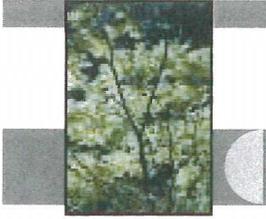


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CITY OF WOODINVILLE
DEVELOPMENT SERVICES



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06 / 01 / 15

Re: Clearwater Investments; Woodinville 10 Tree Plan

Overview



Plans for development at the site located at 13215 N.E. 205th in the City of Woodinville are in the permitting stage. Under the City of Woodinville Municipal Code requirements listed in WMC 21.15.060 an Arborist's report is stipulated.

The report is to include a species' identification of the trees found on site; an assessment of suitability for retention based on health, risk of failure and species suitability. Tree protection specifications are also required; outlining each tree's limits of disturbance (LOD) inclusive of neighboring trees where driplines overextend into the property boundaries. A site visit was made on 5 / 29 / 15 and a field study was conducted. Trees were located and identified; measurements were taken to verify the Diameter at Breast Height (DBH @ 4.5'). Dripline

measurements were also taken to facilitate the formulation of Tree Protection Specifications prior to the onset of construction activities.

Observations



The proposed project site is located on well established residential property; consistent with older properties of the same area; highly vegetated, cultivated lawn and mature trees which surround the property.

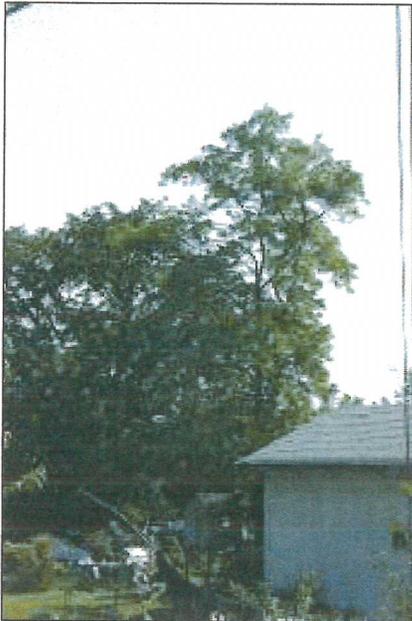
Indications are that little to no maintenance of the landscape has been done in recent years. There are signs that some of the trees have been topped or branches cut back for utility line clearance.

A survey was provided showing seven trees. Three other trees of a significant size were found on site, bringing the number of trees up to ten. The trees were identified; tagged with aluminum markers and numbered, with the corresponding numbers shown on a marked up plan. The additional trees, for reference purposes were marked up for inclusion on the plan.

The species include:

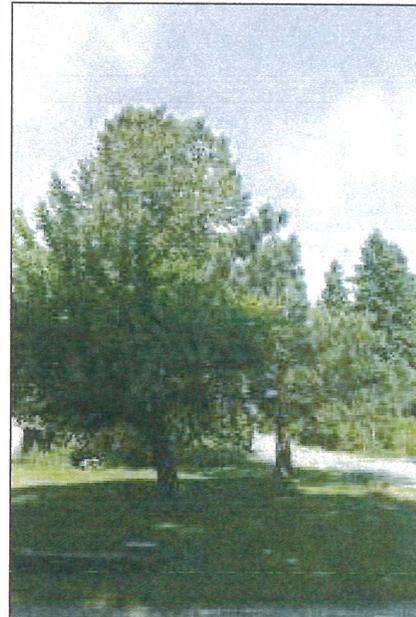
- Bigleaf Maple (*Acer macrophyllum*)
- Black Cottonwood (*Populus trichocarpa*)
- Black Locust (*Robinia pseudoacacia*)
- Crabapple (*Malus spp.*)
- European Birch (*Betula pendula*)
- Japanese Red Pine (*Pinus densiflora*)
- Scouler Willow (*Salix scouleriana*)

The majority of trees on the project site appear to have been part of an old landscape which has long been neglected. As such many of the trees contain severe structural defects with an accumulation of deadwood, dead and dying



branches and multiple incidences of previous failure. Some trees have lost their upper terminal growth and have blown-out or broken tops; or have been repeatedly topped for transmission line clearance. Subsequently, the re-growth appears distorted and unstable; asymmetrical trunks with old wounds and cavities with obvious signs of extensive internal decay. Information was gathered on each tree and shown in the categories below on fieldwork forms in the following section.

