TREECAREUNLIMITED

Tree Care Unlimited,.LLC
5600 Rosewood St.
Lake Oswego, OR 97035

January 3, 2012

Joel Komarek, P.E.
Director, Lake Oswego—Tigard Water Supply Partnership
P.O. Box 369
Lake Oswego, OR 97034

Dear Mr. Komarek,

Attached please find the Tree Assessment for the Water Treatment Properties at 4260 Kenthorpe Way, 4245, 4305 & 4315 SW Mapleton Dr., West Linn, Oregon. I performed the field work between August 24 and August 30. The work included assessing 480 trees of which 184 are regulated and subject to City of West Linn Tree Ordinance and Community Development Code.

Sincerely,

Kay Kinyon
International Society of Aboriculture
Certified Arborist PN 0409A

TREECAREUNLIMITED

Lake Oswego & Tigard Water Treatment Plant
4260 Kenthorpe Way, 4245, 4305 & 4315 Mapleton Dr.
West Linn, Oregon

TREE ASSESSMENT

Revised 1/9/12

Prepared For

Lake Oswego-Tigard Water Supply Partnership
P.O. Box 369
Lake Oswego, Oregon 97034

Residential and Commercial Removal•Pruning•Arboricultural Services•Consultation
MEMBER: Tree Care Industry Association•International Society of Arboriculture•Oregon Construction Contractors Assoc.State Licensed Tree Service #195179•Insured
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ARBORIST REPORT

Subject:	Tree Assessment
Address of the Report:	4260 Kenthorpe Way, 4245, 4305 & 4315 Mapleton Dr. West Linn, Oregon
Date of the Report:	January 3, 2012
Report Submitted To:	Joel Komarek Director, Lake Oswego-Tigard Water Supply Partnership City of Lake Oswego P.O. Box 369 Lake Oswego, OR 97034 Phone: 503-697-6588 FAX: 503-534-5225 E-mail: jkomarek@ci.oswego.or.us

SUMMARY

I have completed an on site assessment of all trees 5 inches in diameter or greater on the properties at 4260 Kenthorpe Way, 4245, 4305 & 4315 Mapleton Drive. This assessment includes 480 trees of which 184 are regulated by The City of West Linn Ordinance 1542 and Development Code Chapter 55. The majority of the regulated trees, approximately 79% are native or naturalized species. The remaining 21% are more exotic species that appear to have been introduced. Five perimeter trees which are just off the tax lots included in this assessment have been included to document their existence and condition.

There appear to be no Heritage trees on site.

A grove of mostly Oregon Ash trees exists along the northern end of 4245 & 4305 Mapleton Dr. Most trees in the grove contain serious defects. At 4260 Kenthorpe Way, development has displaced most native trees in a grove situation on the rest of the site. Trees with diameters of less than 12 inches exist that are in a man made grove situation but are not protected trees. That said, one small grove of mostly native trees does exist on the extreme west side of 4260 Kenthorpe Way and one that is similar in nature exists in the northeast portion of the site.

ASSIGNMENT

Tree Care & Landscapes Unlimited, Inc. was asked to perform an assessment of all trees 5 inches or greater in diameter on site including estimated height and canopy spread. The assessment also includes form, crown class, age class, and tree health. The work is to include determining if any of the assessed trees qualify for designation as a City of West Linn Heritage Tree or significant tree clusters.

OBSERVATIONS
The assessment reviewed 480 trees. Of those, 184 are regulated.

Trees covered by City of West Linn regulation include 20 different species. Regulated trees are Oregon White Oak, Pacific Madrone and Pacific Dogwood with a 6 inch diameter DBH and all other trees with a DBH of 12 inches or greater. A break out of the species is shown below in "Table 1—4260 Kenthorpe Way, 4245, 4305 & 4315 Mapleton Dr. Tree Species".

Table 1—4260 Kenthorpe Way, 4245, 4305 & 4315 Maple Dr. Regulated Trees by Species

COMMON NAME	COUNT	PERCENT
American Elm	1	0.54%
American Sweetgum	2	1.09%
Bigleaf Maple	19	10.33%
Black Cottonwood	8	4.35%
Blue Atlas Cedar	1	0.54%
Deodar Cedar	5	2.72%
Douglas Fir	3	1.63%
European White Birch	5	2.72%
Giant Sequoia	5	2.72%
Grand Fir	4	2.17%
Hawthorn, English	3	1.63%
Hinoki Falsecypress	1	0.54%
Japanese Maple	1	0.54%
London Plantree	1	0.54%
Norway Maple	1	0.54%
Oregon Ash	53	28.80%
Oregon White Oak	11	5.98%
Pacific Yew	1	0.54%
Pine	11	5.98%
Red Alder	7	3.80%
Red Oak	1	0.54%
Spruce	9	4.89%
Western Red Cedar	29	15.76%
Willow	2	1.09%
	184	100.00%

The complete Tree Assessment is found in the attached "Appendix 1—4260 Kenthorpe Way, 4245, 4305 & 4315 Mapleton Dr. Tree Assessment". "Appendix 2—4260 Kenthorpe Way, 4245, 4305 & 4315 Maple Dr. Tree Map" shows the location of all inventoried trees.

All diameters as listed in **Appendix--1** under the column, "DBH", are in inches. All diameters are measured at 54 inches above mean ground level at the base of the plant or at the narrowest trunk area below stem break in the case of multiple stem trees. Exceptions are noted in the "Comments" column. Height and spread of trees is estimated. Trunk area method was used to determine multiple stem tree diameters.

The column headed "Crown Class" refers to the stature of trees described as being Dominant, Co-dominant, or Below Canopy. The terms are relative to the subject tree grove. Dominant trees are the larger trees that have established relatively free from competition. Co-dominant trees form the majority of the grove and have grown up together as a group. Below Canopy

trees have growth that has been restricted by nearby trees. The restriction may be moderate to severe.
"Age Class" refers to the maturity of a tree. The terms Over-mature, Mature, Semi-mature and Young are used to describe this attribute. Over-mature trees are older and display significant decline such as large cavities. Mature trees are older trees that are usually near their full size and may have defects that are not significant. Semi-mature trees are maturing trees usually in good health and in the transition from young to mature. Young trees are usually much smaller than semi-mature trees and are still exhibiting juvenile vigor.
The column headed "Tree Health" describes the condition of trees surveyed which are indicated as being Very Good, Good, Fair, Poor, Very Poor or Dead. Trees rated as Very Good are prime specimens with no visible defects. Trees rated as good may have minor defects but are stable trees in good health. Trees rated as Fair usually contain at least one visible defect that may become more significant some time in the future. Poor trees contain at least one significant visible defect. The defect may be structural or cosmetic. They are usually displaying reduced vigor and may be candidates for removal. Trees rated as Very Poor contain significant defect are hazardous or near hazardous. Dead trees are dead and should be removed before decay advances to the point that they become hazardous.

DISCUSSION

The majority of trees on site are native or naturalized trees. The most significant concentration of mature native trees is located along the northeast side of 4305 Mapleton Dr. and runs along its north end and continues across the north end of 4245 Mapleton Dr. Most of the trees in the grove are over-mature Oregon Ash. A large number of these trees are in very poor condition. All trees in very poor condition are found in this grove. Most of them contain large cavities in their lower bole and root crown areas. The size and number of cavities indicates the need to further evaluate these trees for hazard risk. Details regarding these trees are shown in Table 2 below. This table is restricted to regulated trees as defined by City of West Linn Tree Ordinance (Oregon White Oak 6" DBH or greater, Pacific Madrone 6" DBH or greater, Pacific Dogwood 6" DBH or greater and all others 12" DBH or greater).

Table 2—VERY POOR REGULATED TREES TO BE FURTHER EVALUATED

NO.	COMMON NAME	DBH	TREE HEALTH	COMMENTS
13429	Western Red Cedar	24	Very Poor	24" x 20' cavity from ground on S. side.
13886	Willow	19	Very Poor	4 stems 12,6,11,8. Severe cavities & decay all stems.
14199	Oregon Ash	17	Very Poor	Stem failure at 30' above ground.
14327	Oregon Ash	15	Very Poor	Broken top. 4" limb cavity at 6.5' above ground on E side.
14367	Oregon Ash	30	Very Poor	2 stems 24,18. 4" diameter cavity at 3' above ground on S side. 2" x 12" cavity at 30' above ground on S side. Bark inclisions with excessive end weight. History of large limb failure.
14392	Oregon Ash	28	Very Poor	Cavities in trunk from ground up.
14395	Oregon Ash	21	Very Poor	10" x 3.5' cavity from 4' to 7.5' above ground on N side.
14399	Oregon Ash	27	Very Poor	16" x60" cavity from ground on S side goes all the way through trunk.
14401	Oregon Ash	15	Very Poor	3 stems 12,7,6. Thin crown. Stressed.
14403	Oregon Ash	25	Very Poor	2 stems 22,17. Broken tops on both stems. History of large limb failure.
14404	Oregon Ash	15	Very Poor	18" x 12' cavity from ground on S side.
14404.1	Oregon Ash	18	Very Poor	24" x 5' cavity from ground on N side.

NO.	COMMON NAME	DBH	TREE HEALTH	COMMENTS
14404.2	Oregon Ash	14	Very Poor	10" x 24" cavity from ground on E side.
14405	Oregon Ash	16	Poor	4 stems 8,7,11,4. 18 x 24" cavity from ground on E side.
14484	Oregon Ash	33	Very Poor	12" limb cavity at 4' above ground on N side.
14486	Oregon Ash	25	Very Poor	2 stems 22,12. 8"x24" cavity from ground on E side. Broken top. History of limb failure. Thin crown.
14488	Oregon Ash	14	Very Poor	12" x 8' cavity from ground on N side.
14489	Oregon Ash	18	Very Poor	Stem failure at 15' above ground.
14490	Oregon Ash	25	Very Poor	Stem failures at 25' above ground.
14491	Oregon Ash	29	Very Poor	4" x 24" cavity from ground on N side. 6" x 4' cavity at 40' above ground on S side.
14492	Oregon Ash	19	Very Poor	24" x 8' cavity from ground on E. side.
14493	Oregon Ash	28	Very Poor	3" x 16" cavity from ground on N side.
14493.1	Oregon Ash	16	Very Poor	3" x 4.5' cavity from ground on S side. High crown.
14494	Oregon Ash	19	Very Poor	2"x4" cavity at 2' above ground on N side.
14495	Oregon Ash	20	Very Poor	2" x 12" cavity from 1.5' above ground on E. side.
14496	Oregon Ash	29	Very Poor	2 stems 23,17. 17" stem is hollow from ground'.
14498	Oregon Ash	18	Very Poor	Cavities.
15481	Black Cottonwood	12	Very Poor	Broken top at 30' above ground.
15490	Western Red Cedar	24	Very Poor	Broken top at 30' above ground.
15491	Western Red Cedar	22	Very Poor	Broken top at 20' above ground.
15492	Western Red Cedar	12	Very Poor	Brokne top at 20" above ground.
15581	Western Red Cedar	20	Very Poor	Broken trunk is hollow.
15594	Bigleaf Maple	16	Very Poor	Broken top at 30' above ground.
15607	Bigleaf Maple	33	Very Poor	Failed stem with cavity at 15' above ground.
15610	Bigleaf Maple	29	Very Poor	Dead leader on S. side.
15625	Red Alder	14	Very Poor	Broken top.
15626	Red Alder	18	Very Poor	Broken top.
15629.1	Bigleaf Maple	21	Very Poor	Broken top.
105019	Oregon Ash	32	Very Poor	Decay in lower bole.
105024	Oregon Ash	12	Very Poor	18" x 12' cavity from ground on W side.
105027	Oregon Ash	20	Very Poor	2 stems 12,16. 15"x24" cavity from ground W.

Eleven regulated Oregon White Oaks exist on the site but are not organized into a native oak grove. Instead, they are scattered across the entire site. Five of the Oaks(#14180, #14191, #14252, #14349 & #14480) are growing inside the property lines of the three tax lots that front on Mapleton Dr. A sixth Oregon White Oak(#14438) is growing in the Mapleton Dr. right of way. Six Oregon White Oaks exist on the 4260 Kenthorpe property. They include Trees #13728.3, #13886.1, #13992.4, #14245, #14403.1 & #15476.

The remaining trees appear to have been planted by past residents. They include fruit trees and introduced ornamental landscape varieties. There are also a number of native west coast species not necessarily native to the Willamette Valley that have been planted as landscape trees. Many trees at 4315 Mapleton Dr. are examples of these plantings. Most trees at 4260 Kenthorpe Way are less than 12" DBH and appear to have been planted as a result of past development. These trees are predominantly Western Red Cedar, Douglas Fir and other ornamental landscape varieties.

Two Pacific Waxmyrtles and one 23 inch Oregon Ash are located in the Kenthorpe right of way. The Waxmyrtles are less than 12 inches in diameter and are not regulated. The Oregon

Ash is regulated and is in Very Poor condition and has been determined to be a hazard tree in a previous evaluation.

The inventory of all trees on site was reviewed to determine if there are any candidates that could be considered as possible Heritage Trees. Three possibilities meeting minimum diameter requirements emerged. However, none of them met the score requirement of 180 points. The trees and their scores are shown below in "Table 3 Heritage Tree Candidates".

Table 3—Heritage Tree Candidates

No.	Species	Diameter	DBH Rating	Condition	Location	Historical Factor	Heritage Score
14478	Giant Sequoia	59	5	5	6	1	150
14479	Giant Sequoia	49	5	5	6	1	150
14482	Oregon Ash	39	5	2	6	1	60

SPECIFICATIONS FOR TREE PROTECTION DURING CONSTRUCTION

TREE PROTECTION ZONE (TPZ)

Each tree to be retained shall have a designated tree protection zone (TPZ) identifying the area sufficiently large enough to protect the tree and roots from disturbance. The standard for computing the size of the TPZ shall be a 1/2 foot radius per caliper inch measured from the trunk of the tree. For example, a 30 inch DBH tree would have a TPZ with a radius of 15 feet from the trunk, or a 30 foot diameter full circle around it. The tree protection zone shall be shown on all site plans for the project. Improvements or activities such as paving, utility and irrigation trenching and other ancillary activities shall occur outside the tree protection zone, unless authorized by the City Arborist, or by project approval. Unless otherwise specified, the protective fencing shall serve as the tree protection zone. Activities prohibited within the tree protection zone include:

- Storage or parking vehicles, building materials, refuse, excavated spoils or dumping of poisonous materials on or around trees and roots. Poisonous materials include, but are not limited to, paint, petroleum products, concrete or stucco mix, dirty water or any other material which may be deleterious to tree health.
- The use of tree trunks as a winch support, anchorage, as a temporary power pole, sign posts or other similar function.
- Cutting of tree roots by utility *trenching*, foundation digging, placement of curbs and trenches and other miscellaneous excavation without prior approval of the City Arborist.
- Soil disturbance or grade change.
- Drainage changes.

Activities permitted or required within the tree protection zone include:

- Mulching. During construction, wood chips may be spread within the TPZ to a 4-to 6-inch depth, leaving the trunk clear of mulch to help inadvertent *compaction* and moisture loss from occurring. The mulch may be removed if improvements or other landscaping is required. Mulch material shall be 2-inch unpainted, untreated wood chip

mulch or approved equal.

