

Arborist Report

TO: Adam Merrill
SITE: St. Edwards Park Ball-field
RE: Tree Retention and Protection Report
DATE: May 6, 2016
UPDATED: August 5, 2016
PROJECT ARBORISTS: Katherine Taylor
ISA Certified Arborist PN-8022A
ISA Qualified Tree Risk Assessor

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ISA Qualified Tree Risk Assessor

Summary

There are one-hundred and forty-seven (147) trees surrounding the perimeter of a proposed Ball-field Development site at St. Edwards Park. All trees six inches or greater were measured, assessed, and tagged per City of Kenmore Code Chapter 18.57 requirements. All of the trees from the southwest corner to the south and east sides of the ball park are part of a continuous grove of trees.

Current plans indicate that all trees will be retained and protected throughout the project.

Assignment & Scope of Report

This report outlines the site inspection by Casey Clapp and Katherine Taylor of Tree Solutions, Inc., on March 9, 2016. We were asked to review plans, visit the job site, inventory the trees, and provide a formal report including findings and a tree protection plan. Adam Merrill, Senior Scientist for Environmental Science Associates, lead contractor on the St. Edwards Park Ball-field Development project, requested these services for project planning purposes.

The tree size, species, health and structural condition, and related notes and recommendations for each tree can be found in the attached [Tree Inventory](#). [Maps](#) with locations and numbers for all trees, and the approximate location of tree protection fencing are attached. Photographs, Glossary, and References follow the report. Limits of assignment can be found in [Appendix A](#). Methods can be found in [Appendix B](#). Additional assumptions and limiting conditions can be found in [Appendix C](#).

Observations

The Site and History

The site is currently a ball-field with an adjacent parking and picnic area to the west, and a wetland and wooded area to the south and east of the field. The soils were saturated during our site visit especially in the area of the current ball-field.

The Trees

The trees are all native species including western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), bigleaf maple (*Acer macrophyllum*), black cottonwood (*Populus trichocarpa*), red alder (*Alnus rubra*), and Pacific madrone (*Arbutus menziesii*).

The trees are all around the perimeter of an existing sports field on the west, south, and east sides. All 147 trees have connecting canopies and are therefore considered to be part of a grove. The trees are along the edge of a larger forest and have connecting canopies with many other adjacent trees outside the project area that were not measured or assessed.

Trees 501 to 520 are large western redcedar and Douglas-fir trees in fair to good condition. They are part of a picnic area adjacent to the parking area along the west side of the ball-field. The soil in this area is compacted, likely due to foot traffic and park use. Also, some surface roots of a few of the trees have wounds from lawn mowing activity.

Trees 510, 511, and 517, which are all planned for retention, are Douglas-firs that have swollen bases or roots that could be an indicator of decay.

Discussion

The City of Kenmore defines the critical root zone (CRZ) of a tree as the furthest extent of the dripline or one foot for every inch of trunk diameter at standard height (DSH) measured from the center of the tree out, whichever is greater. There are a few areas along the west and south sides of the field where the limits of disturbance, as drawn on the 60 percent plans appear to be within or at the edge of the CRZ. The project team has adjusted construction and excavation activities to outside the driplines of trees to the extent feasible. Some encroachment on the CRZ of trees is allowable as long as tree protection fencing is in place three feet outside the perimeter of the CRZ (as required by City of Kenmore code) for the duration of the project, except when construction activities are occurring in the area.

The following are anticipated construction activities:

- Installation of TESC details including silt fencing.
- Ball-field: removal of existing turf; excavation of the top 8 to 10 inches of soil; application of a sand sub-grade and 6 inch plastic grating drainage system; and installation of a permeable artificial turf.
- Paths: installation of pervious pavement around the perimeter of the ball-field and paths leading from the parking area on the west side to the ball-field; installing gravel paths within critical root zones of trees; conversion of an existing ditch along the west side of the field to permeable pavement.
- Parking lot: excavation and resurfacing of parking area west of field.
- Grass: hydro-seeding of grass adjacent to paths around the trees on the west side of the field.