- **Tag Number** Numbered aluminum tags attached to the trunks
- **Tree Species** By common name
- **DBH** Diameter at Breast Height the trunk measured by tape at 4.5'
- **Dripline** The distance from the trunk to the edge of the canopy extension
- **Limits of Disturbance (LOD)** The boundary between the protected area around the tree and the allowable site disturbance in feet from the trunk
- **Health & Defect Rating** An assessment A to C of the overall picture of the current health and vitality of the tree. An assessment of health indicates the ability of the tree to ward off disease and decay. A good B moderate C poor
- **Species Rating** (0 to 100 percent) according to the most current published edition (9th edition) of the International Society of Arboriculture "Guide for Plant Appraisal"



- **Viability – Tree Types** Viability is derived from the health, defect and hazard ratings to assess overall suitability given site development. V, viable; NV not-viable; Tree Types are defined in WMC 21.15.060.2 (6) (B)
- **Comments** Observations on each tree and rationale for arriving at the above ratings

Tag Number	Species	DBH	Drip-line	LOD	Health & Defect	Species Rating	Tree Type Viability	Comments
1	Maple	49"	77'	39'	B	60	V-Type2	Multiple co-dominance; old wounds, deadwood, dieback, Tree to be removed
2	Locust	28"	28'	15'	C	70	NV-Type3	Internal decay in root crown, trunk, dieback, cavity, cracks, undermined; To be removed
3	Apple	18"	28'	15'	B/C	50	NV-Type 3	Internal decay, cracks, old wounds, deadwood; To be removed
4	Pine	22"	31'	15'	B/C	70	V - Type 3	Repeated line cleared, old wound, deadwood; To be removed
5	Cottonwood	26"	39'	19'	B	40	NV-Type 3	By species; prone to large limb failure causing damage; To be removed
6	Cottonwood	12"	32'	16'	B	40	NV-Type 3	By species; prone to large limb failure causing damage; To be removed
7	Willow	8"-16"	36'	18'	C	30	NV-Type 3	Multiple stems, poorly attached, broken limbs, dieback, severe decay in stems and scaffolds; To be removed
8	Cottonwood	16"	26'	13'	C	40	NV-Type 3	By species; prone to large limb failure causing damage; To be removed
9	Maple	12'	24"	12'	C	60	NV-Type 3	Multiple co-dominance, included bark, dieback, deadwood; To be removed
10	Birch	25"	60'	30'	C	50	NV-Type 3	Large old wound in trunk with associative decay, asymmetry; To be removed

Conclusions



An assessment of the trees on the property slated for development was made in order to facilitate permitting, as required by City of Woodinville Municipal Code, WMC 21.15.060. Seven trees were shown on the survey that was provided; three others were found on site. Out of the ten trees, two were found to be viable for retention based on assessed health and structural stability. Those include, tree 1, a Bigleaf Maple and tree 4, a Red Pine.

The two trees are not without problems and those problems affect their suitability: The Maple

is located on the northeast corner of the property which is close to the main thoroughfare on N.E. 205th Street. It is a large, mature tree with an extensive canopy; the dripline was measured at 77'. The tree protective measures would encompass an area of 77' with the limits of disturbance at 39' (half way between Zone A and Zone B on the diagram shown on page 10). Some of the branch attachments are less than stable and overhang the roadway. Restorative pruning and cabling would be required; along with monitoring tree condition on an annual basis. Without extensive building plan modification, long-term survivability of the tree is highly doubtful; based on impacts to the Critical Root Zone. In its current condition, the tree represents a moderate-high risk. The level of risk would increase with higher site occupancy, volume of traffic and project crew during construction activities; down the line, as the new homes become occupied with new residents.

The Red Pine will continue to be topped for line clearance; with each cut having the potential to introduce internal decay. Long-term survivability is doubtful. Because of the overgrowth of invasive plants, primarily blackberries, access to areas where neighboring trees may overextend the property was

preventive. Once the site is cleared of invasive and aggressive ground cover, an assessment of those trees can take place and tree protection specifics can be generated. General tree protection measures follow which provide guidance during construction activities.

Construction Impacts

The likelihood and extent of damage during construction depends on a number of factors:

- The current health and condition of the tree
- The location of the tree
- The proximity of the tree to the proposed construction
- The type of construction to take place within the critical root zone
- The protection provided for the tree during planning and construction

Trees are affected by construction in a number of ways; the impacts may be divided into two categories:

1. Direct Impact

2. Indirect Impact

An assessment of the effect of the impacts on an individual tree most often involves evaluating impacts from both categories and understanding the immediate and long term effects of those impacts. An example of the types of damage that occurs in each category is shown below.

1. Direct Impact

- Limb and trunk breakage during equipment access and placement
- Trunk and root damage during the demolition process
- Limb and trunk damage through direct impact from heavy equipment
- Root damage during excavation for foundations
- Root damage during trenching for utilities
- Root, trunk and limb damage during construction

2. Indirect Impact

- Soil compaction during site access

- Soil compaction and root crushing by stacking materials within the critical root zone
- Drainage and irrigation changes through run-off alterations
- Grade changes within the critical root zone
- Spillage of materials within the critical root zone

Avoiding Construction Damage

General recommendations

1. Avoid heavy traffic in the root zones of the trees and minimize heavy traffic on native soils throughout the site
2. Flag or mark any exposed roots
3. Mulch traffic areas
4. Avoid grade change around the root crown and construct tree wells if necessary
5. Fence around trees
6. Flag any overhanging limbs and inform operators
7. Avoid drastic changes in shading or exposure

The following diagram, illustrates the critical root zone divided into three impact zones. Each impact zone has a protection schedule that gives the recommended construction techniques within each zone.