- Root Buffer. When areas under the tree canopy cannot be fenced, a temporary buffer is required and shall cover the root zone and remain in place at the specified thickness until final grading stage.
- Irrigation, aeration, fertilizing or other beneficial practices that have been specifically approved for use within the tree protection zone.
- Erosion Control. If a tree is adjacent to or in the immediate proximity to a grade slope of 8% or more, then approved erosion control or silt barriers shall be installed outside the TPZ to prevent siltation and/or erosion within the tree protection zone.

TREE PROTECTION FENCING

Fenced enclosures shall be erected around trees to be protected to achieve three primary goals, (1) to keep the foliage crowns and branching structure clear from contact by equipment, materials and activities; (2) to preserve roots and soil conditions in an intact and non-compacted state and; (3) to identify the tree protection zone in which no soil disturbance is permitted and activities are restricted, unless otherwise approved.

- **Size and type of fence:** All trees to be preserved shall be protected with six foot high chain link fences six foot high "no climb" wire fencing. Fences are to be mounted on two inch diameter galvanized iron posts or 8' studded tee steel fence posts, driven into the ground to a depth of at least 2-feet at no more than 10-foot spacing. This detail shall appear in the construction plan set, and can be referenced in the City's Construction Standards.
- **Area to be fenced:** The fences shall enclose the entire area within the tree protection zone of the tree(s) to be saved throughout the life of the project as mapped by the building permit approval, or as mapped within the tree protection and preservation plan contained in the Arborist Report for the project. The fencing shall remain until final improvement work within the area is required, typically near the end of the project. If the fencing must be located on paving or sidewalk that will not be demolished, the posts may be supported by an appropriate grade level concrete base. For trees situated within a narrow planting strip, only the planting strip shall be enclosed with the required chain link protective fencing in order to keep the sidewalk and street open for public use. Trees situated in a small tree well or sidewalk planter pit, shall be wrapped with 2-inches of orange plastic fencing as padding from the ground to the first branch with 2-inch thick wooden slats bound securely on the outside. During installation of the wood slats, caution shall be used to avoid damaging any bark or branches. Major scaffold limbs may also require plastic fencing as directed by the project arborist or City Arborist.
- **Duration:** Tree fencing shall be erected before demolition, grubbing, grading or construction begins and remain in place until final inspection of the project permit, except for work specifically required in the approved plans in which case the project arborist or City Arborist (in the case of street trees) must be consulted.
- **Warning Sign:** A warning sign shall be prominently displayed on each fence. The sign shall be a minimum of 8.5 x 11-inches and clearly state:
    - WARNING:

    Tree Protection Zone.
- **Violations:** The penalty for the unauthorized removal or relocation of a tree protection fence, and/or unauthorized activity within a TPZ, is $500, plus $500 per day until the fence is repaired or replaced and any damage to the tree properly mitigated.

TREE PROTECTION ALERNATIVE

In situations where construction impact intrudes into a TPZ but is compatible with the long term viability of the tree(s) as determined by the project arborist the project arborist may prescribe alternative tree protection to fencing. Such protection measures may include minimum 12 inch thick wood chip layer over a soil cloth base. Steel plates placed over the ground to protect TPZ from soil compaction may also be an example of a project arborist prescribed alternative protection measure.

CONSTRUCTION MEETING AND INSPECTION SCHEDULE

A certified arborist may be required to be retained by the applicant during the construction of large development projects. This project arborist retained shall conduct the following required inspections for the duration of construction activity. Correspondence may be as simple as e-mail in some cases or may require larger documents with tables, photographs, etc. for others.

- **Inspection of Protective Tree Fencing:** The City Arborist shall be in receipt of a written statement from the applicant or project arborist verifying that the protective tree fencing has been installed and may be inspected by the City Arborist prior to issuance of a demolition, grading, or building permit, unless otherwise approved.
- **Pre-Construction Meeting:** Prior to commencement of construction, the applicant or contractor may be required to conduct a pre-construction meeting to discuss tree protection with the job site superintendent, grading equipment operators, certified arborist, and City Arborist.
- **Monthly Inspections:** If a project arborist is required for the development project, he/she shall perform monthly inspections to monitor changing conditions and tree health. The City Arborist shall be in receipt of an inspection summary during the first week of each calendar month or, immediately if there are any changes to the approved plans or protection measures.
- **Special Activity Within the Tree Protection Zone:** Work in this area (TPZ) requires the direct onsite supervision of the project arborist or City Arborist.
- **Project Summary and Conclusion:** A brief summary discussing the project's trees shall be submitted to the City Arborist at the conclusion of all construction activity. It shall include concerns about trees that may have been negatively impacted as well as recommendations for care of the trees in the future.

TREE PRUNING, SURGERY AND REMOVAL

Prior to construction, various trees may require that branches be pruned clear from structures, activities, building encroachment or may need to be strengthened by means of mechanical support or surgery. The most compelling reason to prune is to develop a strong, safe framework and tree structure. Such pruning, surgery or the *removal* of trees shall adhere to the following standards:

- **Minimum Pruning:** If the project arborist recommends that trees be pruned, and the type of pruning is left unspecified, the standard pruning shall consist of *'crown cleaning'* as defined by ISA pruning guidelines. Trees shall be pruned to reduce hazards and develop a strong, safe framework.
- **Maximum Pruning:** Maximum pruning should only occur in special situations approved by the City Arborist. No more than one-third (33 percent) of the functioning leaf and stem area may be removed within one calendar year of any tree, or removal of foliage so as to cause the unbalancing of the tree. It must be recognized that trees are individual in form and structure, and that pruning needs may not always fit strict rules. The project arborist shall assume all responsibility for special pruning practices

that vary from the standards outlined in this manual.

- **Tree Workers:** Pruning shall not be attempted by construction or contractor personnel, but shall be performed by a qualified tree care specialist or certified tree worker, according to specifications contained within the City of West Linn Tree Technical Manual.
- **Surgery:** Prior to construction, if it is necessary to promote health and prolong useful life or the structural characteristics, then trees shall be provided the appropriate treatments as specified by the project arborist or City Arborist.
- **Tree Removal:** Removal of trees that extend into the branches or roots of protected trees shall not be attempted by demolition or construction personnel, grading or other heavy equipment. A certified arborist or tree worker shall remove the tree carefully in a manner that causes no damage above or below ground to trees that remain.
- **Stump Removal:** Before performing stump extraction, the developer shall first consider whether or not roots may be entangled with trees that are to remain. If so, these stumps shall have their roots severed before extracting the stump. *Removal* shall include the grinding of stump and roots to a minimum depth of 24-inches but expose soil beneath stump to provide drainage. In sidewalk or small planter areas to be replanted with a new tree, the entire stump shall be removed and the planting pit dug to a depth of 30-inches. If dug below 30-inches, compact the backfill to prevent settling. Large surface roots three feet from the outside circumference shall be removed, including the spoils and backfilled with City approved topsoil to grade, and the area tamped to settle the soil.

CONSTRUCTION ACTIVITY

Construction is normally prohibited in the TPZ. Under certain circumstances it may be necessary to work in the TPZ, however only with approval from the City Arborist. If any construction activity is to occur in the TPZ the following guidelines apply:

- **Excavation and Grading**

The following guidelines shall be followed in regard to excavation and grading activities:

1. Contractor shall notify the Project Arborist and City Arborist a minimum of 24 hours in advance of the activity in the tree protection zone.
2. Roots that are encountered shall be cut to sound wood and repaired. Roots 2-inches and greater must remain injury free and uncut.
3. Any approved excavation, demolition or extraction of material shall be performed with equipment sitting outside the tree protection zone. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology. Avoid excavation within the TPZ during hot, dry weather. If excavation or trenching for drainage, utilities, irrigation lines, etc.,
4. Grade changes within the tree protection zone are not permitted unless approved by the City Arborist.
5. Grade changes outside of the tree protection zone shall not significantly alter drainage within the TPZ.
6. Grade changes under specifically approved circumstances shall not allow more than 6-inches of fill soil added or allow more than 4-inches of existing soil to be removed from natural grade.
7. Grade fills over 6-inches or impervious overlay shall incorporate an approved permanent aeration system, permeable material or other approved mitigation.
8. Grade cuts exceeding 4-inches shall incorporate retaining walls or an appropriate transition equivalent.

9. If excavation or trenching for drainage, utilities, irrigation lines, etc., it is the duty of the contractor to tunnel under any roots 2-inches in diameter and greater. Prior to excavation for foundation/footings/walls, grading or trenching within the TPZ, roots shall first be severed cleanly 1-foot outside the tree protection zone and to the depth of the future excavation. The trench must then be hand dug and roots pruned with approved root pruning equipment.
10. If injurious activity or interference with roots greater than 2-inches will occur within the tree protection zone, plans shall specify a design of special foundation, footing, walls, concrete slab or pavement designs subject to *City Arborist* approval. Discontinuous foundations such as concrete pier and structural grade beam must maintain natural grade (not to exceed a 4-inch cut), to minimize root loss and allow the tree to use the existing soil.
11. Basement excavations shall be designed outside the tree protection zone of all protected trees unless approved by the City Arborist, and shall not be harmful to other neighboring property trees.
12. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited unless approved by the Project Arborist. If allowed, a protective root buffer is required. The protective buffer shall consist of a base course of tree chips spread over the root area to a minimum of 6-inch depth, layered by 3/4-inch quarry gravel to stabilize 3/4-inch plywood on top. This buffer within the tree protection zone shall be maintained throughout the entire construction process.

Trenching, Tunneling and Directional Drilling for Utilities

1. If trenching or pipe installation has been approved within the tree protection zone, then the trench shall be either cut by hand, air-spade, hydraulic vacuum excavation or, by mechanically boring the tunnel under the roots with a horizontal directional drill and hydraulic or pneumatic air excavation technology.
2. Utility pipe must be installed immediately, backfilled with soil and soaked within the same day.
3. Street Trees that are in conflict with utility infrastructure where the conflict cannot be resolved may be removed if approved by the City Arborist. All Street Tree removals are subject to replacement.
4. Emergency utility repairs shall be exempt from the above restriction zones within the Tree Protection Zone. The City Arborist shall be contacted after any such repairs that may result in significant tree damage or removal.

- **Pavement and Hardscape**

Conflicts may occur when tree roots grow adjacent to paving, foundations, sidewalks or curbs (hardscape). Improper or careless extraction of these elements can cause severe injury to the roots and instability or even death of the trees. The following alternatives must first be considered before root pruning within the tree protection zone of a tree:

1. Grinding a raised sidewalk edge.
2. Ramping the walking surface over the roots.
3. Routing the sidewalk around the tree roots.
4. Install flexible paving or rubberized sections.
5. On private property, new sidewalk or driveway design should consider alternatives to conventional pavement and sidewalk materials. Substitute permeable materials for typical asphalt or concrete overlay, sub-base or footings to consider are: permeable

paving materials (such as ECO-Stone or RIMA pavers), interlocking pavers, flexible paving, wooden walkways, porches elevated on posts and brick or flagstone walkways on sand foundations.

Removal of existing pavement over tree roots shall include the following precautions:

1. Break hardscape into manageable pieces with a jackhammer or pick and hand load the pieces onto a loader. The loader must remain on undisturbed pavement or off exposed roots.
2. Do not remove base rock that has been exploited by established absorbing roots.

Replacement of pavement or sidewalk:

1. An alternative to the severance of roots greater than 2- inches in diameter should be considered before cutting roots.
2. If an alternative is not feasible, remove the sidewalk, remove roots only as approved by the City Arborist and replace sidewalk using #3 dowels at the expansion joint if within 10-feet of a street tree. Use a wire mesh reinforcement within if within 10-feet of the trunk of a protected or street tree. Any work in the right-of-way requires a street work permit from Public Works Department.

Conflicts and associated costs can be avoided or reduced by the following planting practices:

1. Plant deep rooted trees that are proven to be non-invasive.
2. Over soil that shrinks and swells, install a sidewalk with higher strength that has wire mesh and/or expansion slip joint dowel reinforcement.
3. Follow soil loosening planting techniques to promote deep rooting.
4. Install root barrier only along the hardscape area of the tree and allow roots to use open lawn or planter strip areas.
5. Dedicate at least 10-linear feet of planting space for the growth of each tree.
6. When designing hardscape areas near trees, the project architect or engineer should consider the use of recommended base course material such as an engineered structural soil mix.

- **Invasive species removal**

Often, contractors will be required to remove invasive plant species from the understory in TPZ's. In most cases, native understory plants shall be saved and the area will be fully cleared of invasive species. The following practices must be followed when removing invasives:

1. The preferred method for invasive plant removal, is by hand, extracting the entire plant, including the roots. Other manual methods include cutting the plants to ground level, either mechanically, or with hand tools, and spraying the new growth with an approved herbicide. In either case, native understory plants may not be harmed or removed.
2. If heavy machinery is used, for example, a brush rake attached to an excavator, the machine must stay outside of the TPZ and "reach" into the area, carefully extracting the invasives without damaging the protected trees or native understory whatsoever.
3. In some cases, a restoration of native understory may be required. An approved list of native plants is included as *appendix B*

CONSTRUCTION DAMAGE TO PROTECTED TREES

Any damage or injury to trees shall be reported within 6-hours to the Project Arborist and Site Superintendent or City Arborist so that mitigation can take place. All mechanical or chemical injury to branches, trunk or to roots over 2-inches in diameter shall be reported in the monthly inspection report. In the event of injury, the following mitigation and damage control measures shall apply:

- **Root injury:** If trenches are cut and tree roots 2-inches or larger are encountered they must be cleanly cut back to a sound wood lateral root. All exposed root areas within the TPZ shall be backfilled or covered within one hour. Exposed roots may be kept from drying out by temporarily covering the roots and draping layered burlap or carpeting over the upper 3-feet of trench walls. The materials must be kept wet until backfilled to reduce evaporation from the trench walls.
- **Bark or trunk wounding:** Current bark treatment methods shall be performed by a qualified tree care specialist within two days.
- **Scaffold branch or leaf canopy injury:** Remove broken or torn branches back to an appropriate branch capable of resuming terminal growth within five days. If leaves are heat scorched from equipment exhaust pipes, consult the Project Arborist within 6 hours.

Construction Injury Mitigation

A mitigation program may be required if it is found the approved development will cause drought stress, dust accumulation or soil compaction to trees that are to be saved. To help reduce impact injury, one or more of the following mitigation measures shall be implemented and supervised by the Project Arborist as follows:

- **Irrigation Program:** Irrigate to wet the soil within the tree protection zone to a depth of 24-inches to 30-inches. Or, apply sub-surface irrigation at regular specified intervals by injecting on approximate 3-foot centers, 10-gallons of water per inch trunk diameter within the tree protection zone. Duration shall be until project completion or monthly until seasonal rainfall totals at least 8-inches of rain, unless specified otherwise by the certified arborist.
- **Dust Control Program:** During periods of extended drought, wind or grading, spray wash trunk, limbs and foliage to remove accumulated construction dust.
- **Compaction Mitigation:** If inadvertent compaction of the soil has occurred within the tree protection zone, the soil shall be loosened by one or more of the following methods to promote favorable root conditions: vertical mulching, soil fracturing, core-venting, radial trenching or other method approved by the City Arborist.
- **Aeration System:** If an approved paving, hardscape or other compromising material encroaches within the tree protection zone, an aeration system may be required and shall be designed by the Project Arborist and used within this area.