Construction specific to the ball-field does not appear to fall within the critical root zone of any trees. Some of the construction to install pervious paths around the perimeter of the ball-field and between the west parking lot and ball-field does fall within or very near to critical root zones of trees 502 through 509, 516 through 520 and trees 534 through 537.

Most critical roots are found in the top one to two feet of soil and can be negatively impacted by excavation, compaction, and cutting or damaging of roots with tools. The root systems of trees extend much further than the defined critical root zone.

Current plans show the installation of silt fencing. Installation of silt fencing must use a detail that does not require trenching.

Installation of pervious pavement will require 18 inches of excavation and sub-grade which is typically deeper than what non-pervious pavement requires. Excavation and compaction within or adjacent to the critical root zones should be limited to the extent possible.

To construct paths, consider using a pneumatic excavator, preferably an Air Spade or Air Knife brand, both of which have been designed specifically for use around tree roots, to perform all excavation occurring near trees 501 through 520 and trees 534 through 537. Pneumatic excavators use pressurized air to remove soil around tree roots protecting those roots from significant damage. Limit root pruning to the extent possible. As roots are encountered during excavation, apply gravel under, around, and over the top of the roots. All work and root pruning within and at the edge of the Tree Protection Fencing Zones should be done in the presence of a qualified arborist. A specification for pneumatic excavation is attached. It is best that pneumatic excavation be done by an experience professionals. Several arborists in the area have this equipment and are experienced in these methods.

Construction for the paths in this area should be planned carefully to minimize traffic of heavy equipment in the area. Any heavy excavation equipment should not be used from within the CRZ of any trees unless the soils are protected from the load. If excavators are chosen for use in this area, use a flat bucket to lower the grade and have one person spotting for roots. Any roots over 1.5 inches in diameter encountered should not be torn, instead they should be cut using a sharp saw. Using an excavator is not the recommended method of excavation in this area.

In the 60% Plans we noted that there are plans for hydro-seeding strips of lawn adjacent to all paths around trees 501 to 520. Grass requires significant irrigation otherwise it will die back. Because the trees have adapted to not having any additional source of water the addition of irrigation will cause further disturbance to the trees. In addition the trees have already suffered damage to their surface roots from previous mowing activities around the edge of the grove. Consider applying wood chip mulch to the edge of the paths instead of strips of lawn. Wood chip mulch will be much easier to maintain in the long run as it will not require regular mowing.

Trees 510, 511, and 517, which are all planned for retention, are Douglas-firs that have swollen bases or roots that could be an indicator of decay. We recommend testing these trees to determine the presence/extent of decay. Testing could either be done using a micro resistance drill or sonic tomography. Both tools measure the density and strength of the wood as an indicator of decay.

Overall potential for wind-throw of the trees along the south and east sides is low as there are no plans for removal of trees that would expose interior trees to edge conditions and excavation is occurring outside the CRZ. As stated above trees 510, 511, and 517 should be further assessed to determine the presence and extent of decay which will impact their wind firmness.

Potential for wind-throw is increased for trees 501 through 520 and trees 534 through 537 as disturbance will occur within and directly adjacent to their CRZs. Activities planned include grading (excavation and filling), compaction, and root pruning. Limiting the disturbance in these areas using the methods described above is important to the viability of the trees.

A qualified arborist should be onsite at all time when work is occurring within the Tree Protection Fencing Zones so that they can assess the extent of damage to the root systems which will impact wind-firmness. It is difficult to predict with any accuracy the potential wind-throw prior to understanding the extent of damage to the root systems.

Tree Protection Plan

On this site we strongly recommend protecting the trees in two sections as described below. Trees 501 to 520, on the west side of the ball field are all mature trees of approximately 30 inches DSH or more and should be treated as a grove. Trees of this size and maturity tend to respond more negatively to construction disturbance than younger trees. Construction disturbance includes foot traffic, storage of materials, dumping (including excavated soils) or parking within the root zone which cause compaction and can limit the amount of water and oxygen available to the trees.

