trees, this report is an opinion and I cannot guarantee or warrant the condition of these trees. Given the facts in combination with the fact that external factors such as weather events (i.e. drought and windstorms) contribute to the failure of a tree, it is impossible to determine the eventual failure of any given tree.

Please give me a call if you have any questions. Thank you.

Sincerely,

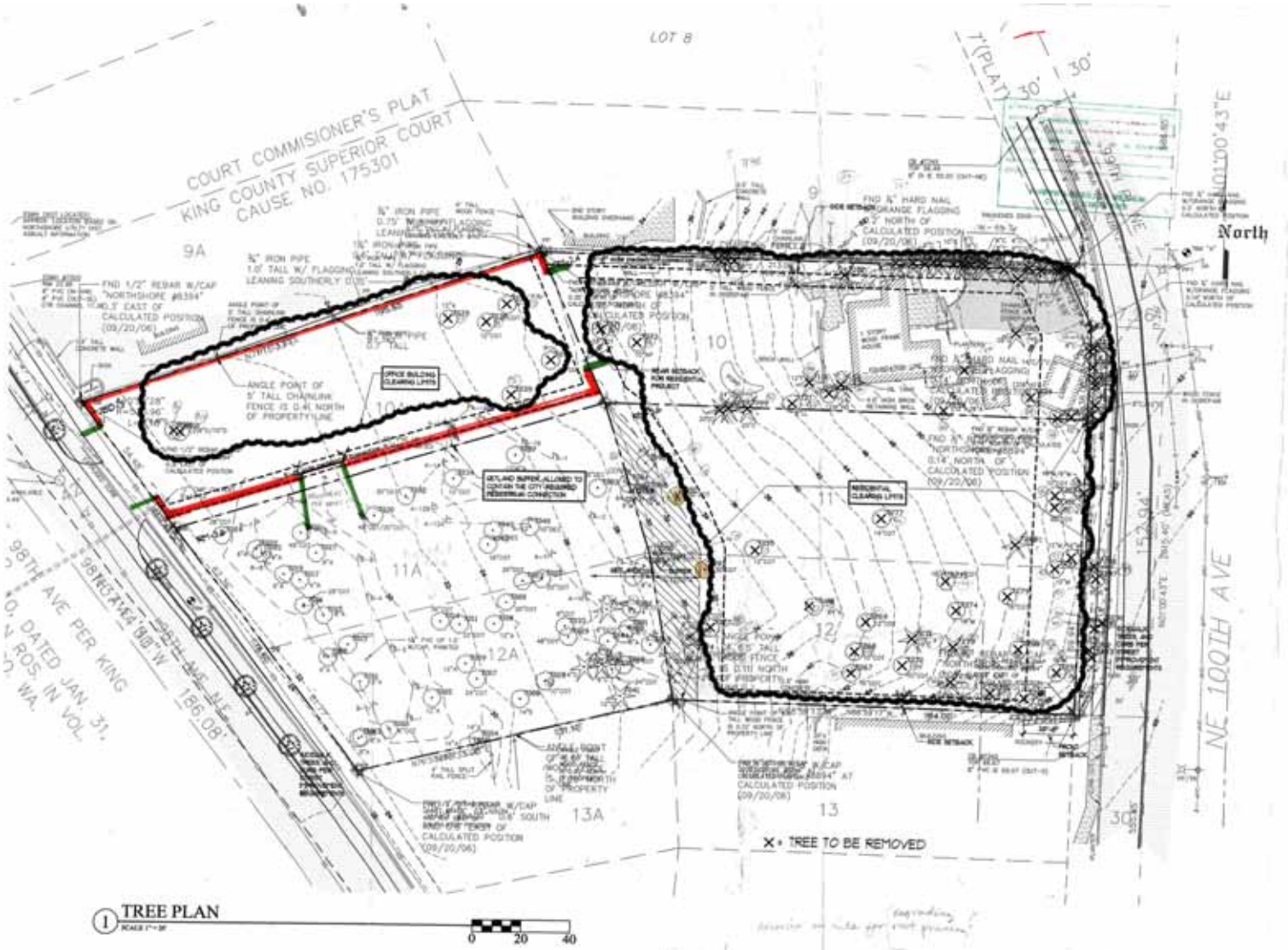
Zsófia Pasztor,
Certified Arborist: Cert. # PN5795A

Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7001	Alder	8	40	20	Fair	Keep
7002	Cotton	6	40	12	OK	Keep
7003	Alder	14	70	20	Poor/trunks joined	Keep
7004	Alder	11	80	30	Poor	Keep
7005	Alder	9	40	25	Fair	Keep
7006	Alder	18	80	30	Fair	Keep
7007	Cotton	25	125	90	Fair	Keep
7008	Cotton	15	90	20	Fair	Keep
7009	Alder	10	50	25	Fair	Keep
7010 (A)	Alder	11	45	20	Fair	Keep
7010 (B)	Alder	10	15	8	Poor	Keep
7011	Cotton	28	125	40	Fair	Keep
7012	Alder	6	50	20	Fair	Keep
7013	Alder	18	100	20	Fair	Keep
7015 (A)	Alder	7	60	15	Fair	Keep
7015 (B)	Alder	12	60	5	Fair	Keep
7016	Cotton	35	150	35	Topped, very poor, joined together	Keep
7017	Alder	7	60	6	Fair	Keep
7018	Cotton	15	100	15	OK	Keep
7019	Alder	7	60	20	Leaning	Keep
7020	Cotton	24	100	10	Fair	Keep
7021	Cotton	10	60	5	Poor	Remove
7023 (A)	Cotton	25	65	25	Fair	Keep
7023 (B)	Cotton	36	100	4	Fair	Keep
7024 (A)	Cotton	6	125	20	Good	Keep
7024 (B)	Cotton	28	100	40	Very poor	Keep
7025	Cotton	25	100	12	Fair	Keep
7026	Cotton	50	150	40	Fair	Keep
7027	Cotton	8	70	15	Fair	Keep
7028	Cotton	20	60	12	Chopped	Remove
7029	Cotton	40	100	18	Poor, saw, Cut	Keep
7030	Cotton	75	150	40	Fair	Keep
7031 (A)	Cedar	17	60	28	Fair	Keep
7031 (B)	Alder	8	65	15	Fair	Keep
7032	Cotton	30	150	40	Fair	Keep
7033	Box Elder	7	60	20	Topped, very poor	Keep
7038 (A)	Cotton	26	100	20	Fair	Keep
7038 (B)	Cotton	10	100	15	Fair	Keep
7040	Cotton	9	40	0	Very poor, Topped	Keep
7041	Cedar	12	65	8	Good	Remove
7042 (A)	Cotton	9	100	10	OK	Keep
7042 (B)	Cotton	17	100	25	Fair	Keep
7045	Cedar	10	50	8	Good	Keep

RECEIVED
AUG 18 2008
_____AM_____PM
PLANNING DEPARTMENT
BY_____

Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7068	Cotton	12	70	6	Compacted roots/ poor	Keep
7069	Cotton	32	100	8	Fair	Keep
7072	Cotton	10	60	6	Fair	Keep
7074	Cotton	16	75	15	Fair	Keep
7082	Cotton	24	100	12	Fair	Remove
7083	Box Elder	10	80	25	Dead	Keep
7084	Maple	14	75	15	Crowded	Remove
7086	Maple	7	70	20	OK	Remove
7088	Cotton	15	70	20	OK	Remove
7089	Cotton	14	60	15	Crowded	Remove
7091	Cotton	30	100	40	Leaning	Remove
7092	Maple	20	60	12	Chopped	Remove
7093	Cotton	30	100	30	OK	Keep
7098	Cotton	18	100	25	Fair	Keep
7132	D. Fir	34	100	20	Very poor	Remove
7136	D. Fir	13	75	20	Very poor	Remove
7142	W.Red Cedar	5	35	7	Very poor	Remove
7143	W.Red Cedar	5	35	7	Very poor	Remove
7144	W.Red Cedar	7	35	7	Poor	Remove
7145	W.Red Cedar	7	35	7	Poor	Remove
7179	Cedar	6	30	10	Compacted roots/ poor	Remove
7180	Cedar	6	30	4	Compacted roots/ poor	Remove
7181	Cedar	8	35	11	Compacted roots/ poor	Remove
7182	Doug Fir	7	40	7	Poor	Remove
7183	Cedar	6	35	10	Compacted roots/ poor	Remove
7184	Cedar	11	35	12	Compacted roots/ poor	Remove
7185	Cedar	7	35	7	Compacted roots/ poor	Remove
7187	Holly	5	35	7	Compacted roots/ poor	Remove
7188	Cedar	9	35	7	Compacted roots/ poor	Remove
7189	Cedar	8	35	7	Compacted roots/ poor	Remove
7190	Cedar	5	35	7	Compacted roots/ poor	Remove
7192	W.Red Cedar	4	35	5	Compacted roots/ poor	Remove
7193	Cedar	5	35	5	Compacted roots/ poor	Remove
7194	Cedar	6	30	5	Compacted roots/ poor	Remove
7195	Cedar	6	30	5	Compacted roots/ poor	Remove