Non-compliance, Penalty and Enforcement

Non-compliance with any City mandated mitigation shall result in enforcement of penalties set forth in section 8.740 of the West Linn Tree Ordinance.

NOTE: This tree protection plan identifies construction protection measures to prevent unwarranted tree loss. The identified measures limit the amount of earth disturbance surrounding the trees, and limit the removal of the tree's root systems. Due to the variation of every project, it is unlikely all of the above identified measures can be practicably applied to each individual tree; nor is it likely each measure is necessary to retain each tree. Prior to the beginning of construction a meeting between a certified arborist and the necessary contractors will be held to determine the appropriate level of protection for each tree, in relation to what work needs to be completed in the tree's vicinity. On site supervision by a certified arborist will be determined and supplied as necessary.

MITIGATION TREE MAINTENANCE RECOMMENDATIONS

TREE PLANTING SPECIFICATIONS

Planting specifications apply for trees that are planted as a replacement for a tree approved for removal. Using the following specifications will result in consistent city-wide plantings, and superior tree growth and vitality. To achieve this, landscape architects shall incorporate these items into their specifications.

PLANTING STOCK

It is the contractor's responsibility to supply stock that meets ANSI 760.1-1996 and City of West Linn *Tree Technical Manual Standards.* All plants and trees installed within the City of West Linn shall conform with American Association of Standards, ANSI Z60.1, *Specifications for Acceptance of Nursery Trees at the Time of Delivery*, in all ways.

- Plants shall be sound, healthy, vigorous, and free of plant disease and insect pests and their eggs.
- Container stock shall be grown for at least 8-months in containers in which delivered and shall not be root bound or have girdling roots.
- Trees shall not have been topped or headed.
- Plants and trees with broken tops, branches or injured trunks shall be rejected.

RECOMMENDED MITIGATION TREES

There are many trees available that are appropriate for use as mitigation trees, and new varieties are being developed every year. The City shall maintain a list of appropriate trees for planting in the City, either as street trees, or for use in yards, parks, etc. and is *appendix A* to the City of West Linn Tree Technical Manual. The list will be updated periodically as new varieties are available, or as information is received about diseases, insects and other nuisances. Please consider the location, size of planting area, and other site specific variables when choosing a tree.

MISCELANEOUS MATERIALS

The following materials shall be used unless otherwise specified:

- **Tree stakes:** Support stakes shall be treated 2-inch diameter pine or equal,

two stakes per tree. No cross brace shall be used. After installation, stakes shall be trimmed so that the branches clear the top of the stake.

- **Tree Ties:** Twist brace, fabric-reinforced rubber (3/8-inch minimum), or equivalent approved by the City of West Linn shall be used and installed in a figure eight fashion to support the tree to the stakes.
- **Mulch:** Screened untreated wood chips, bark dust or approved equal, spread to a 2-inch depth out to the edge of the root ball. The mulch should be kept at least two inches away from the trunk and shall be applied to each tree.
- **Mower guards:** For trees in turf areas requiring regular mowing, the tree stem shall be protected with Tree Guard or equivalent.
- **Tree Grates:** Where sidewalk width is less than 8-feet and new trees will be installed in a tree well, metal tree grates shall be used and approved by Public Works. Minimum size grates shall be 4' x 4' unless specified otherwise. All tree grates shall be mounted in frames inset into a concrete foundation within the sidewalk or surface material and shall be flush with the surrounding surface.

SOIL PREPARATION AND CONDITIONING

- All debris, wood chips, pavement, concrete and rocks over 2-inches in diameter shall be removed from the planting pit to a minimum of 24-inch depth, unless specified.
- Trees in a confined planter pit or sidewalk area: The planting hole shall be excavated to a minimum of 30-inches deep x the width of the exposed area. Scarify the sides of the pit. Soil beneath the root ball shall be compacted to prevent settling.
  Trees in all other areas: Excavate the hole's width a minimum of three times the diameter of the container, and deep enough to allow the root ball of the container to rest on firm soil. Scarify the sides and the bottom of the pit.
  The height of the container root ball should be 1-2-inches higher than grade level, except when structural urban tree soil mix is used, in which case the tree may be planted at level grade.
  If the soil is dry, add a few inches of water in the hole. Let it drain before planting the tree.

PLACING THE TREE

Roots: Remove tree from the container and trim the root ball in the following Way. Straighten and/or cut cleanly any thick circling roots. For thin roots, make three to four vertical cuts 1/2-inch deep around root ball and spread the bottom out if necessary

Orientation: Locate the tree in the hole, and rotate the tree to direct the main branches away from the street side, if possible.

Filling the Hole: Place the aeration tubes, fill the hole halfway up with original soil (amended soil only when approved), and gently tamp out air pockets with a pole or shovel handle. Add about 1 -inch of water, and let drain. Fill the rest of the hole to grade, water the fill soil, and let drain.

Staking: Place the stakes at the edge of the root ball (drive them 2-feet into undisturbed ground), and avoid contact with the branches. If in a windy area, set the stakes in a plane at right angles to the wind. Remove the nursery stake. Loosely place two ties in a figure eight around the trunk, as low as needed to hold the tree upright and nail to the stake. Stakes shall be trimmed so that the

branches clear the top of the stake. Do not install a cross-brace.

Berm, Mulch and Water: In non-turf areas, form a soil berm 3 to 4-inches high at the outermost edge of the root ball. Place 1 to 2-inches of mulch or bark over root ball and berm, keeping the mulch away from the trunk a minimum of 2-inches. Fill the berm with water to capacity.

Turf Areas: In turf areas that receive regular watering, the watering berm may be eliminated. The turf shall be maintained a minimum of one foot from the new tree stem, and mulch placed on top of the root ball. The mulch shall not be touching the tree stem.

Aeration Tubes for Trees: If required, 4-inch diameter perforated aeration tubes with grated plastic caps placed at the edge of the root ball to the bottom of the pit. Irrigation heads shall not be installed inside the aeration pipes. Any of the above holes, pipes, grates or fixtures shall include the installation of Filter Fabric wrap over the side openings and secured as recommended by manufacturer when connected to an approved aeration system.

Alternate Specifications: Occasionally, tree planting must occur in poor or difficult soil where standard planting techniques will result in poor-to-average performance or mortality (such as unique or unusual regional geology, slope,oil volume, restrictive physical or chemical properties, poor drainage, etc.). In this case, the responsible party must investigate alternative solutions to enable long term tree growth. Alternative planting specifications or plans that vary from the native or typical soil conditions shall be submitted to the *City Arborist* for approval prior to installation. Alternative or specified soils, such as engineered, amended or structural urban tree soil mix, including written specifications and physical samples, shall be submitted for approval from the City Arborist and/or Landscape Architect.

CONCLUSIONS

Of the 480 trees on site, 38% are trees regulated by City of West Linn ordinance. About 30 percent of the regulated trees are native Oregon Ash most which are in Poor to Very Poor condition and should be further evaluated for hazard risk. No trees qualifying for status as Heritage Trees were found.

Sincerely,

Kay Kinyon
Tree Care & Landscapes Unlimited, Inc.
Certified Arborist by the International
Society of Arboriculture, #PN-0409

APPENDIX 1--4260 Kenthorpe Way, 4245, 4305, 4315 Mapleton Drive Tree Assessment

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
13082	Black Cottonwood	*Populus trichocarpa*	21	80	40	Fair	Dominant	Mature	Poor	Yes	Yes	6" x 24" cavity from ground on N. side.
13083	Black Cottonwood	*Populus trichocarpa*	23	90	45	Fair	Fair	Mature	Fair	Yes	Yes	
13084	Black Cottonwood	*Populus trichocarpa*	16	80	40	Fair	Dominant	Mature	Fair	Yes	Yes	
13084.1	Douglas Fir	*Fraxinus latifolia*	5	20	10	Fair	Below Canopy	Young	Poor	No	Yes	Girdled with staking wires.
13387	Shore Pine	*Pinus contorta*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
13388	Western Red Cedar	*Thuja plicata*	15	30	30	Good	Below Canopy	Young	Good	Yes	Yes	6 stems 10,6,6,7,3,3.
13389	Western Red Cedar	*Thuja plicata*	12	30	20	Good	Below Canopy	Young	Good	Yes	Yes	
13390	Callery Pear	*Pyrus calleryana*	5	20	15	Good	Below Canopy	Young	Good	No	Yes	
13390.1	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
13390.1	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
13402	Canadian Hemlock	*Tsuga canadensis*	8	25	15	Good	Single tree	Semi-mature	Good	No	No	
13429	Western Red Cedar	*Thuja plicata*	24	35	20	Fair	Co-dominant	Mature	Very Poor	Yes	Yes	24" x 20' cavity from ground on S. side.
13431	Grand Fir	*Abies grandis*	10	25	15	Good	Below Canopy	Young	Good	Yes	Yes	
13431.1	Western Red Cedar	*Thuja plicata*	4	20	10	Good	Below Canopy	Young	Good	No	Yes	
13431.2	Western Red Cedar	*Thuja plicata*	11	30	20	Good	Below Canopy	Young	Good	No	Yes	
13431.3	Western Red Cedar	*Thuja plicata*	6	20	10	Good	Below Canopy	Young	Good	No	Yes	
13431.4	Western Red Cedar	*Thuja plicata*	4	20	10	Good	Below Canopy	Young	Good	No	Yes	
13431.5	Western Red Cedar	*Thuja plicata*	5	20	10	Good	Below Canopy	Young	Good	No	Yes	
13431.6	Western Red Cedar	*Thuja plicata*	6	25	12	Good	Below Canopy	Young	Good	No	Yes	
13431.7	Western Red Cedar	*Thuja plicata*	11	30	12	Good	Below Canopy	Young	Good	No	Yes	
13431.8	Western Red Cedar	*Thuja plicata*	7	30	12	Good	Below Canopy	Young	Good	No	Yes	
13432	Western Red Cedar	*Thuja plicata*	39	40	25	Good	Co-dominant	Semi-mature	Good	Yes	Yes	
13433	Western Red Cedar	*Thuja plicata*	29	40	30	Good	Co-dominant	Mature	Poor	Yes	Yes	7" x 6' cavity from ground on W. side.
13434	Western Red Cedar	*Thuja plicata*	29	40	30	Good	Co-dominant	Mature	Poor	Yes	Yes	6" x 20' cavity from ground on W. side.
13435	Bigleaf Maple	*Acer macrophyllum*	39	70	40	Good	Dominant	Mature	Good	Yes	Yes	2 stems 26,29.
13437	Pacific Waxmyrtle	*Myrica californica*	11	20	25	Fair	Below Canopy	Mature	Poor	No	Yes	4 stems 7,7,3,4. Topped. Stem cavities.
13438	Pacific Waxmyrtle	*Myrica californica*	10	20	25	Fair	Below Canopy	Mature	Poor	No	Yes	Topped. Trunk cavity. Measured at 3' above ground.
13441	Bigleaf Maple	*Acer macrophyllum*	26	70	40	Fair	Co-dominant	Over-mature	Very Poor	Yes	Yes	3' x 3' cavity with bark inclusion from ground on W. side.
13442	Western Red Cedar	*Thuja plicata*	31	80	30	Good	Dominant	Mature	Good	Yes	Yes	
13443	Grand Fir	*Abies grandis*	28	80	20	Fair	Co-dominant	Over-mature	Poor	Yes	Yes	4" x 24" cavity from ground on W. side.
13463	Grand Fir	*Abies grandis*	30	60	25	Fair	Co-dominant	Mature	Poor	Yes	Yes	Thin crown.
13464	Grand Fir	*Abies grandis*	29	60	25	Fair	Co-dominant	Mature	Fair	Yes	Yes	
13542	Magnolia	*Magnolia sp.*	10	25	20	Good	Below Canopy	Young	Good	No	No	
13614	Western Red Cedar	*Thuja plicata*	11	30	20	Good	Co-dominant	Young	Good	No	No	
13615	Magnolia	*Magnolia sp.*	8	25	20	Good	Below Canopy	Young	Good	No	Yes	2 stems 6,5.
13616	Western Red Cedar	*Thuja plicata*	15	30	25	Good	Co-dominant	Young	Good	Yes	Yes	3 stems 8,7,10.
13617	Western Red Cedar	*Thuja plicata*	13	45	20	Good	Dominant	Semi-mature	Good	Yes	Yes	2 stems 10,8.
13617.1	Does Not Exist											Does Not Exist
13618	Blue Atlas Cedar	*Cedrus atlantica 'Glauca'*	14	50	25	Good	Dominant	Semi-mature	Good	Yes	Yes	
13619	Deodar Cedar	*Cedrus deodara*	18	60	30	Good	Dominant	Semi-mature	Good	Yes	Yes	
13620	Deodar Cedar	*Cedrus deodara*	19	50	25	Good	Dominant	Semi-mature	Good	Yes	Yes	
13621	Shore Pine	*Pinus contorta*	10	30	20	Fair	Co-dominant	Young	Poor	No	Yes	
13622	Shore Pine	*Pinus contorta*	10	30	15	Fair	Co-dominant	Young	Fair	No	Yes	
13623	Shore Pine	*Pinus contorta*	11	30	15	Fair	Co-dominant	Young	Poor	No	Yes	Borers.
13625	Shore Pine	*Pinus contorta*	9	30	15	Fair	Co-dominant	Young	Poor	No	Yes	
13626	Shore Pine	*Pinus contorta*	9	35	15	Fair	Co-dominant	Young	Poor	No	Yes	Thin crown. High crown. Borers.
13627	Shore Pine	*Pinus contorta*	11	35	15	Good	Co-dominant	Young	Good	No	Yes	
13628	Deodar Cedar	*Cedrus deodara*	15	45	20	Good	Co-dominant	Young	Good	Yes	Yes	
13629	Blue Atlas Cedar	*Cedrus atlantica 'Glauca'*	9	35	15	Good	Co-dominant	Young	Poor	No	Yes	Girdling root.
13630	Deodar Cedar	*Cedrus deodara*	14	40	20	Good	Co-dominant	Young	Good	Yes	Yes	
13631	Blue Atlas Cedar	*Cedrus atlantica 'Glauca'*	11	35	15	Good	Co-dominant	Young	Good	No	Yes	
13658	Bigleaf Maple	*Acer macrophyllum*	17	30	30	Good	Below Canopy	Young	Good	No	Yes	8 stems 8,5,8,5,6,7,4,4
13689	Pacific Waxmyrtle	*Myrica californica*	11	20	25	Fair	Below Canopy	Mature	Poor	Yes	Yes	6 stems 6,5,3,3,5,5. Cavities in all stems. Topped. Stem