Prior to commencing any grading or clearing onsite tree protection shall be installed as follows:

1. Tree protection shall be 5 foot tall chain link fence fastened to steel stakes or posts driven into the ground to discourage easy movement.
2. Tree protection fencing shall be installed **3 feet outside the critical root zone.**
3. To facilitate construction activities planned within the critical root zones of trees 501 through 537, tree protection fencing shall be installed in two sections (see the attached plans):
 - a. **Tree Protection Fencing Zone 1 (TPF-1):** Fencing shall encompass trees 501 through 542 3 feet outside the critical root zone. This area is where new paths will be installed within the critical root zone and therefore access will be required. Fencing shall remain in place at all times except when work is occurring within TPF-1. When work occurs within this zone, fencing shall remain in place except for the portion of the fencing which shall be adjusted to allow access for construction activities.
 - b. **Tree Protection Fencing Zone 2 (TPF-2):** Fencing shall be installed along the perimeter of trees 543 through 647, 3 feet outside the critical root zones. Tree fencing in this area shall be remain in place for the duration of the project. No traffic shall enter TPF-2 for the duration of the project.
 - c. A map with locations for tree protection fencing is attached.
4. Three to four inches of arborist wood chips shall be applied in the critical root zone of TPF-1 to retain moisture and prevent compaction. We do not recommend applying arborist wood chips in TPF-2 because it is a forested natural area where there is already duff (organic material) present to retain moisture and prevent compaction.
5. No materials shall be placed or stored within TPF-1 or TPF-2 at any time throughout the duration of the project.
6. For work occurring within the Tree Protection Fencing Zones ensure proper protection for soils. Acceptable methods of protecting the soil include applying an 18 inch deep layer of wood chips, applying 1 inch plywood over 3 to 4 inches of wood chips, or using Alturna Mats (or equivalent).
7. An arborist shall inspect tree protection fencing prior to commencement of site work.

8. An arborist shall be present at all times when work or root pruning is occurring within or at the edge of the Tree Protection Fencing Zones.

Recommendations

- Obtain all permits necessary prior to commencement of project work.
- Install tree protection as described above around all trees prior to the commencement of any site work.
- Have a certified arborist inspect tree protection prior to the commencement of site work.
- Limit the amount of excavation and compaction within critical roots zones to the extent possible.
- Complete any excavation within tree protection zones using a pneumatic excavator to reduce damage caused to the root system.
- Have a qualified arborist monitor all work including root pruning done within the tree protection zones.
- Consider additional testing for trees #510, 511, and 517 to determine the presence/extent of decay.

Photographs



Photo 1: Aerial view of the west side of the field where installation of permeable paths, gravel paths, and parking improvement is planned within, and around the CRZs of the trees.



Photo 2: Area adjacent to parking lot where pervious paths are planned within the critical root zone.
Source: Google Maps



Photo 3: Another view of area adjacent to parking lot where pervious paths are planned within the critical root zone. Note that pervious pavement will also be installed around the perimeter of the new ball-fields over-top of the existing ditch.
Source: Google Maps