Tree #	Species	DBH (inches, unless noted	Height	Spread	Condition/Location/ Factors	Action
7202	Cedar	7	80	20	Very crowded, topped	Keep
7230	Big Leaf Maple	7	50	12	Compressed roots/suppressed/ crowded	Keep
7231	Grand Fir	11	65	12	Maple crowding fir	Keep
7232	W. Red Cedar	8	60	12	Compressed roots/suppressed/ crowded	Keep
7233	Cedar	18	60	12	Compressed roots/suppressed/ crowded	Keep
7234	Cedar	17	60	12	Compressed roots/suppressed/ crowded	Keep
7235	Pine	10	50	10	Compressed roots/suppressed/ crowded	Keep
7236	Cedar	10	50	10	Compressed roots/suppressed/ crowded	Keep
7238 (A)	Box Elder	7	8	7	Compressed roots/suppressed/ crowded	Keep
7238 (B)	Box Elder	12	65	24	Poor/crowded	Keep
7239	Holly	7	50	23	Poor/crowded	Keep
7267	Maple	14	80	20	Split, Very dangerous	Keep
7268	Cotton	15	60	20	Fair	Keep
7270	Cotton	8	40	20	Very crowded, very poor	Keep
7272	Cedar	9	60	20	Poor	Keep
7273 (A)	Cotton	27	100	40	Fair	Keep
7273 (B)	Cedar	21	90	30	Fair	Keep
7274	Maple	17	100	40	Poor	Keep
7275	Cotton	17	100	30	Crowded, poor/remove	Keep
7278	Cedar	43	100	40	Split	Keep
7279	Cotton	15	100	30	Crowded/suppressed,	Keep
7281	Maple	11	80	25	Very poor, suppressed	Keep
7294 (A)	Cedar	24	60	16	Poor, topped, crowded A, B, C joined together	Keep
7294 (B)	Cedar	24	60	16	"	Keep
7294 (C)	Cedar	24	60	16	"	Keep
7296	Maple	12	60	20	Bark missing, split, diseased, remove	Keep
7297	Maple	7	60	20	Back damaged, diseased, very poor	Keep
7298	Cedar	38	80	40	Topped	Keep



1 TREE PLAN
SCALE 1"=20'
0 20 40

Staging Area For Wetland Restoration (?)

Entrance Corridor For Equipment (?)

RECEIVED
AUG 13 2008

INDEX OF DRAWINGS

A0 SITE PLAN
A1B TREE PLAN
A2 PREVIOUS SITE PLAN STUDIES
A3 SITE REFERENCE PHOTOS
A4 SITE REFERENCE PHOTOS
A5 3-D STUDIES
1 of 1 SURVEY
W1 WETLAND MITIGATION PLAN (IMPACT)
W2 WETLAND MITIGATION PLAN (GRADING)
W3 WETLAND MITIGATION PLAN (SPECS)
1 CONCEPTUAL DRAINAGE PLAN

NO.	DATE	REVISION

CURTIS GELOTTE Architects

OLSON TOWNHOUSES

11401 100th AVENUE NE
KIRKLAND, WA 98033

VARIANCE REQUEST

TREE PLAN

DATE:
JOB NUMBER:
FILE: A1.3
SHEET NO:

A1.3

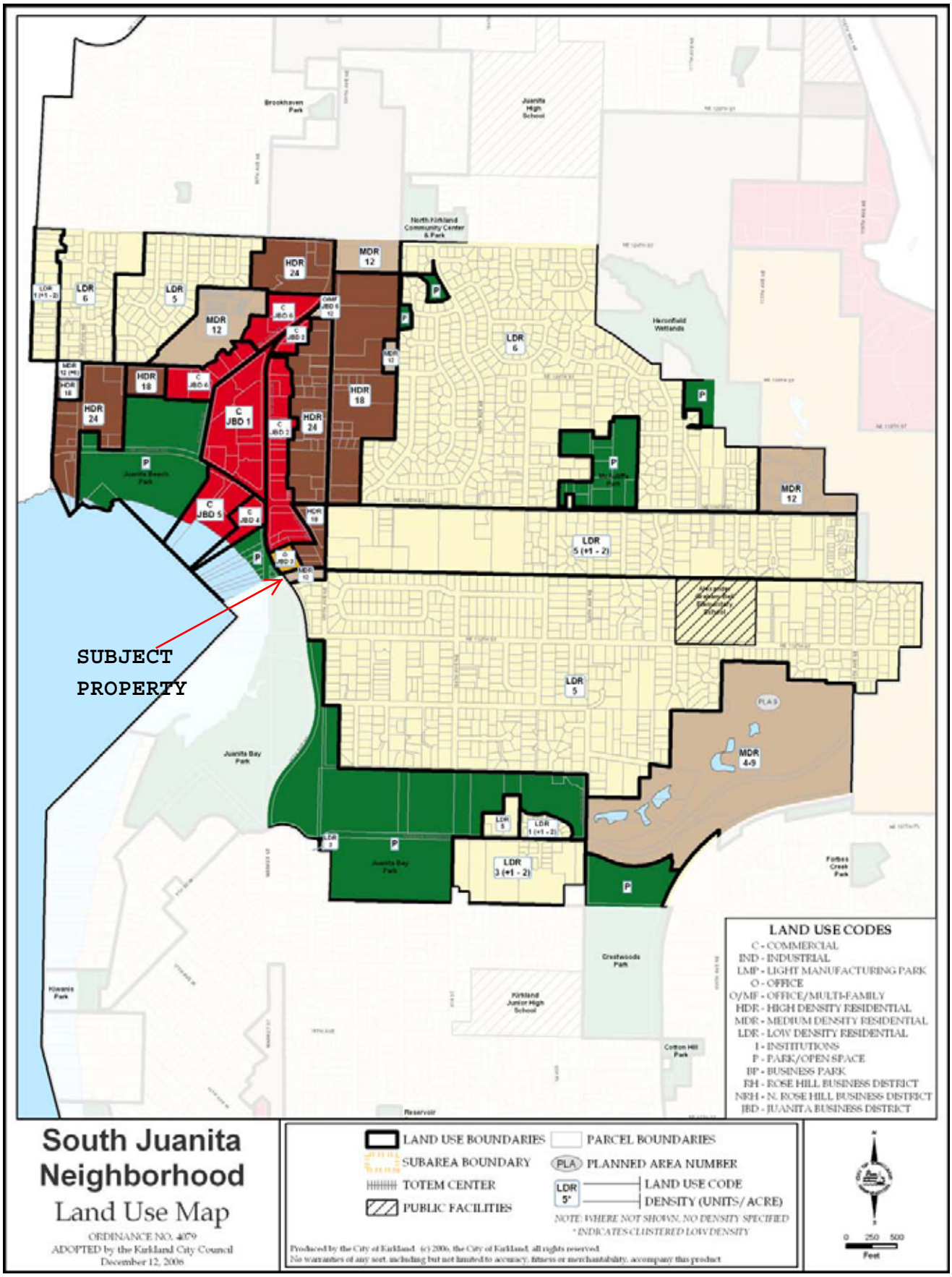