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
13690	Pacific Waxmyrtle	*Myrica californica*	9	12	15	Fair	Below Canopy	Mature	Poor	No	Yes	2 stems 6,3.
13728	Western Red Cedar	*Thuja plicata*	8	35	20	Fair	Co-dominant	Young	Good	No	Yes	
13728.1	Vine Maple	*Acer circinatum*	10	25	20	Good	Co-dominant	Young	Good	No	Yes	
13728.3	Oregon White Oak	*Quercus garryana*	14	25	25	Fair	Co-dominant	Young	Good	Yes	Yes	
13729	Western Red Cedar	*Thuja plicata*	13	35	20	Fair	Co-dominant	Young	Good	Yes	Yes	3 stems 5,10,7.
13730	Western Red Cedar	*Thuja plicata*	13	35	20	Fair	Co-dominant	Young	Good	Yes	Yes	2 stems 7,12.
13730.1	Vine Maple	*Acer circinatum*	10							No	Yes	
13736	Western Red Cedar	*Thuja plicata*	11	25	20	Fair	Co-dominant	Young	Good	No	Yes	
13737	Shore Pine	*Pinus contorta*	10	25	20	Fair	Co-dominant	Young	Good	No	Yes	
13738	Western Red Cedar	*Thuja plicata*	10	25	20	Fair	Co-dominant	Young	Good	No	Yes	
13739	Western Red Cedar	*Thuja plicata*	10	25	20	Fair	Co-dominant	Young	Good	No	Yes	
13739.1	Western Red Cedar	*Thuja plicata*	5	15	10	Fair	Co-dominant	Young	Good	No	Yes	
13739.2	Western Red Cedar	*Thuja plicata*	10	25	20	Fair	Co-dominant	Young	Good	No	Yes	
13836	Western Red Cedar	*Thuja plicata*	8	30	20	Good	Co-dominant	Young	Good	No	Yes	
13884	Oregon Ash	*Fraxinus latifolia*	8	50	20	Fair	Below Canopy	Semi-mature	Fair	No	Yes	
13884.1	Redosier Dogwood	*Cornus sericea*	5	20	10	Fair	Below Canopy	Mature	Fair	No	Yes	2 stems 4,2.
13885	Oregon Ash	*Fraxinus latifolia*	22	80	40	Fair	Dominant	Mature	Fair	Yes	Yes	
13885.1	Willow	*Salix sp.*	5	25	15	Fair	Below Canopy	Semi-mature	Fair	No	Yes	
13885.2	Oregon Ash	*Fraxinus latifolia*	27	90	50	Good	Dominant	Mature	Good	Yes	Yes	
13885.3	Oregon Ash	*Fraxinus latifolia*	5	25	15	Good	Below Canopy	Young	Good	No	Yes	2 stems 4.3.
13885.4	Oregon Ash	*Fraxinus latifolia*	21	80	40	Fair	Co-dominant	Over-mature	Very Poor	Yes	Yes	6" x 10' cavity from ground on N. side.
13885.5	Oregon Ash	*Fraxinus latifolia*	8	35	20	Poor	Below Canopy	Semi-mature	Poor	No	Yes	Suppressed.
13885.6	Plum	*Prunus sp.*	4	20	10	Poor	Below Canopy	Semi-mature	Poor	No	Yes	Suppressed.
13885.7	Western Red Cedar	*Thuja plicata*	21	60	25	Good	Co-dominant	Mature	Good	Yes	Yes	
13885.8	Oregon Ash	*Fraxinus latifolia*	19	70	40	Fair	Co-dominant	Mature	Fair	Yes	Yes	Bark inclusion in lower bole.
13885.9	Oregon Ash	*Fraxinus latifolia*	13	70	30	Fair	Co-dominant	Mature	Fair	Yes	Yes	Higher crown.
13886	Willow	*Salix sp.*	19	30	20	Poor	Below Canopy	Mature	Very Poor	Yes	Yes	4 stems 12,6,11,8. Severe cavities & decay all stems.
13886.1	Oregon White Oak	*Quercus garryana*	18	70	30	Fair	Co-dominant	Semi-mature	Fair	Yes	Yes	2 stems 10,15.
13886.3	Vine Maple	*Acer circinatum*	9	15	20	Good	Below Canopy	Mature	Good	No	Yes	
13887	Willow	*Salix sp.*	10	25	20	Poor	Below Canopy	Mature	Very Poor	No	Yes	Broken top. Decay.
13960	Norway Maple	*Acer platanoides*	21	45	30	Good	Co-dominant	Mature	Fair	Yes	Yes	3" x 3' cavity from ground on S. side.
13960.1	Oregon Ash	*Fraxinus latifolia*	18	70	50	Fair	Dominant	Mature	Good	Yes	Yes	3 stems 13,11,7.
13960.4	Douglas Fir	*Pseudotsuga menziesii*	6	15	14	Good	Below Canopy	Young	Good	No	Yes	
13960.5	Western Red Cedar	*Thuja plicata*	4	12	8	Fair	Below Canopy	Young	Fair	No	Yes	
13960.6	Western Red Cedar	*Thuja plicata*	4	15	8	Fair	Below Canopy	Young	Fair	No	Yes	
13960.7	Western Red Cedar	*Thuja plicata*	4						Dead	No	Yes	
13960.8	Redosier Dogwood	*Thuja plicata*	6	20	20	Fair	Below Canopy	Mature	Fair	No	Yes	2 stems 4,4
13960.9	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
13985	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
13985.1	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
13986	Douglas Fir	*Pseudotsuga menziesii*	9	25	15	Good	Below Canopy	Young	Good	No	Yes	
13986.1	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	9' NW #13985, 8' NE #13986. Tag missing.
13986.2	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
13987	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
13990.2	Sweet Cherry	*Prunus avium*	8	25	15	Fair	Below Canopy	Young	Fair	No	Yes	
13990.3	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
13992	Sweet Cherry	*Prunus avium*	8	25	15	Fair	Below Canopy	Young	Fair	No	Yes	3 stems 4,4,5.
13992.1	Western Red Cedar	*Thuja plicata*	25	40'	40'	Fair	Co-dominant	Semi-mature	Poor	Yes	Yes	Topped.
13992.2	Douglas Fir	*Pseudotsuga menziesii*	9	30	20	Good	Below Canopy	Young	Good	No	Yes	
13992.3	Douglas Fir	*Pseudotsuga menziesii*	10	30	20	Good	Single tree	Young	Good	No	Yes	
13992.4	Oregon White Oak	*Quercus garryana*	34	90	60	Good	Dominant	Mature	Good	Yes	Yes	3 stems 27,15,15.
13992.5	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
13992.6	Red Maple	*Acer rubrum*	9	30	20	Good	Below Canopy	Young	Good	No	Yes	Appears to be off property.
14160	Western Red Cedar	*Thuja plicate*	11	30	25	Fair	Co dominant	Mature	Poor	No	Yes	Wound seam from ground to 18' above ground . Not 12".
14160.1	Pear, Common	*Pyrus communis*	14	30	25	Poor	Below canopy	Mature	Poor	No	Yes	2 stems 9,10. Fruit Tree
14163	European White Birch	*Betula pendula*	7	30	25				Dead	No		Dead.
14163.1	White Fir	*Abies concolor*	8	35	25	Poor	Co dominant	Mature	Poor	No	Yes	High crown Thin crown. Not 12".

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
14163.2	English Holly	*Ilex aquifolium*	5	20	20	Fair	Below canopy	Semi-Mature	Fair	No	Yes	
14164	Spruce	*Picea sp.*	14	40	35	Fair	Co dominant	Semi-Mature	Good	Yes	Yes	
14165	Spruce	*Picea sp.*	10	30	20	Fair	Co dominant	Semi-Mature	Fair	No	Yes	Not 12".
14166	Giant Sequoia	*Sequoiadendron giganteum*	30	50	35	Good	Dominant	Mature	Good	Yes	Yes	
14167	Scotch Pine	*Pinus sylvestris*	17	40	30	Fair	Co dominant	Mature	Fair	Yes	Yes	
14168	Red Oak	*Quercus rubra*	25	55	50	Good	Dominant	Mature	Good	Yes	Yes	
14168.1	Douglas Fir	*Pseudotsuga menziesii*	5	30	20	Good	Below canopy	Young	Good	No	Yes	Not 12".
14168.2	Western Red Cedar	*Thuja plicata*	6	25	20	Good	Below canopy	Young	Good	No	Yes	Not 12".
14170	Common Apple	*Malus pumila*	23	35	35	Poor	Below canopy	Over-mature	Poor	No	Yes	Stag headed. Fruit tree.
14171	London Planetree	*Platanus × acerifolia*	30	50	50	Fair	Dominant	Mature	Fair	Yes	Yes	2" x 6" cavity at ground on E side.
14171.1	Western Red Cedar	*Thuja plicata*	7	25	15	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14171.2	Western Red Cedar	*Thuja plicata*	5	20	12	Poor	Below canopy	Young	Poor	No	Yes	Trunk cavity. Not 12"
14172	Western Red Cedar	*Thuja plicata*	5	20	12	Poor	Below canopy	Young	Poor	No	Yes	
14173	Spruce	*Picea sp.*	7	30	20	Poor	Below canopy	Semi-Mature	Poor	No	Yes	Suppressed. Not 12".
14174	Douglas Fir	*Pseudotsuga menziesii*	22	55	30	Good	Dominant	Mature	Good	Yes	Yes	
14175	Arborvitae	*Thuja occidentalis*	8	20	8	Poor	Below canopy	Mature	Fair	No	Yes	Not 12".
14176	Shore Pine	*Pinus contorta*	13	40	25	Poor	Below canopy	Mature	Poor	Yes	Yes	Old broken top.
14177	Western Red Cedar	*Thuja plicata*	9	20	15	Good	Below canopy	Young	Good	No	Yes	
14178	Western Red Cedar	*Thuja plicata*	9	25	20	Good	Below canopy	Young	Good	No	Yes	Not 12".
14179	Western Red Cedar	*Thuja plicata*	11	25	20	Good	Co dominant	Young	Good	No	Yes	Not 12".
14180	Oregon White Oak	*Quercus garryana*	21	50	45	Good	Dominant	Mature	Good	Yes	Yes	
14181	Douglas Fir	*Pseudotsuga menziesii*	12	35	20	Fair	Below canopy	Semi-Mature	Fair	Yes	Yes	
14183	Spruce	*Picea sp.*	10	30	25	Poor	Co dominant	Semi-Mature	Fair	No	No	Leans W. Not 12"
14184	Arborvitae	*Thuja occidentalis*	9	20	8	Poor	Below canopy	Mature	Fair	No	No	3 stems 3 stems 6,6,3. Not 12"
14187	Arborvitae	*Thuja occidentalis*	3	15	4	Poor	Below canopy	Mature	Poor	No	No	Not 12".
14191	Oregon White Oak	*Quercus garryana*	28	45	45	Good	Dominant	Mature	Good	Yes	No	
14196	Plum	*Prunus sp.*	11	25	35	Very Poor	Below canopy	Over-mature	Fair	No	Yes	Not 12".
14197	Spruce	*Picea sp.*	23	45	30	Good	Co dominant	Mature	Good	Yes	Yes	
14198	Scotch Pine	*Pinus sylvestris*	14	30	20	Poor	Co dominant	Mature	Poor	Yes	Yes	Thin crown.
14199	Spruce	*Picea sp.*	15	45	25	Poor	Co dominant	Mature	Fair	Yes	Yes	
14199	Oregon Ash	*Fraxinus latifolia*	17	65	30	Very Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	Stem failure at 30' above ground.
14200	Pine, Ponderosa	*Pinus ponderosa*	16	45	35	Fair	Co dominant	Mature	Poor	Yes	Yes	Thin crown.
14201	English Holly	*Ilex aquifolium*	8	20	15	Poor	Below canopy	Young	Fair	No	Yes	4 stems 5,4,4,3. Not 12"
14202	Pine, White	*Pinus monticola*	19	40	35	Good	Co dominant	Mature	Fair	Yes	Yes	
14203	Ponderosa Pine	*Pinus ponderosa*	4	12	10	Poor	Below canopy	Semi-Mature	Poor	No	Yes	Severe lean S. Suppressed. Not 12".
14204	Shore Pine	*Pinus contorta*	9	25	20	Poor	Below canopy	Mature	Poor	No	Yes	Not 12".
14206	Hinoki Falsecypress	*Chamaecyparis obtusa*	8	20	10	Poor	Below canopy	Mature	Poor	No	No	Not 12".
14217	Spruce	*Picea sp.*	10	30	20	Fair	Co dominant	Semi-Mature	Fair	No	Yes	Not 12".
14218	Red Alder	*Alnus rubra*	9	25	20	Fair	Co dominant	Young	Good	No	Yes	Not 12".
14219	Black Cottonwood	*Populus trichocarpa*	18	65	35	Fair	Dominant	Mature	Good	No	Yes	Off property.
14222	Douglas Fir	*Pseudotsuga menziesii*	6	20	12	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14224	European White Birch	*Betula pendula*	11	40	25	Fair	Co dominant	Mature	Poor	No	Yes	7" x 10' cavity from 6' to 16' above ground on W side. Not 12"
14227	Scotch Pine	*Pinus sylvestris*	20	40	30	Fair	Co dominant	Mature	Fair	Yes	Yes	High crown.
14228	Douglas Fir	*Pseudotsuga menziesii*	20	60	30	Fair	Dominant	Mature	Poor	Yes	Yes	
14228.1	Pine	*Pine sp.*	9	30	20	Poor	Co dominant	Mature	Poor	No	Yes	Suppressed. Not 12".
14228.2	European White Birch	*Betula pendula*	9	35	20	Poor	Co dominant	Semi-Mature	Poor	No	Yes	Leans S. Not 12"
14229	Western Red Cedar	*Thuja plicata*	19	30	20	Poor	Co dominant	Mature	Poor	Yes	Yes	Dead top. Root zone over filled.
14232	Spruce	*Picea sp.*	13	30	20	Fair	Co dominant	Mature	Fair	Yes	No	
14245	Oregon White Oak	*Quercus garryana*	20	45	35	Good	Dominant	Mature	Good	Yes	Yes	
14246	Black Cottonwood	*Populus trichocarpa*	8	30	20	Fair	Co dominant	Young	Fair	No	Yes	
14246.1	Black Cottonwood	*Populus trichocarpa*	5	20	15	Fair	Below canopy	Young	Fair	No	Yes	
14247	Black Cottonwood	*Populus trichocarpa*	7	30	20	Fair	Co dominant	Young	Fair	No	Yes	
14252	Oregon White Oak	*Quercus garryana*	30	55	40	Very Good	Dominant	Mature	Very Good	Yes	No	
14254	Giant Sequoia	*Sequoiadendron giganteum*	39	60	35	Good	Co dominant	Mature	Good	Yes	Yes	
14255	Arborvitae	*Thuja occidentalis*	5	15	5	Poor	Below canopy	Mature	Poor	No	No	Not 12".
14256	English Holly	*Ilex aquifolium*	6	20	16	Fair	Below canopy	Young	Fair	No	Yes	Not 12"