Glossary

- advanced assessment:** an assessment performed to provide detailed information about specific tree parts, defects, targets, or site conditions. Specialized equipment, data collection and analysis, and/or expertise are usually required (ISA 2013)
- ANSI A300:** American National Standards Institute (ANSI) standards for tree care
- basic assessment:** detailed visual inspection of a tree and surrounding site that may include the use of simple tools. It requires that a tree risk assessor walk completely around the tree trunk looking at the site, aboveground roots, trunk, and branches (ISA 2013)
- cracks:** defects in trees that, if severe, may pose a risk of tree or branch failure (Lilly 2001)
- crown:** the aboveground portions of a tree (Lilly 2001)
- crown cleaning:** selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches (ANSI A300)
- DBH or DSH:** diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)
- deciduous:** tree or other plant that loses its leaves sometime during the year and stays leafless generally during the cold season (Lilly 2001)
- epicormic:** arising from latent or adventitious buds (Lilly 2001)
- evergreen:** tree or plant that keeps its needles or leaves year round; this means for more than one growing season (Lilly 2001)
- ISA:** International Society of Arboriculture
- landscape function:** the environmental, aesthetic, or architectural functions that a plant can have (Lilly 2001)
- limited visual assessment:** a visual assessment from a specified perspective such as foot, vehicle, or aerial (airborne) patrol of an individual tree or a population of trees near specified targets to identify specified conditions or obvious defects (ISA 2013)
- mitigation:** process of reducing damages or risk (Lilly 2001)
- monitoring:** keeping a close watch; performing regular checks or inspections (Lilly 2001)
- owner/manager:** the person or entity responsible for tree management or the controlling authority that regulates tree management (ISA 2013)
- pathogen:** causal agent of disease (Lilly 2001)
- micro-resistance drill:** a drilling instrument used to determine the density of wood by measuring the amount of resistance presented to the drilling needle as it is driven into the wood. The drilling resistance profiles show clearly where compression wood, annual rings, rot in various stages and other defects have been encountered by the drilling needle
- retain and monitor:** the recommendation to keep a tree and conduct follow-up assessments after a stated inspection interval (ISA 2013)
- significant size:** a tree measuring 6" DSH or greater
- soil structure:** the arrangement of soil particles (Lilly 2001)
- structural defects:** flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (Lilly 2001)
- tomography:** a technique for obtaining 2-D cross sections or 3-D pictures of the interior of an object by passing sound waves through the object and measuring the travel times of the acoustic signals as the object absorbs or scatters them on ray paths between source and receiver.
- Visual Tree Assessment (VTA):** method of evaluating structural defects and stability in trees by noting the pattern of growth. Developed by Claus Mattheck (Harris, *et al* 1999)

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006.

Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly. Tree Risk Assessment Manual. Champaign, Illinois: International Society of Arboriculture, 2013.

E. Smiley, N. Matheny, S. Lilly. Best Management Practices: TREE RISK ASSESSMENT. ISA 2011.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Appendix A - Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the soils on site should be obtained by a qualified professional if an additional understanding of site characteristics is needed to make an informed decision.

Appendix B - Methods

I evaluated tree health and structure utilizing **visual tree assessment (VTA)** methods. The basis behind VTA is the identification of symptoms, which trees produce in reaction to weak spots or areas of mechanical stress. Trees react to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts (Mattheck & Breloer 1994). Understanding uniform stress allows me to make informed judgments about the condition of a tree.

I measured the diameter of each tree at 54 inches above grade, **diameter at standard height (DSH)**. Where a tree had multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the Guide for Plant Appraisal, 9th Edition, published by the Council of Tree and Landscape Appraisers.

Appendix C - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.
3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.
8. All photographs included in this report were taken by Tree Solutions Inc. during the documented site visit, unless otherwise noted.
9. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
10. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.
11. Loss or alteration of any part of this Agreement invalidates the entire report.