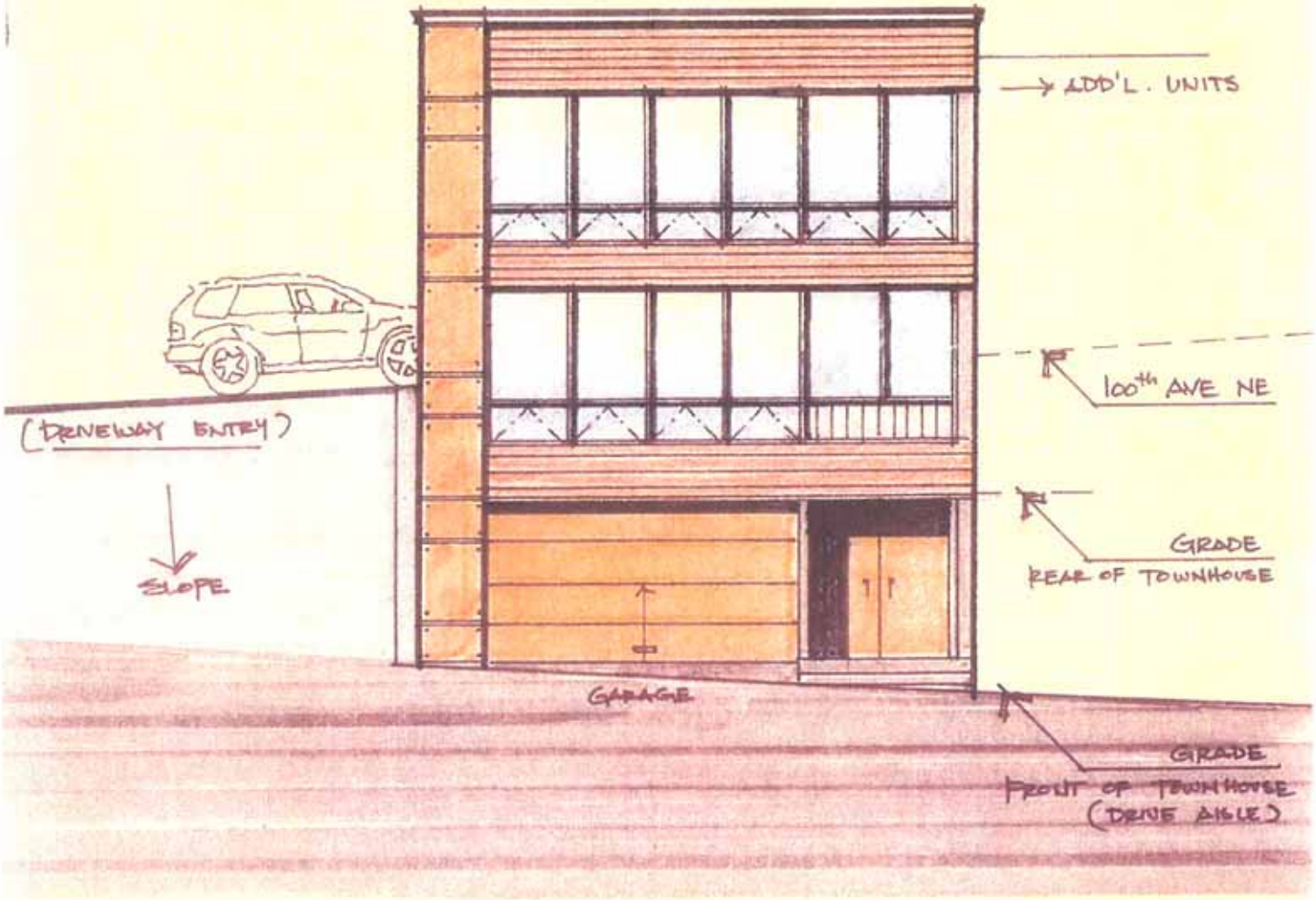