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
14257	English Holly	*Ilex aquifolium*	6	20	15	Fair	Below canopy	Young	Fair	No	Yes	Not field tagged. Not 12"
14257.1	English Holly	*Ilex aquifolium*	6	20	15	Fair	Below canopy	Young	Fair	No	Yes	Not field tagged. Not 12"
14258	Arborvitae	*Thuja occidentalis*	4	15	5	Poor	Below canopy	Mature	Poor	No	No	Not 12".
14259	Shore Pine	*Pinus contorta*	8	30	12	Fair	Below canopy	Mature	Fair	No	No	Not 12".
14287	Willow	*Salix sp.*	11	40	35	Fair	Below canopy	Young	Fair	No	Yes	6 stems 5,5,5,4,4,4. Not 12"
14288	Black Cottonwood	*Populus trichocarpa*	6	35	15	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14289	Black Cottonwood	*Populus trichocarpa*	11	45	25	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14290	Black Cottonwood	*Populus trichocarpa*	7	35	15	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14291	Black Cottonwood	*Populus trichocarpa*	10	40	20	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14292	Black Cottonwood	*Populus trichocarpa*	9	35	20	Fair	Below canopy	Young	Fair	No	Yes	Not 12".
14305	Spruce	*Picea sp.*	18	40	25	Poor	Co dominant	Mature	Fair	Yes	Yes	
14312	Pacific Yew	*Taxus brevifolia*	14	20	30	Good	Below canopy	Mature	Good	Yes	Yes	
14313	Black Cottonwood	*Populus trichocarpa*	23	65	40	Fair	Co dominant	Young	Fair	Yes	Yes	
14314	Black Cottonwood	*Populus trichocarpa*	18	55	30	Fair	Co dominant	Young	Fair	Yes	Yes	2 stems 16,8.
14315	Black Cottonwood	*Populus trichocarpa*	19	50	30	Fair	Co dominant	Young	Fair	Yes	Yes	2 stems 15,11
14319	Spruce	*Picea sp.*	18	45	30	Good	Co dominant	Mature	Good	Yes	Yes	
14320	Willow	*Salix sp.*	10	45	30	Poor	Below canopy	Mature	Fair	No	Yes	2 stems 6,8. High crown. Not 12".
14321	Black Cottonwood	*Populus trichocarpa*	22	70	45	Good	Co dominant	Mature	Good	Yes	Yes	
14321.1	Cherry, Sweet	*Prunus avium*	6	30	20	Fair	Below canopy	Young	Fair	No	Yes	Fruit tree.
14321.2	Cherry, Sweet	*Prunus avium*	5	30	20	Fair	Below canopy	Young	Fair	No	Yes	Fruit tree.
14321.3	Cherry, Sweet	*Prunus avium*	6	30	20	Fair	Below canopy	Young	Fair	No	Yes	Fruit tree.
14322	Bigleaf Maple	*Acer macrophyllum*	17	40	35	Fair	Co dominant	Mature	Fair	Yes	Yes	
14323	Oregon Ash	*Fraxinus latifolia*	9	35	20	Fair	Co dominant	Young	Fair	No	Yes	Not 12".
14323.1	Oregon Ash	*Fraxinus latifolia*	10	35	20	Fair	Co dominant	Young	Fair	No	Yes	Not 12".
14324	Oregon Ash	*Fraxinus latifolia*	12	50	30	Fair	Below canopy	Mature	Fair	Yes	Yes	
14324.1	Oregon Ash	*Fraxinus latifolia*	6	35	20	Poor	Below canopy	Young	Poor	No	Yes	Trunk cavity. Not 12"
14325	Oregon Ash	*Fraxinus latifolia*	15	60	30	Poor	Co dominant	Mature	Fair	Yes	Yes	2 stems 14,4. 4" stem is dead. Leans N.
14326	Oregon Ash	*Fraxinus latifolia*	13	55	30	Fair	Co dominant	Semi-Mature	Fair	Yes	Yes	
14326.1	Hawthorn, Common	*Craetagus monogyna*	6	20	15	Poor	Below canopy	Mature	Very Poor	No	Yes	Trunk cavity. Leans S. Not 12"
14327	Oregon Ash	*Fraxinus latifolia*	15	55	30	Poor	Below canopy	Over-mature	Very Poor	Yes	Yes	Broken top. 4" limb cavity at 6.5' above ground on E side.
14328	Oregon Ash	*Fraxinus latifolia*	24	70	40	Fair	Dominant	Mature	Fair	Yes	Yes	
14336	Spruce	*Fraxinus latifolia*	9	25	20	Fair	Below canopy	Young	Fair	No	Yes	
14337	Spruce	*Picea*	24	30	40	Good	Co dominant	Mature	Good	Yes	Yes	
14338	Pine, Ponderosa	*Pinus ponderosa*	17	40	30	Good	Dominant	Mature	Fair	Yes	No	
14339	Pine, Ponderosa	*Pinus ponderosa*	18	40	35	Poor	Co dominant	Mature	Fair	Yes	Yes	
14340	Hawthorn, English	*Crataegus laevigata*	14	25	30	Poor	Co dominant	Mature	Fair	Yes	Yes	2 stems 10,9.
14341	Western Red Cedar	*Thuja plicata*	20	30	40	Poor	Co dominant	Mature	Fair	Yes	Yes	Topped.
14342	Oregon Ash	*Fraxinus latifolia*	16	40	35	Fair	Below canopy	Young	Fair	Yes	No	4 stems 10,9,8,4.
14344	Douglas Fir	*Pseudotsuga menziesii*	10	20	15	Very Poor	Below canopy	Young	Very Poor	No	No	Broken top with cavity. Not 12"
14345	Oregon Ash	*Fraxinus latifolia*	15	50	40	Fair	Co dominant	Mature	Fair	Yes	Yes	5" x 7" cavity from 15' above ground to 22' above ground.
14347	Hawthorn, Common	*Craetagus monogyna*	6	25	20	Poor	Below canopy	Young	Fair	No	Yes	Measured at 3' above ground. Not 12"
14348	Common Apple	*Malus pumila*	6	25	25	Fair	Below canopy	Mature	Fair	No	Yes	Not 12". Fruit Tree.
14348.1	Black Locust	*Robinia pseudoacacia*	5	35	25	Poor	Below canopy	Young	Fair	No	Yes	Not 12".
14348.2	Black Locust	*Robinia pseudoacacia*	9	20	20	Poor	Below canopy	Young	Fair	No	Yes	2 stems 6,6. Not 12"
14348.3	Black Locust	*Robinia pseudoacacia*	10	25	25	Fair	Below canopy	Young	Fair	No	Yes	
14349	Oregon White Oak	*Quercus garryana*	30	60	50	Good	Dominant	Mature	Good	Yes	Yes	
14351	Pine, Ponderosa	*Pinus ponderosa*	16	35	25	Fair	Co dominant	Mature	Fair	Yes	Yes	
14352	Pine, Ponderosa	*Pinus ponderosa*	12	45	20	Poor	Co dominant	Young	Fair	Yes	Yes	Crooked trunk. High crown.
14353	Deodar Cedar	*Cedrus deodara*	28	40	40	Good	Co dominant	Mature	Fair	Yes	Yes	
14354	Pine	*Pine sp.*	14	30	25	Fair	Co dominant	Mature	Fair	Yes	Yes	
14355	Spruce	*Picea sp.*	15	50	25	Fair	Co dominant	Mature	Fair	Yes	Yes	
14362	Pear, Dwarf Fruiting	*Pyrus communis*	11	25	20	Fair	Below canopy	Mature	Poor	No	No	Thin crown. Leaf spot. Fruit tree.
14363	Pear, Dwarf Fruiting	*Pyrus communis*	5	15	12	Fair	Below canopy	Mature	Poor	No	No	2 stems 4,2. Thin crown. Leaf spot. Fruit tree
14364	Pear, Dwarf Fruiting	*Pyrus communis*	4	20	12	Fair	Below canopy	Mature	Poor	No	No	Thin crown. Leaf spot. Fruit tree.
14365	Hinoki Falsecypress	*Chamaecyparis obtusa*	22	55	30	Fair	Co dominant	Mature	Fair	Yes	Yes	
14365.1	English Holly	*Ilex aquifolium*	5	20	15	Poor	Below canopy	Young	Fair	No	Yes	Measured at 6" above ground. Not 12"
14366	Western Red Cedar	*Thuja plicata*	42	80	40	Fair	Dominant	Mature	Good	Yes	Yes	

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
14367	Oregon Ash	*Fraxinus latifolia*	30	65	45	Poor	Dominant	Over-mature	Very Poor	Yes	Yes	2 stems 24,18. 4" diameter cavity at 3' above ground on
14371	Oregon Ash	*Fraxinus latifolia*	5	30	20	Good	Below canopy	Young	Good	No	No	Not 12"
14372	Shore Pine	*Pinus contorta*	5	12	12	Fair	Below canopy	Young	Good	No	No	Not 12"
14373	Red Alder	*Alnus rubra*	20	50	40	Good	Co dominant	Mature	Good	Yes	No	
14375	Oregon Ash	*Fraxinus latifolia*	26	50	50	Good	Dominant	Mature	Good	Yes	No	2 stems 19,18.
14376	Cherry, Fruiting	*Prunus avium*	20	30	35	Fair	Below canopy	Mature	Poor	No	No	Measured at 3' above ground. Fruit tree.
14377	Cherry, Fruiting	*Prunus avium*	17	40	40	Fair	Below canopy	Mature	Fair	No	No	Fruit tree.
14378	American Sweetgum	*Liquidambar styraciflua*	31	95	40	Fair	Dominant	Mature	Fair	Yes	No	
14379	Common Apple	*Malus pumila*	8	35	30	Fair	Below canopy	Mature	Fair	No	No	Measured at 3' above ground. Fruit tree.
14380	Common Apple	*Malus pumila*	9	25	25	Fair	Below canopy	Mature	Fair	No	No	Measured at 2.5' about ground.
14391	Oregon Ash	*Fraxinus latifolia*	14	55	30	Fair	Co dominant	Mature	Fair	Yes	Yes	2 stems 10,9.
14392	Oregon Ash	*Fraxinus latifolia*	28	85	55	Good	Dominant	Over-mature	Very Poor	Yes	Yes	Cavities in trunk from ground up.
14392.1	Hawthorn, Common	*Crataegus monogyna*	6	25	15	Very Poor	Below canopy	Over-mature	Very Poor	No	Yes	Dead top. Not 12".
14393	Oregon Ash	*Fraxinus latifolia*	13	55	30	Fair	Co dominant	Mature	Fair	Yes	Yes	
14395	Oregon Ash	*Fraxinus latifolia*	21	70	40	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	10" x 3.5' cavity from 4' to 7.5' above ground on N side.
14397	Oregon Ash	*Fraxinus latifolia*	22	80	55	Fair	Dominant	Over-mature	Poor	Yes	Yes	
14398	Oregon Ash	*Fraxinus latifolia*	29	80	55	Fair	Dominant	Over-mature	Poor	Yes	Yes	Die back in crown. History of large limb failure.
14397.1	Oregon Ash	*Fraxinus latifolia*	12	55	25	Fair	Below canopy	Semi-Mature	Fair	Yes	Yes	
14399	Oregon Ash	*Fraxinus latifolia*	27	75	50	Poor	Dominant	Over-mature	Very Poor	Yes	Yes	16" x60" cavity from ground on S side goes all the way through trunk.
14400	Hawthorn, Common	*Crataegus monogyna*	10	25	25	Poor	Below canopy	Mature	Very Poor	No	Yes	2 stems . Not 12"
14400.1	Common Hawthorn		6	25	25	Poor	Below	Mature	Very Poor	Yes		
14401	Oregon Ash	*Fraxinus latifolia*	15	55	30	Poor	Co dominant	Over-mature	Poor	Yes	Yes	3 stems 12,7,6. Thin crown. Stressed.
14402	Oregon Ash	*Fraxinus latifolia*	19	65	35	Good	Co dominant	Mature	Good	Yes	Yes	3 stems 17,7,4. 4" &7" stems have large cavities.
14403	Oregon Ash	*Fraxinus latifolia*	25	70	40	Poor	Dominant	Over-mature	Very Poor	Yes	Yes	2 stems 22,17. Broken tops on both stems. History of large limb failure.
14403.1	Oregon White Oak	*Quercus garryana*	18	65	45	Good	Dominant	Mature	Good	Yes	Yes	
14404	Oregon Ash	*Fraxinus latifolia*	15	65	35	Fair	Co dominant	Over-mature	Very Poor	Yes	Yes	18" x 12' cavity from ground on S side.
14404.1	Oregon Ash	*Fraxinus latifolia*	18	70	35	Fair	Co dominant	Over-mature	Very Poor	Yes	Yes	24" x 5' cavity from ground on N side.
14404.2	Oregon Ash	*Fraxinus latifolia*	14	55	30	Fair	Co dominant	Over-mature	Very Poor	Yes	Yes	10" x 24" cavity from ground on E side.
14405	Oregon Ash	*Fraxinus latifolia*	16	60	40	Fair	Co dominant	Mature	Poor	Yes	Yes	4 stems 8,7,11,4. 18 x 24" cavity from ground on E side.
14405.1	Hawthorn, Common	*Crataegus monogyna*	5	20	15	Poor	Below canopy	Mature	Fair	No	Yes	Not 12"
14406	Hawthorn, Common	*Crataegus monogyna*	12	40	20	Poor	Below canopy	Mature	Fair	Yes	Yes	Measured at 1' above ground.
14407	Hawthorn, Common	*Crataegus monogyna*	16	45	35	Fair	Below canopy	Mature	Fair	Yes	Yes	Measured at 1' above ground.
14407.1	Oregon Ash	*Fraxinus latifolia*	9	40	25	Fair	Below canopy	Young	Fair	No	Yes	2 stems 7,6. Located at 4245 Mapleton Dr. Not 12"
14407.2	Oregon Ash	*Fraxinus latifolia*	9	45	25	Poor	Below canopy	Young	Poor	No	Yes	3" x 10" cavity from ground on N side. Located at 4245 Mapleton Dr. Not 12"
14411	Sweet Cherry	*Prunus avium*	10	25	20	Fair	Below canopy	Young	Fair	No	No	2 stems 7,7.
14418	European White Birch	*Betula pendula*	19	65	40	Poor	Dominant	Mature	Poor	Yes	Yes	Thin crown.
14419	European White Birch	*Betula pendula*	15	65	40	Poor	Dominant	Mature	Poor	Yes	Yes	Thin crown.
14421	American Sweetgum	*Liquidambar styraciflua*	23	70	40	Good	Dominant	Mature	Good	Yes	Yes	
14421.1	European White Birch	*Betula pendula*	20	65	40	Fair	Dominant	Mature	Poor	Yes	Yes	
14421.2	European White Birch	*Betula pendula*	16	60	40	Fair	Dominant	Mature	Poor	Yes	Yes	
14421.3	Giant Sequoia	*Sequoiadendron giganteum*	43	80	40	Fair	Dominant	Mature	Good	Yes	No	2 stems 27,30
14435	American Elm	*Ulmus americana*	29	65	50	Poor	Dominant	Mature	Poor	Yes	Yes	Die back in crown. Suspect Dutch Elm disease.
14438	Oregon White Oak	*Quercus garryana*	18	25	30	Fair	Co dominant	Mature	Good	No	No	Off property in Mapleton R/W.
14438.1	Crapemyrtle	*Lagerstroemia* sp.	10	20	40	Good	Below canopy	Mature	Good	No	No	Measured at ground. Not 12"
14438.2	European White Birch	*Betula pendula*	16	40	30	Poor	Dominant	Mature	Poor	Yes	Yes	Thin crown.
14441	Japanese Maple	*Acer palmatum*	7	20	20	Good	Below canopy	Mature	Good	Yes	Yes	Measured at 1' above ground. Not 12".
14456	Spruce	*Picea sp.*	9	30	25	Fair	Co dominant	Young	Fair	No	Yes	Not 12"
14457	English Walnut	*Juglans regia*	17	30	35	Fair	Co dominant	Mature	Fair	No	No	Topped. Fruit Tree
14459	Common Apple	*Malus pumila*	23	35	30	Poor	Co dominant	Mature	Fair	No	Yes	Topped. Fruit Tree
14460	Common Apple	*Malus pumila*	21	25	30	Poor	Below canopy	Mature	Poor	No	Yes	Topped. Fruit Tree
14461	Common Apple	*Malus pumila*	12	20	20	Poor	Below canopy	Mature	Poor	No	Yes	Topped. Fruit Tree
14463	Common Apple	*Malus pumila*	14	20	20	Poor	Below canopy	Mature	Poor	No	Yes	Topped. Fruit Tree
14476	Red Alder	*Alnus rubra*	7	30	20	Good	Co dominant	Semi-mature	Good	No	Yes	Not 12".
14476.1	Oregon Ash	*Fraxinus latifolia*	8	35	20	Good	Below canopy	Young	Good	No	Yes	2 stems 6,6. Not 12"