Table of Trees
St. Edwards Park, Kenmore, WA

Date of Inventory: 3-9-2016
Table Prepared: 3-15-2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
501	<i>Pseudotsuga menziesii</i>	Douglas-fir	43.8	Good	Good	35	Retain.	Damage to surface roots from mowers, shared canopy.
502	<i>Pseudotsuga menziesii</i>	Douglas-fir	30.2	Good	Good	23	Retain.	Damage to surface roots from mowers, shared canopy, small amount of bird activity in trunk.
503	<i>Pseudotsuga menziesii</i>	Douglas-fir	35.2	Good	Good	25	Retain.	Shared canopy.
504	<i>Thuja plicata</i>	Western redcedar	39.1	Good	Good	21	Retain.	Central decay column, shared canopy
505	<i>Thuja plicata</i>	Western redcedar	34.4, 23.5	Good	Fair	25	Retain.	Co-dominant stems, wounds, internal decay.
506	<i>Pseudotsuga menziesii</i>	Douglas-fir	31.8	Good	Good	18	Retain.	Good root flare, some girdling roots, some bird activity in trunk.
507	<i>Pseudotsuga menziesii</i>	Douglas-fir	27.9	Fair	Good	22	Retain.	Swept base, some dieback, thinner canopy, shorter branchlet growth, less vigor.
508	<i>Thuja plicata</i>	Western redcedar	42.7	Good	Good	19	Retain.	
509	<i>Thuja plicata</i>	Western redcedar	33.4	Fair	Good	20	Retain.	Slightly thin canopy, moderate vigor.
510	<i>Pseudotsuga menziesii</i>	Douglas-fir	35.7	Good	Good	28	Test if retained.	Swelling on west side of base, surface root damage.
511	<i>Pseudotsuga menziesii</i>	Douglas-fir	41.6	Good	Good	33	Test if retained.	Surface roots, swelling at base/roots
512	<i>Thuja plicata</i>	Western redcedar	20.8	Good	Good	15	Retain.	Surface roots.
513	<i>Thuja plicata</i>	Western redcedar	25.5	Good	Good	19	Retain.	Surface roots.
514	<i>Pseudotsuga menziesii</i>	Douglas-fir	43.4	Good	Good	32	Retain.	Girdling root from adjacent western redcedar, flat side of trunk on south, strange tissue formation on east side possibly a canker.
515	<i>Thuja plicata</i>	Western redcedar	39.2	Good	Good	23	Retain.	
516	<i>Thuja plicata</i>	Western redcedar	32.7	Good	Fair	25	Retain.	Lost top, two new leaders have regrown.
517	<i>Pseudotsuga menziesii</i>	Douglas-fir	34.1	Good	Good	20	Test if retained.	Swept base, bulge at base.
518	<i>Thuja plicata</i>	Western redcedar	36.3	Good	Good	22	Retain.	Canopy is a bit thin.
519	<i>Thuja plicata</i>	Western redcedar	43.7	Good	Good	25	Retain.	
520	<i>Thuja plicata</i>	Western redcedar	32.0	Good	Good	21	Retain.	

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Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
521	<i>Acer macrophyllum</i>	Bigleaf maple	11, 10.6, 13.7	Good	Fair	31	Retain.	Three stems.
522	<i>Acer macrophyllum</i>	Bigleaf maple	15.1	Good	Good	24	Retain.	
523	<i>Acer macrophyllum</i>	Bigleaf maple	12.2, 7.9, 10.8, 12.8	Good	Fair	17	Retain.	
524	<i>Thuja plicata</i>	Western redcedar	41.8	Good	Good	23	Retain.	Slightly buried.
525	<i>Acer macrophyllum</i>	Bigleaf maple	12.0	Good	Fair	13	Retain.	Swept base, subdominant leader.
526	<i>Populus trichocarpa</i>	Black cottonwood	27.2	Good	Good	24	Retain.	
527	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.5	Fair	Good	12	Retain.	
528	<i>Acer macrophyllum</i>	Bigleaf maple	7.4, 11.8, 11.6, 9.9	Good	Fair	36	Retain.	Stilted roots, co-dominant stems from base.
529	<i>Pseudotsuga menziesii</i>	Douglas-fir	36.0	Good	Good	24	Retain.	Stilted roots, growing in wetland.
530	<i>Thuja plicata</i>	Western redcedar	26.0	Good	Fair	20	Retain.	Directly adjacent to 531, swept base.
531	<i>Thuja plicata</i>	Western redcedar	27.2	Good	Fair	20	Retain.	Directly adjacent to 531, swept base.
532	<i>Thuja plicata</i>	Western redcedar	25.8	Good	Fair	20	Retain.	Swept base, decay column.
533	<i>Acer macrophyllum</i>	Bigleaf maple	10.5, 4.8, 4, 3.4, 11.6, 10	Fair	Poor	19	Retain.	Decay at base, large dead parts in canopy.
534	<i>Populus trichocarpa</i>	Black cottonwood	28.2	Good	Fair	31	Retain.	Measured at narrowest point below union. Codominant leaders with included bark.
535	<i>Populus trichocarpa</i>	Black cottonwood	14.6	Fair	Fair	32	Retain.	Ivy on trunk, phototropic lean.
536	<i>Populus trichocarpa</i>	Black cottonwood	23.6	Good	Good	27	Retain.	Grafted at base to 537
537	<i>Populus trichocarpa</i>	Black cottonwood	29.4	Good	Good	27	Retain.	Grafted at base to 536
538	<i>Populus trichocarpa</i>	Black cottonwood	13.7	Fair	Fair	7	Retain.	Broken top, sprouts along stem.