Figure J-2b: South Juanita Land Use

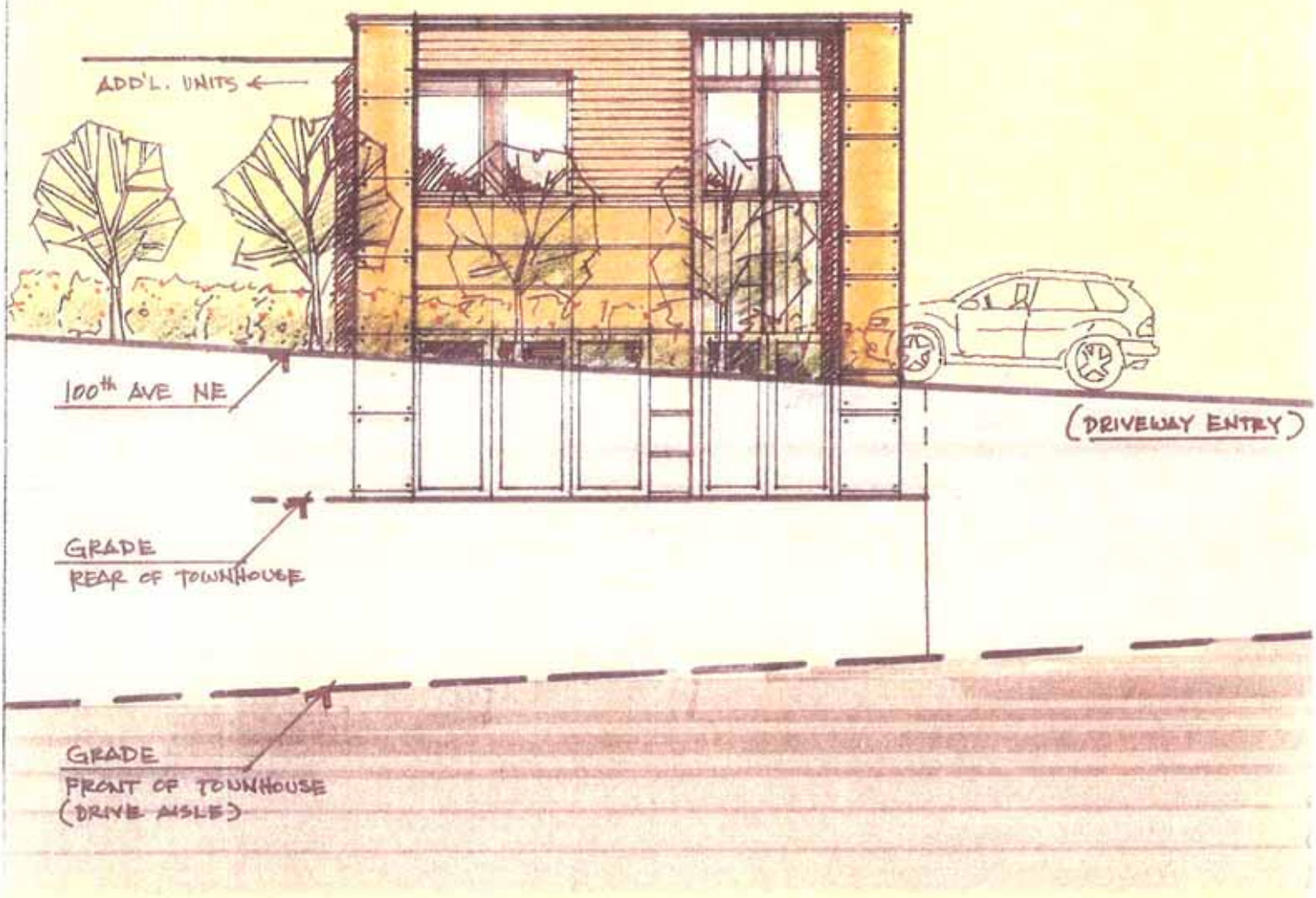
UNIT # 4
PER SITE PLAN



OLSON
TOWNHOUSES
VARIANCE REQUEST
FRONT ELEVATION - CAR
1/8" = 1'.0" (TYP. UNIT)

UNIT # 4

PER SITE PLAN



OLSON
TOWNHOUSES
VARIANCE REQUEST

REAR ELEVATION - STREET
1/8" = 1'.0" (TYP. UNIT)