Zone A: *Half way from the trunk to the dripline*

Protection Schedule 1

No disturbance allowed without site-specific Arborist inspection and approval

All excavation to be completed by hand or with the use of micro-excavator

All roots severed above 1" must be cut clean, back to laterals where possible

Severance of roots larger than 2" prohibited

No grade changes

No heavy equipment access or stockpiling of materials
Tunneled excavations may be allowed, 3' below ground level or deeper

Zone B: *From outer edge of Zone A to the dripline*

Protection Schedule 2

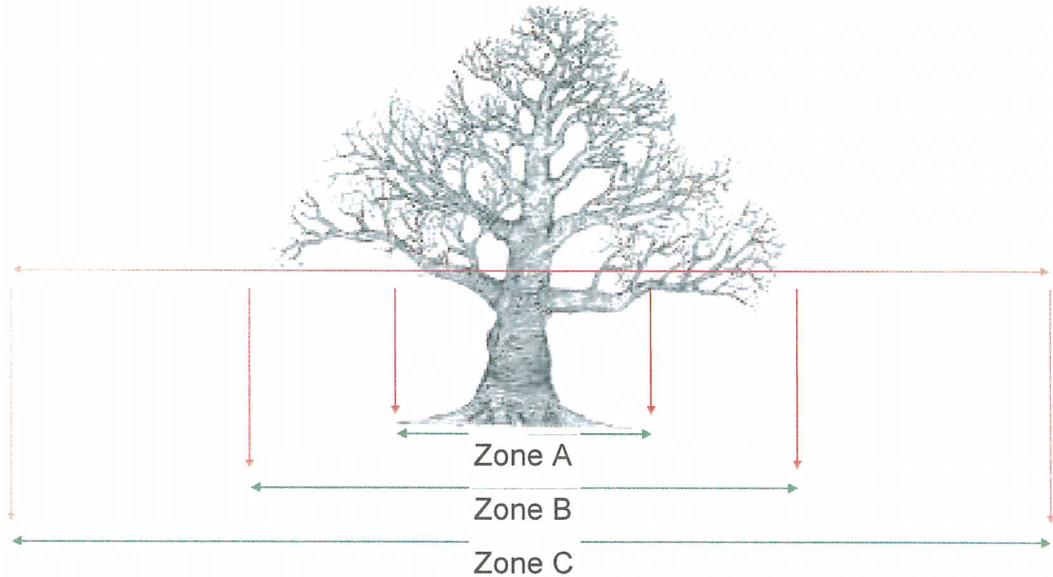
Trenching allowed only to the following guide lines
Hand dig or excavate with hand driven trencher
Limit trench width
All roots severed above 1" must be cut clean, back to laterals where possible
Do not operate heavy equipment or stockpile materials
Apply a 6" layer of wood chip mulch to minimize soil compaction from foot traffic
Minimize grade change
Erect 6' temporary chain-link fence between zones B & C to establish a Tree Protection Zone (TPZ)

Zone C: *Two times the diameter of zone B*

Protection Schedule 3

Apply a 1' layer of wood chip mulch to minimize compaction from heavy equipment
Open trenching allowed with heavy equipment
Minimize trench width
All roots severed above 1" must be cut clean, back to laterals where possible

Zones of Construction Impact on existing trees Recommendations to limit Construction Damage



ZONE A Half the area of Zone B (Half the area from the trunk to the dripline)

ZONE B The area from the trunk to the dripline (The edge of the canopy)

ZONE C Twice the area of Zone B and represents the extent of the absorbing root system

Zone A - Protection Schedule 1

- No heavy equipment traffic
- No stacking of materials or supplies
- Any roots above 1" should be cut clean back to laterals where possible
- Severance of roots over 2" in diameter prohibited
- Hand digging required to 3' depth
- Tunneling required below 3' depth
- No grade changes

No disturbance allowed without site specific arborist recommendation and approval

Zone B – Protection Schedule 2

- No heavy equipment traffic on roots
- No stacking of materials
- Apply 6" layer of wood chip mulch
- No severance of roots over 4" in diameter
- Hand digging or hand guided trencher
- Limit trench width
- Any roots above 1" should be cut clean back to laterals where possible
- Minimize grade change

6' Chain link fence around perimeter

Zone C – Protection Schedule 3

- Apply 1' layer of wood-chip mulch
- Open trenching allowed with heavy equipment
- Minimize trench width
- All roots severed above 1" in diameter must be cut clean back to laterals where possible

General Recommendations:

- Minimize heavy traffic on native soils throughout the site.**
- Flag or mark exposed roots and overhanging limbs**