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14478	Giant Sequoia	*Sequoiadendron giganteum*	59	95	45	Good	Dominant	Mature	Good	Yes	Yes	
14479	Giant Sequoia	*Sequoiadendron giganteum*	49	110	50	Good	Dominant	Mature	Good	Yes	Yes	
14480	Oregon White Oak	*Quercus garryana*	22	55	30	Fair	Co dominant	Mature	Poor	Yes	Yes	3" x 14" cavity from 1' above ground on W side.
14481	Oregon Ash	*Fraxinus latifolia*	16	55	30	Fair	Co dominant	Mature	Fair	Yes	Yes	
14482	Oregon Ash	*Fraxinus latifolia*	39	75	35	Fair	Dominant	Mature	Fair	Yes	Yes	History of large limb failure.
14484	Oregon Ash		33	75	35	Fair	Dominant	Over-mature	Very Poor	Yes		12" limb cavity at 4' above ground on N side.
14486	Oregon Ash	*Fraxinus latifolia*	25	70	35	Fair	Co dominant	Over-mature	Very Poor	Yes	Yes	2 stems 22,12. 8"x24" cavity from ground on E side. Broken top. History of limb failure. Thin crown.
14488	Oregon Ash	*Fraxinus latifolia*	14	60	30	Very Poor	Below canopy	Over-mature	Very Poor	Yes	Yes	12" x 8' cavity from ground on N side.
14489	Oregon Ash	*Fraxinus latifolia*	18	65	35	Very Poor	Below canopy	Over-mature	Very Poor	Yes	Yes	Stem failure at 15' above ground.
14490	Oregon Ash	*Fraxinus latifolia*	25	25	20	Poor	Below canopy	Over-mature	Very Poor	Yes	Yes	Stem failures at 25' above ground.
14491	Oregon Ash	*Fraxinus latifolia*	29	80	40	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	4" x 24" cavity from ground on N side. 6" x 4' cavity at 40' above ground on S side.
14492	Oregon Ash	*Fraxinus latifolia*	19	70	35	Very Poor	Below canopy	Over-mature	Very Poor	Yes	Yes	24" x 8' cavity from ground on E. side.
14493	Oregon Ash	*Fraxinus latifolia*	28	70	40	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	3" x 16" cavity from ground on N side.
14493.1	Oregon Ash	*Fraxinus latifolia*	16	60	30	Very Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	3" x 4.5' cavity from ground on S side. Highcrown.
14494	Oregon Ash	*Fraxinus latifolia*	19	70	35	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	2"x4" cavity at 2' above ground on N side.
14495	Oregon Ash	*Fraxinus latifolia*	20	75	4040	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	2" x 12" cavity from 1.5' above ground on E. side.
14496	Oregon Ash	*Fraxinus latifolia*	29	75	40	Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	2 stems 23,17. 17" stem is hollow from ground'.
14498	Oregon Ash	*Fraxinus latifolia*	18	65	30	Very Poor	Co dominant	Over-mature	Very Poor	Yes	Yes	Cavities.
14507	Crabapple	*Malus sp.*	25	25	35	Fair	Below canopy	Mature	Fair	No	No	4 stems 7,7,5,6.
15470	Black Cottonwood	*Populus trichocarpa*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
15470.1	Willow	*Salix sp.*	7	20	20	Fair	Single tree	Mature	Fair	No	Yes	2 stems 4,5.
15476	Oregon White Oak	*Quercus garryana*	26	90	50	Good	Dominant	Mature	Good	Yes	Yes	
15476.1	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
15476.2	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Poor	Below Canopy	Young	Poor	No	Yes	Partial uproot.
15478	Oregon Ash	*Fraxinus latifolia*	28	85	50	Poor	Dominant	Over-mature	Very Poor	Yes	Yes	12" cavity at 50' above ground.
15478.1	Douglas Fir	*Pseudotsuga menziesii*	4	25	15	Good	Below Canopy	Young	Good	No	Yes	
15481	Black Cottonwood	*Populus trichocarpa*	12	35	20	Poor	Single Tree	Mature	Very Poor	Yes	Yes	Broken top at 30' above ground.
15482	Red Alder	*Alnus rubra*	16	60	30	Poor	Co-dominant	Mature	Poor	Yes	Yes	Broken top.
15483	Red Alder	*Alnus rubra*	12	40	20	Poor	Co-dominant	Mature	Poor		Broken top.	
15490	Western Red Cedar	*Thuja plicata*	24	30	15	Poor	Single Tree	Mature	Very Poor	Yes	Yes	Broken top at 30' above ground.
15491	Western Red Cedar	*Thuja plicata*	22	40	15	Poor	Single Tree	Mature	Very Poor	Yes	Yes	Broken top at 20' above ground.
15492	Western Red Cedar	*Thuja plicata*	12	35	15	Poor	Single Tree	Mature	Very Poor	Yes	Yes	Broken top at 20' above ground.
15502	Grand Fir	*Abies grandis*	37	40	20	Fair	Single Tree	Mature	Poor	Yes	Yes	Broken top.
15572	Bigleaf Maple	*Acer macrophyllum*	21	50	25	Poor	Co-dominant	Semi-mature	Poor	Yes	Yes	Broken top.
15573	Western Red Cedar	*Thuja plicata*	21	60	25	Good	Co-dominant	Semi-mature	Fair	Yes	Yes	
15573.1	Western Red Cedar	*Thuja plicata*	7	25	15	Fair	Below Canopy	Semi-mature	Fair	No	Yes	Corrected lean S.
15573.2	Western Red Cedar	*Thuja plicata*	20	20	15	Poor	Below Canopy	Semi-mature	Poor	Yes	Yes	Suppressed.
15574	Bigleaf Maple	*Acer macrophyllum*	17	50	25	Fair	Co-dominant	Semi-mature	Fair	Yes	Yes	
15576	Red Alder	*Alnus rubra*	18	60	30	Fair	Co-dominant	Mature	Fair	Yes	Yes	Bark inclusion in lower bole.
15577	Bigleaf Maple	*Acer macrophyllum*	8	35	20	Poor	Below Canopy	Semi-mature	Poor	No	Yes	Suppressed.
15581	Western Red Cedar	*Thuja plicata*	20	35	30	Very Poor	Below Canopy	Over-mature	Very Poor	Yes	Yes	Broken trunk is hollow.
15582	Oregon Ash	*Fraxinus latifolia*	15	80	45	Good	Dominant	Semi-mature	Good	Yes	Yes	
15583	Western Red Cedar	*Thuja plicata*	31	80	50	Good	Dominant	Mature	Good	Yes	Yes	
15584	Bigleaf Maple	*Acer macrophyllum*	23	90	60	Fair	Dominant	Mature	Fair	Yes	Yes	
15585	Oregon Ash	*Fraxinus latifolia*	24	80	45	Good	Dominant	Mature	Good	Yes	Yes	
15586	Black Cottonwood	*Populus trichocarpa*	5	30	10	Poor	Below Canopy	Young	Poor	No	Yes	Suppressed.
15587	Black Cottonwood	*Populus trichocarpa*	11	45	25	Fair	Co-dominant	Young	Fair	No	Yes	
15589	Oregon Ash	*Fraxinus latifolia*	7	45	20	Good	Co-dominant	Young	Good	No	Yes	
15589.1	Oregon Ash	*Fraxinus latifolia*	4	45	15	Fair	Co-dominant	Young	Good	No	Yes	
15589.2	Oregon Ash	*Fraxinus latifolia*	7	45	20	Good	Co-dominant	Young	Good	No	Yes	
15589.3	Oregon Ash	*Fraxinus latifolia*	9	50	25	Good	Co-dominant	Semi-mature	Good	No	Yes	
15591.1	Oregon Ash	*Fraxinus latifolia*	7	35	20	Fair	Co-dominant	Young	Fair	No	Yes	
15591.2	Bigleaf Maple	*Acer macrophyllum*	5	20	15	Poor	Below Canopy	Young	Poor	No	Yes	
15592	Black Cottonwood	*Populus trichocarpa*	11	40	25	Fair	Below Canopy	Young	Fair	No	Yes	
15593	Black Cottonwood	*Populus trichocarpa*	9	35	20	Fair	Co-dominant	Young	Fair	No	Yes	

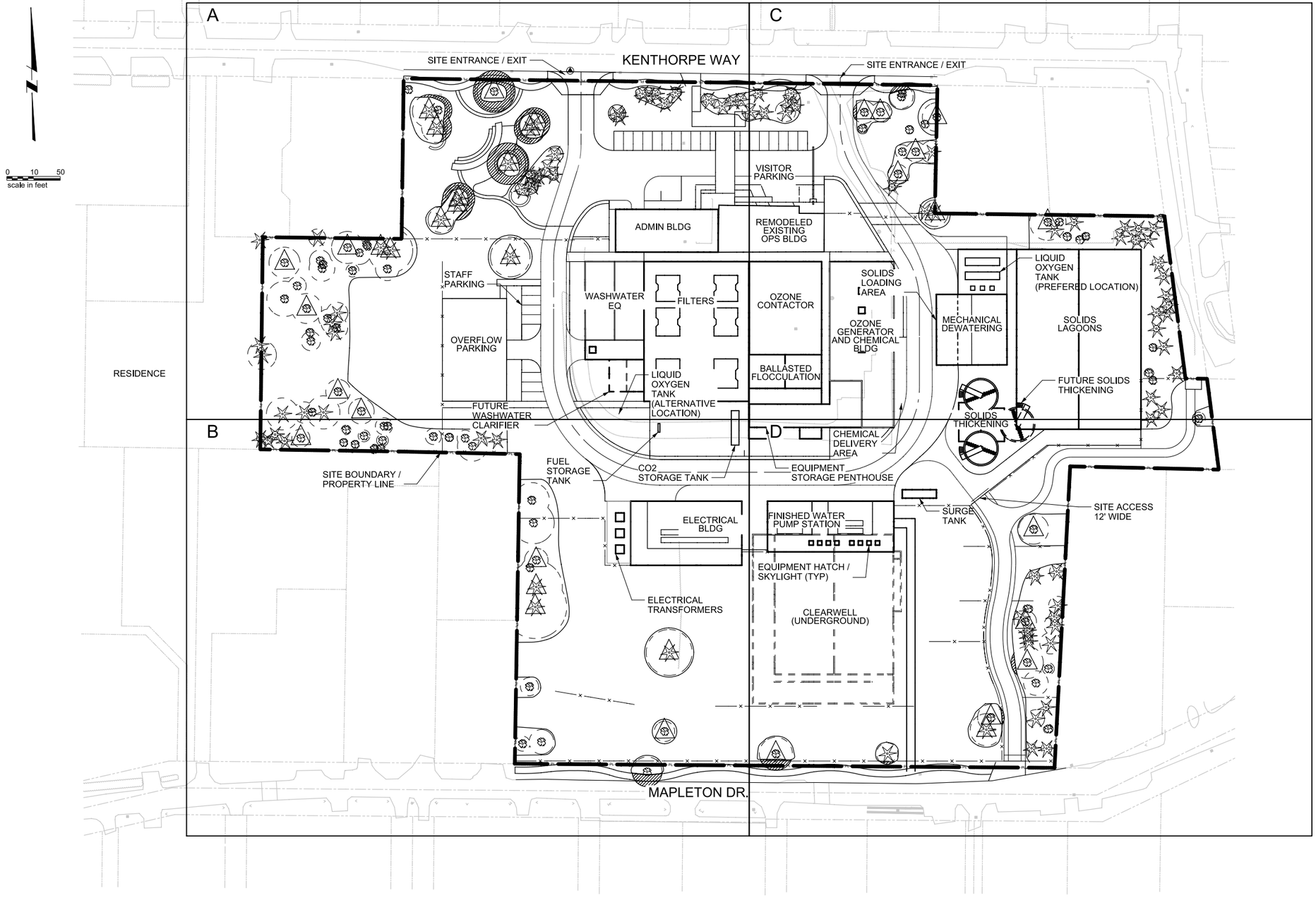
NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
15594	Bigleaf Maple	*Acer macrophyllum*	16	30	15	Very Poor	Below Canopy	Semi-mature	Very Poor	Yes	Yes	Broken top at 30' above ground.
15594.1	Bigleaf Maple	*Acer macrophyllum*	6	25	15	Poor	Below Canopy	Young	Poor	No	Yes	Broken top.
15595	Western Red Cedar	*Thuja plicata*	30	80	25	Good	Dominant	Mature	Good	Yes	Yes	
15596.4	English Laurelcherry	*Prunus laurocerasus*	4	30	15	Poor	Below Canopy	Mature	Fair	No	Yes	
15597	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
15598	Western Red Cedar	*Thuja plicata*	6	25	15	Fair	Below Canopy	Young	Good	No	Yes	
15599	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
15600	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
15602	Bigleaf Maple	*Acer macrophyllum*	17	70	35	Good	Dominant	Semi-mature	Good	Yes	Yes	
15605	Western Red Cedar	*Thuja plicata*	27	60	40	Fair	Co-dominant	Mature	Poor	Yes	Yes	Broken top. Severe cavities in lower bole.
15606	Bigleaf Maple	*Acer macrophyllum*	28	90	50	Fair	Dominant	Over-mature	Very Poor	Yes	Yes	24" x 36" cavity from ground on N. side.
15607	Bigleaf Maple	*Acer macrophyllum*	33	50	35	Very Poor	Co-dominant	Over-mature	Very Poor	Yes	Yes	Failed stem with cavity at 15' above ground.
15608	Red Alder	*Alnus rubra*	17			Dead				Yes	Yes	
15612	Spruce	*Picea sp.*	16	40	30	Fair	Co-dominant	Mature	Poor	Yes	Yes	Broken top. Straddles property line.
15613	Bigleaf Maple	*Acer macrophyllum*	20	50	35	Fair	Co-dominant	Mature	Poor	Yes	Yes	1" x 8" cavity at 3' to3'-8" above ground on W. side.
15614	Bigleaf Maple	*Acer macrophyllum*	7	25	10	Fair	Co-dominant	Mature	Poor	No	Yes	Broken top.
15615	Bigleaf Maple	*Acer macrophyllum*	24	50	35	Poor	Co-dominant	Mature	Poor	Yes	Yes	Broken top.
15616	Bigleaf Maple	*Acer macrophyllum*	30	80	45	Good	Dominant	Mature	Good	Yes	Yes	
15618	Western Red Cedar	*Thuja plicata*	42	60	40	Good	Dominant	Mature	Good	Yes	Yes	
15619	Western Red Cedar	*Thuja plicata*	18	55	30	Good	Dominant	Semi-mature	Good	Yes	Yes	
15620	Bigleaf Maple	*Acer macrophyllum*	9	45	20	Poor	Below Canopy	Mature	Poor	No	Yes	Suppressed.
15620.1	Bigleaf Maple	*Acer macrophyllum*	6	45	15	Poor	Below Canopy	Mature	Poor	No	Yes	Suppressed.
15620.2	Bigleaf Maple	*Acer macrophyllum*	22	65	30	Fair	Co-dominant	Mature	Fair	Yes	Yes	
15621	Bigleaf Maple	*Acer macrophyllum*	12	50	20	Fair	Co-dominant	Mature	Fair	Yes	Yes	
15621.1	Bigleaf Maple	*Acer macrophyllum*	9	50	20	Fair	Co-dominant	Mature	Fair	No	Yes	
15621.2	Bigleaf Maple	*Acer macrophyllum*	4	25	10	Fair	Co-dominant	Mature	Fair	No	Yes	
15622	Oregon Ash	*Fraxinus latifolia*	22	80	45	Fair	Dominant	Mature	Fair	Yes	Yes	
15623	Bigleaf Maple	*Acer macrophyllum*	22	70	50	Good	Dominant	Mature	Good	Yes	Yes	
15624	Bigleaf Maple	*Acer macrophyllum*	22	80	45	Good	Dominant	Mature	Good	Yes	Yes	
15625	Red Alder	*Alnus rubra*	14	30	20	Very Poor	Co-dominant	Mature	Very Poor	Yes	Yes	Broken top.
15626	Red Alder	*Alnus rubra*	18	30	20	Very Poor	Co-dominant	Mature	Very Poor	Yes	Yes	Broken top.
15627	Red Alder	*Alnus rubra*	14	50	30	Fair	Co-dominant	Semi-mature	Fair	Yes	Yes	
15628	Red Alder	*Alnus rubra*	8	20	10	Very Poor	Below Canopy	Semi-mature	Very Poor	No	Yes	Broken top.
15629	Willow	*Salix sp.*	14	50	30	Fair	Co-dominant	Mature	Fair	Yes	Yes	
15629.1	Bigleaf Maple	*Acer macrophyllum*	21	45	20	Very Poor	Co-dominant	Mature	Very Poor	Yes	Yes	Broken top.
105000	Douglas Fir	*Pseudotsuga menziesii*	11	30	20	Good	Co-dominant	Young	Good	No	Yes	
105001	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105002	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105003	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105004	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105005	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	
105006	Red Osier Dogwood	*Cornus sericea*	5	20	20	Good	Co-dominant	Young	Good	No	Yes	
105007	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105008	Black Cottonwood	*Populus trichocarpa*	5	25	15	Good	Co-dominant	Young	Good	No	Yes	
105009	Black Cottonwood	*Populus trichocarpa*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105010	Black Cottonwood	*Populus trichocarpa*	5	25	15	Good	Co-dominant	Young	Good	No	Yes	
105011	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105012	Black Cottonwood	*Populus trichocarpa*	4	25	15	Good	Co-dominant	Young	Good	No	Yes	
105013	Black Cottonwood	*Populus trichocarpa*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	Lost top.
105014	Black Cottonwood	*Populus trichocarpa*	3	25	15	Good	Co-dominant	Young	Good	No	Yes	
105015	Willow	*Salix sp.*	7	20	20	Fair	Below Canopy	Young	Fair	No	Yes	3 stems 3,4,4.
105016	Black Cottonwood	*Populus trichocarpa*	5	25	15	Good	Co-dominant	Young	Good	No	Yes	
105017	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105018	Bigleaf Maple	*Acer macrophyllum*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	
105019	Oregon Ash	*Fraxinus latifolia*	32	70'	35	Fair	Dominant	Over-mature	Poor	Yes	Yes	Decay in lower bole.
105020	Sweet Cherry	*Prunus avium*	8	50	30	Fair	Co-dominant	Semi-mature	Fair	No	Yes	
105021	Sweet Cherry	*Prunus avium*	9	50	30	Fair	Co-dominant	Semi-mature	Fair	No	Yes	

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
105022	Douglas Fir	*Pseudotsuga menziesii*	4	20	10	Fair	Below Canopy	Young	Poor	No	Yes	Girdled with staking wires.
105023	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Fair	Co-dominant	Young	Poor	No	Yes	Girdled with staking wires.
105024	Oregon Ash	*Fraxinus latifolia*	12	35	20	Very Poor	Below Canopy	Over-mature	Very Poor	Yes	Yes	18" x 12' cavity from ground on W side.
105025	Douglas Fir	*Pseudotsuga menziesii*	3	20	10	Poor	Below Canopy	Young	Poor	No	Yes	Suppressed.
105026	Douglas Fir	*Pseudotsuga menziesii*	5	25	10	Fair	Below Canopy	Young	Poor	No	Yes	Girdled with staking wires.
105027	Oregon Ash	*Fraxinus latifolia*	20	75	30	Fair	Dominant	Over-mature	Very Poor	Yes	Yes	2 stems 12,16. 15" x 24" cavity from ground on W. side.
105028	Western Red Cedar	*Thuja plicata*	8	30	15	Good	Co-dominant	Young	Good	No	Yes	
105029	Western Red Cedar	*Thuja plicata*	4	25	15	Good	Co-dominant	Young	Good	No	Yes	
105030	Black Cottonwood	*Populus trichocarpa*	4	25	15	Good	Co-dominant	Young	Good	No	Yes	
105030.1	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	
105031	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105032	Douglas Fir	*Pseudotsuga menziesii*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105033	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105034	Western Red Cedar	*Thuja plicata*	4	25	15	Good	Co-dominant	Young	Good	No	Yes	
105034.1	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105035	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105036	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105037	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105038	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	
105039	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105040	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	
105041	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	
105042	Western Red Cedar	*Thuja plicata*	7	20	15	Poor	Co-dominant	Young	Poor	No	Yes	Dead top.
105043	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	2 stems 7,5.
105044	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Co-dominant	Young	Good	No	Yes	
105045	Western Red Cedar	*Thuja plicata*	7	20	15	Poor	Co-dominant	Young	Poor	No	Yes	Dead top.
105046	Western Red Cedar	*Thuja plicata*	7	20	15	Poor	Co-dominant	Young	Poor	No	Yes	Dead top.
105047	Western Red Cedar	*Thuja plicata*	7	20	15	Poor	Co-dominant	Young	Poor	No	Yes	Dead top.
105048	Western Red Cedar	*Thuja plicata*	8	20	15	Poor	Co-dominant	Young	Poor	No	Yes	Dead top.
105049	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	2 stems 7,5.
105050	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	
105051	Western Red Cedar	*Thuja plicata*	7	25	15	Poor	Co-dominant	Young	Poor	No	Yes	Thin crown.
105052	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105053	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	2 stems 5,6.
105054	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Co-dominant	Young	Good	No	Yes	2 stems 4,7.
105055	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Co-dominant	Young	Good	No	Yes	
105056	Common Hawthorn	*Crataegus monogyna*	8	25	15	Fair	Co-dominant	Mature	Fair	No	Yes	
105057	Common Hawthorn	*Crataegus monogyna*	5	20	10	Fair	Co-dominant	Mature	Fair	No	Yes	
105058	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	
105059	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Co-dominant	Young	Good	No	Yes	
105060	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105062	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105063	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
105064	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105065	Oregon Ash	*Fraxinus latifolia*	18	70	30	Fair	Dominant	Mature	Fair	Yes	Yes	
105066	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Below Canopy	Young	Good	No	Yes	
105067	Western Red Cedar	*Thuja plicata*	10	25	15	Good	Below Canopy	Young	Good	No	Yes	
105068	Western Red Cedar	*Thuja plicata*	10	25	15	Good	Below Canopy	Young	Good	No	Yes	
105069	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105070	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	2 stems 6,3.
105071	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105072	Western Red Cedar	*Thuja plicata*	4	12	8	Poor	Below Canopy	Young	Poor	No	Yes	Dead top.
105073	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105074	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105075	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105076	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	2 stems 7,3.
105077	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	3 stems 5,3,3.

NO.	COMMON NAME	BOTANICAL NAME	DBH	HEIGHT	SPREAD	FORM	CROWN CLASS	AGE CLASS	TREE HEALTH	REGULATED	GROVE	COMMENTS
105078	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105079	Western Red Cedar	*Thuja plicata*	7	25	15	Poor	Below Canopy	Young	Poor	No	Yes	Thin crown.
105080	Western Red Cedar	*Thuja plicata*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
105081	Western Red Cedar	*Thuja plicata*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105082	Oregon Ash	*Fraxinus latifolia*	18	70	30	Poor	Co-dominant	Over-mature	Very Poor	Yes	Yes	6" x 10' cavity on W. side.
105085	Western Red Cedar	*Thuja plicata*	9	25	15	Good	Below Canopy	Young	Good	No	Yes	
105086	Willow	*Salix sp.*	9	30	30	Fair	Below Canopy	Semi-mature	Fair	No	Yes	
105087	Red Alder	*Alnus rubra*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105088	Red Alder	*Alnus rubra*	6	25	15	Good	Below Canopy	Young	Good	No	Yes	
105089	Red Alder	*Alnus rubra*	5	25	15	Good	Below Canopy	Young	Good	No	Yes	
105090	Red Alder	*Alnus rubra*	4	25	15	Good	Below Canopy	Young	Good	No	Yes	
105091	Red Alder	*Alnus rubra*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
105092	Douglas Fir	*Pseudotsuga menziesii*	5	20	10	Poor	Below Canopy	Young	Poor	No	Yes	
105093	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105094	Douglas Fir	*Pseudotsuga menziesii*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105095	Douglas Fir	*Pseudotsuga menziesii*	7	25	15	Good	Below Canopy	Young	Good	No	Yes	
105096	Western Red Cedar	*Thuja plicata*	15	40	25	Good	Below Canopy	Young	Good	Yes	Yes	
105097	Western Red Cedar	*Thuja plicata*	8	25	15	Good	Below Canopy	Young	Good	No	Yes	
105098	Western Red Cedar	*Thuja plicata*	15	40	25	Good	Below Canopy	Young	Good	Yes	Yes	
105098.1	Red Alder	*Alnus rubra*	4	25	15	Poor	Below Canopy	Young	Poor	No	Yes	
105098.2	Western Red Cedar	*Thuja plicata*	4	25	15	Poor	Below Canopy	Young	Poor	No	Yes	

GENERAL SHEET NOTES

1. INVENTORIED TREES WITH DIAMETERS LESS THAN 5" HAVE NOT BEEN SHOWN ON THIS PLAN.
2. ALL WORK DONE WITHIN DIAGONALLY HATCHED IMPACT ZONES SHALL BE SUPERVISED BY AN INTERNATIONAL SOCIETY OF AGRICULTURE CERTIFIED ARBORIST.



LEGEND

- SITE BOUNDARY / PROPERTY LINE
- C — KEY PLAN BOUNDARY
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE OF SIGNIFICANCE
- TREE PROTECTION ZONE BOUNDARY
- TREE PROTECTION FENCE
- TREE PROTECTION IMPACT ZONE

MWH®
806 SW BROADWAY, SUITE 200
PORTLAND, OREGON 97205

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: ####
DRAWN: ####
CHECKED: ####
CHECKED: ####
APPROVED: ####

REVISIONS (XREFS)??

REV.	DESCRIPTION	BY		APP.

OWNER:
CITY OF LAKE OSWEGO
380 A AVENUE
LAKE OSWEGO, OR 97034
PHONE: 503-635-0270

Lake Oswego · Tigard Water Partnership
sharing water · connecting communities

LAKE OSWEGO AND TIGARD WATER TREATMENT PLANT

DESIGN REVIEW AND CONDITIONAL USE

PROPOSED SITE PLAN
OVERVIEW
TREE PROTECTION PLAN

FILENAME
PROJECT NUMBER
SCALE 1" = 50'
DRAWING/FIGURE NUMBER FIG-1
OF

PLOT DATE: September 10, 2008 - 1:56PM USER: kittsc
FILE: C:\Documents and Settings\kittsc\Desktop\130594- TITLE BLOCK.dwg

GENERAL SHEET NOTES

1. INVENTORIED TREES WITH DIAMETERS LESS THAN 5" HAVE NOT BEEN SHOWN ON THIS PLAN.
2. ALL WORK DONE WITHIN DIAGONALLY HATCHED IMPACT ZONES SHALL BE SUPERVISED BY AN INTERNATIONAL SOCIETY OF AGRICULTURE CERTIFIED ARBORIST.

KENTHORPE WAY

SIDEWALK
SITE ENTRANCE

SITE BOUNDARY / PROPERTY LINE

SITE BOUNDARY / PROPERTY LINE

FENCE

TREE PROTECTION FENCE

CONCRETE SIDEWALK

ADMIN BUILDING

OPS BLDG

WASHWATER EQUALIZATION

FILTERS

EQUIPMENT ACCESS HATCH

FUTURE WASHWATER CLARIFIER

EQUIPMENT ACCESS HATCH

CO2 STORAGE

DIESEL STORAGE

MATCHLINE - SEE FIGURE 4 FOR CONTINUATION

MATCHLINE - SEE FIGURE 3 FOR CONTINUATION

0 10 20
scale in feet

LEGEND

- SITE BOUNDARY / PROPERTY LINE
- C — KEY PLAN BOUNDARY
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE OF SIGNIFICANCE
- TREE PROTECTION ZONE BOUNDARY
- TREE PROTECTION FENCE
- TREE PROTECTION IMPACT ZONE

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FILE: C:\Documents and Settings\kittsc\Desktop\138094- TITLE BLOCK.dwg

MWH ®
806 SW BROADWAY, SUITE 200
PORTLAND, OREGON 97205

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: ####
DRAWN: ####
CHECKED: ####
CHECKED: ####
APPROVED: ####

REVISIONS

REV.	(XREFS)??? DESCRIPTION	BY		APP.

OWNER:
CITY OF LAKE OSWEGO
380 A AVENUE
LAKE OSWEGO, OR 97034
PHONE: 503-635-0270

Lake Oswego · Tigard Water Partnership
sharing water · connecting communities

LAKE OSWEGO AND TIGARD WATER TREATMENT PLANT

DESIGN REVIEW AND CONDITIONAL USE

PROPOSED SITE PLAN
AREA A
TREE PROTECTION PLAN

FILENAME	
PROJECT NUMBER	
SCALE	1" = 20'
DRAWING/FIGURE NUMBER	FIG-2
#### OF	

MATCHLINE - SEE FIGURE 2 FOR CONTINUATION

15600 7"
15602 17"
15589.3 9"
15587 11"
15589.2 7"
15592 17"
15594 16"
15594.1 6"
105098 15"
105097 8"
105096 15"
105095 7"
105094 8"
15599 8"
15597 6"
15598 6"
15589 7"
15593 9"
15591.1 7"
15478 28"
PL

SITE BOUNDARY / PROPERTY LINE

0 10 20
scale in feet

DIESEL STORAGE
CO2 STORAGE
ELECTRICAL BLDG
14484 33"
14482 39"
14480 22"
14481 16"
FENCE
ELECTRICAL TRANSFORMERS
14479 49"
14478 59"
14421.3 43"
14457 17"
14463 14"
14459 23"
14418 19"
14439 16"
FENCE
SIDEWALK
MAPLETON DR.

MATCHLINE - SEE FIGURE 5 FOR CONTINUATION

GENERAL SHEET NOTES

1. INVENTORIED TREES WITH DIAMETERS LESS THAN 5" HAVE NOT BEEN SHOWN ON THIS PLAN.
2. ALL WORK DONE WITHIN DIAGONALLY HATCHED IMPACT ZONES SHALL BE SUPERVISED BY AN INTERNATIONAL SOCIETY OF AGRICULTURE CERTIFIED ARBORIST.

LEGEND

- SITE BOUNDARY / PROPERTY LINE
- C — KEY PLAN BOUNDARY
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE OF SIGNIFICANCE
- TREE PROTECTION ZONE BOUNDARY
- TREE PROTECTION FENCE
- TREE PROTECTION IMPACT ZONE

MWH ®
806 SW BROADWAY, SUITE 200
PORTLAND, OREGON 97205

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: ####
DRAWN: ####
CHECKED: ####
CHECKED: ####
APPROVED: ####

REVISIONS (XREFS)??

REV.	DESCRIPTION	BY		APP.

OWNER:
CITY OF LAKE OSWEGO
380 A AVENUE
LAKE OSWEGO, OR 97034
PHONE: 503-635-0270

Lake Oswego · Tigard Water Partnership
sharing water · connecting communities

LAKE OSWEGO AND TIGARD WATER TREATMENT PLANT

DESIGN REVIEW AND CONDITIONAL USE

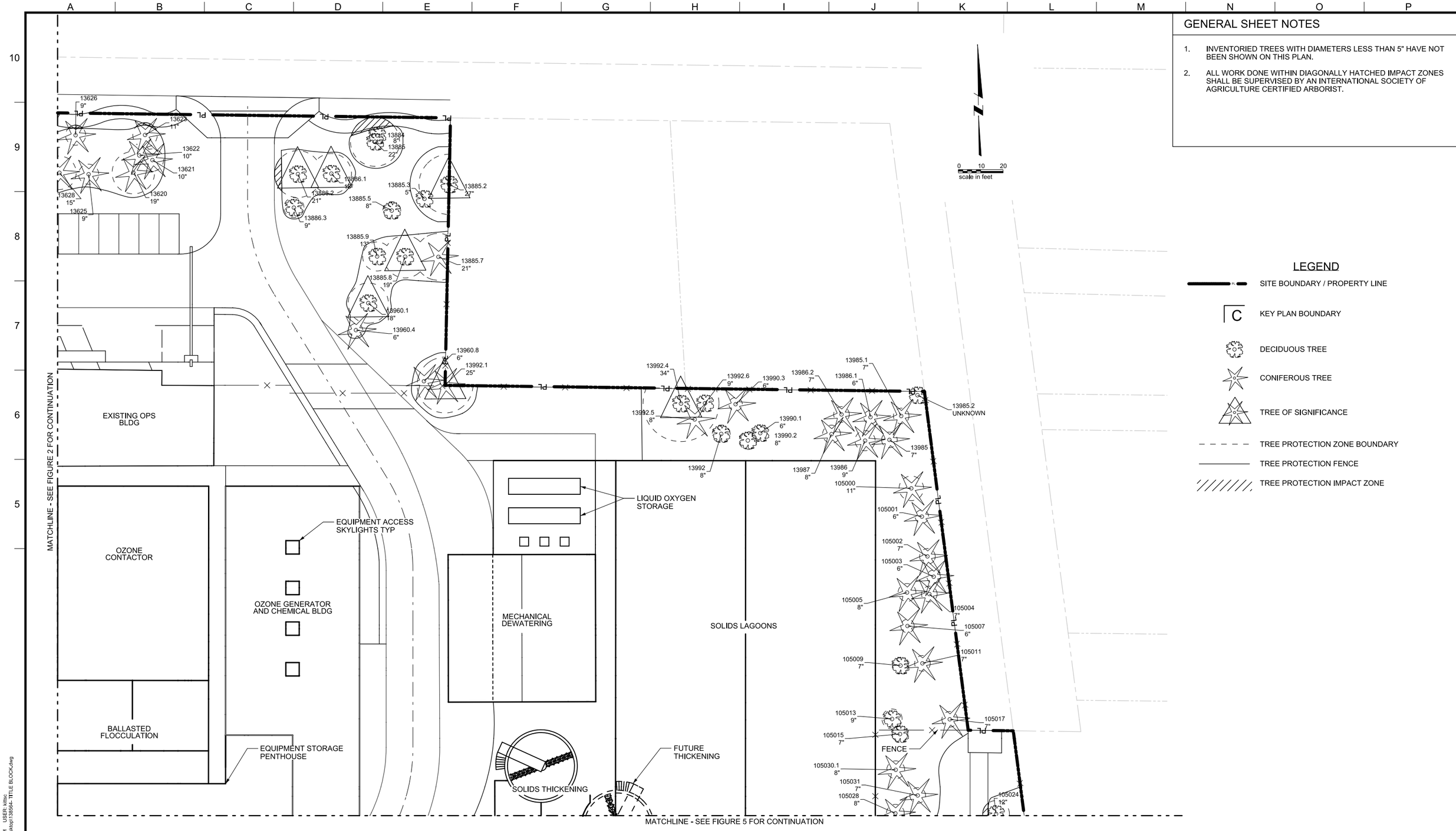
PROPOSED SITE PLAN
AREA B
TREE PROTECTION PLAN

FILENAME
PROJECT NUMBER
SCALE 1" = 20'
DRAWING/FIGURE NUMBER FIG-3
OF

PLOT DATE: September 10, 2008 - 1:55PM USER: kittsc
FILE: C:\Documents and Settings\kittsc\Desktop\138594- TITLE BLOCK.dwg

GENERAL SHEET NOTES

1. INVENTORIED TREES WITH DIAMETERS LESS THAN 5" HAVE NOT BEEN SHOWN ON THIS PLAN.
2. ALL WORK DONE WITHIN DIAGONALLY HATCHED IMPACT ZONES SHALL BE SUPERVISED BY AN INTERNATIONAL SOCIETY OF AGRICULTURE CERTIFIED ARBORIST.



LEGEND

- SITE BOUNDARY / PROPERTY LINE
- C — KEY PLAN BOUNDARY
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE OF SIGNIFICANCE
- TREE PROTECTION ZONE BOUNDARY
- TREE PROTECTION FENCE
- TREE PROTECTION IMPACT ZONE

MWH
806 SW BROADWAY, SUITE 200
PORTLAND, OREGON 97205

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: ####
DRAWN: ####
CHECKED: ####
CHECKED: ####
APPROVED: ####

REVISIONS

REV.	DESCRIPTION	BY		APP.

OWNER:
CITY OF LAKE OSWEGO
380 A AVENUE
LAKE OSWEGO, OR 97034
PHONE: 503-635-0270

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sharing water · connecting communities

LAKE OSWEGO AND TIGARD WATER TREATMENT PLANT

DESIGN REVIEW AND CONDITIONAL USE

PROPOSED SITE PLAN
AREA C
TREE PROTECTION PLAN

FILENAME
PROJECT NUMBER
SCALE 1" = 20'
DRAWING/FIGURE NUMBER FIG-4
OF

PLOT DATE: September 10, 2008 - 1:55PM USER: kitsc
FILE: C:\Documents and Settings\kitsc\Desktop\138564 - TITLE BLOCK.dwg

MATCHLINE - SEE FIGURE 4 FOR CONTINUATION

MATCHLINE - SEE FIGURE 3 FOR CONTINUATION

SOLIDS THICKENER

SURGE TANK

FINISHED WATER PUMP STATION

RAW WATER PIPELINE

FINISHED WATER PIPELINE

FENCE

CLEARWELL (UNDERGROUND)

SITE BOUNDARY / PROPERTY LINE

PL

0 10 20
scale in feet

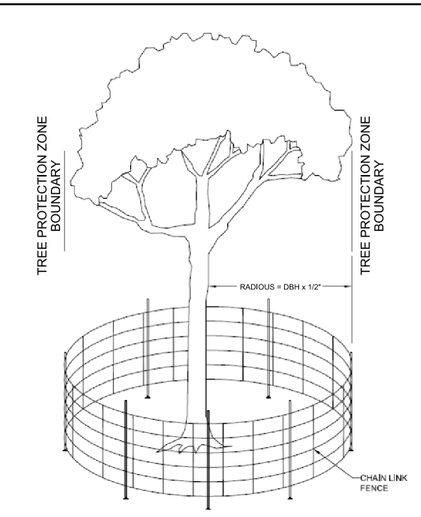
14191 28"
14183 10"
14232 13"
14228.2 9"
14229 19"
14181 12"
14180 21"
14228.1 9"
14179 11"
14228 20"
14178 9"
14177 9"
14227 20"
14171 30"
14224 11"
14170 28"
14222 6"
14167 7"
14218 9"
14168 25"
14166 30"
14163.1 8"
14217 10"
14341 20"
14378 31"

GENERAL SHEET NOTES

1. INVENTORIED TREES WITH DIAMETERS LESS THAN 5" HAVE NOT BEEN SHOWN ON THIS PLAN.
2. ALL WORK DONE WITHIN DIAGONALLY HATCHED IMPACT ZONES SHALL BE SUPERVISED BY AN INTERNATIONAL SOCIETY OF AGRICULTURE CERTIFIED ARBORIST.

LEGEND

- SITE BOUNDARY / PROPERTY LINE
- C — KEY PLAN BOUNDARY
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE OF SIGNIFICANCE
- TREE PROTECTION ZONE BOUNDARY
- TREE PROTECTION FENCE
- TREE PROTECTION IMPACT ZONE



1. 6' CHAIN LINK ON 2" POST AT 10' SPACING, DRIVEN 2' INTO GROUND.
2. RADIUS IS 1/2 PER CALIPER INCH.

TREE PROTECTION

MWH
806 SW BROADWAY, SUITE 200
PORTLAND, OREGON 97205

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: ####
DRAWN: ####
CHECKED: ####
CHECKED: ####
APPROVED: ####

REVISIONS

REV.	DESCRIPTION	BY		APP.

OWNER:
CITY OF LAKE OSWEGO
380 A AVENUE
LAKE OSWEGO, OR 97034
PHONE: 503-635-0270

Lake Oswego · Tigard Water Partnership
sharing water · connecting communities

LAKE OSWEGO AND TIGARD WATER TREATMENT PLANT

DESIGN REVIEW AND CONDITIONAL USE

PROPOSED SITE PLAN
AREA D
TREE PROTECTION PLAN

FILENAME
PROJECT NUMBER
SCALE 1" = 20'
DRAWING/FIGURE NUMBER FIG-5
OF

PLOT DATE: September 10, 2008 - 1:55PM USER: kittsc
FILE: C:\Documents and Settings\kittsc\Desktop\136564- TITLE BLOCK.dwg

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Brown AND Caldwell

Technical Memorandum

Final

Date: January 11, 2012

Prepared for: Lake Oswego-Tigard Water Partnership

Subject: Water Treatment Plant –City of West Linn Significant Tree Mitigation

To: Eric Day, Lake Oswego

From: Ethan Rosenthal, Project Manager-Ecologist
David Evans and Associates, Inc.

Prepared by: Ethan Rosenthal, Ecologist,
David Evans and Associates, Inc.

Reviewed by: Eric Eisemann J.D., E2 Land Use Planning Services, LLC.

Copies to: Terry Buchholz, Integrated Water Solutions, LLC

Lake Oswego · Tigard Water Partnership
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Introduction

This report has been prepared in support of a City of West Linn (City) land use application for the Lake Oswego-Tigard Water Partnership Project (Project) water treatment plant (WTP). The cities of Lake Oswego and Tigard propose to expand and improve the existing water collection, transmission, and treatment system of Lake Oswego to meet increasing future water demand of both cities. The overall Project lies primarily within Clackamas County, Oregon with a small portion lying within Washington County, Oregon. The project extends approximately 10 miles from the river intake pump station on the Clackamas River in Gladstone, Oregon through West Linn and Lake Oswego to the Bonita Pump Station located in Tigard, Oregon.

This technical memorandum specifically concerns proposed work at the WTP in West Linn, Oregon. The purpose of this memorandum is to document impacts to "significant trees" and proposed mitigation for the loss of these trees.

The following West Linn Code (WLC) items were reviewed:

- West Linn Tree Removal
- West Linn Community Tree Ordinance
- West Linn Tree Technical Manual

Methods

The following steps were conducted to determine significant tree mitigation:

- All trees on-site were professionally land surveyed by West Lake Consultants, Inc.
- The project arborist and West Linn arborist collaborated to determine which trees are "significant." [Note: West Linn code does not specifically define "significant tree."]
- Project designers reviewed opportunities to minimize impacts to significant trees to the greatest extent practicable.
- Site development plan was overlaid with significant tree mapping to determine significant trees impacted (also total trees impacted).
- Mitigation requirements are not clearly specified in WLC. The mitigation ratio used to determine significant tree replacement needs is based on pre-application meeting notes between the project planner and West Linn planning department. Specifically, mitigation was determined based on a one to one ratio of DBH impacted to mitigated.
- Greenworks developed site landscaping plan, which incorporates significant tree mitigation needs.

Significant Tree Impacts

Based on the methods described above, a total of 36 significant trees were identified on-site. Of these, six significant trees will be removed and therefore require mitigation. Mapping of tree removal has been provided as part of the land use application package. Table 1 provides a summary of the significant trees that will be removed. The combined DBH for these trees is182 inches.

Table 1. Significant Trees Impacted by Project

Tree #	Common Name	Botanical Name	Diameter at Breast Height (DBH, inches)
13960	Norway Maple	*Acer platanoides*	21
14245	Oregon White Oak	*Quercus garryana*	20
14349	Oregon White Oak	*Quercus garryana*	30
14366	Western Red Cedar	*Thuja plicata*	42
14252	Oregon White Oak	*Quercus garryana*	30
14254	Giant Sequoia	*Sequoiadendron giganteum*	39
	TOTAL DBH		**182**

Significant Tree Mitigation

Based on the 182 inches of significant tree DBH removal, mitigation will require 182 inches of DBH replacement. The project proposes conducting this replacement by planting 91 sapling trees at 2 inch caliper per tree for a total of 182 inches. In addition to the 91 trees needed for significant tree mitigation, an additional 217 trees will also be planted. This will result in a total of 308 trees being planted on-site. Although the final tree count is subject to minor changes, the 91 trees to be planted for significant tree mitigation will not change.

Detailed planting plans, including a plant schedule noting number of each species to be planted, are provided as part of the land use application package.