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539	<i>Populus trichocarpa</i>	Black cottonwood	13.2	Good	Fair	10	Retain.	Some dieback, suppressed.
540	<i>Populus trichocarpa</i>	Black cottonwood	14.0	Good	Fair	19	Retain.	Slight phototropic lean, stilted roots, suppressed growth.
541	<i>Populus trichocarpa</i>	Black cottonwood	19.1	Good	Fair	30	Retain.	Lost top, phototropic lean.
542	<i>Populus trichocarpa</i>	Black cottonwood	26.4	Good	Fair	31	Retain.	Lost top, reiterations.
543	<i>Populus trichocarpa</i>	Black cottonwood	25.9	Good	Good	26	Retain.	Grafted at base to tree 542.
544	<i>Thuja plicata</i>	Western redcedar	13.9	Good	Good	13	Retain.	Phototropic lean.
545	<i>Acer macrophyllum</i>	Bigleaf maple	41.9	Fair	Fair	27	Retain.	Measured at narrowest point below union. Kretschmaria and decay at base, very large wound - tear-out at base.
546	<i>Thuja plicata</i>	Western redcedar	35.8	Good	Good	18	Retain.	
547	<i>Populus trichocarpa</i>	Black cottonwood	38.9	Good	Good	33	Retain.	
548	<i>Acer macrophyllum</i>	Bigleaf maple	10.3, 13, 11.8	Fair	Poor	16	Retain.	Kretschmaria and decay visible on trunk, stilted roots.
549	<i>Thuja plicata</i>	Western redcedar	24.7	Poor	Poor	12	Retain.	Dead top, animal activity, lots of wounds.
550	<i>Acer macrophyllum</i>	Bigleaf maple	12, 13.6, 13.1	Good	Fair	30	Retain.	Die back in canopy, narrowly attached stems.
551	<i>Thuja plicata</i>	Western redcedar	36.1	Good	Good	15	Retain.	Two leaders.
552	<i>Acer macrophyllum</i>	Bigleaf maple	15.4	Good	Fair	20	Retain.	Measured at narrowest point below union. Narrow attachment, included bark.
553	<i>Acer macrophyllum</i>	Bigleaf maple	7.9, 11.3	Fair	Poor	21	Retain.	Narrow attachment.
554	<i>Populus trichocarpa</i>	Black cottonwood	25.8	Good	Good	33	Retain.	
555	<i>Populus trichocarpa</i>	Black cottonwood	21, 25.5	Good	Fair	27	Retain.	Co-dominant stems with included bark.
556	<i>Populus trichocarpa</i>	Black cottonwood	35.8, 30.6	Good	Fair	27	Retain.	Co-dominant stems, a 6 and an 8 inch maple growing from base.

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557	<i>Populus trichocarpa</i>	Black cottonwood	24.3, 32.5, 35	Good	Fair	30	Retain.	Three co-dominant stems.
558	<i>Acer macrophyllum</i>	Bigleaf maple	12.4	Good	Good	10	Retain.	
559	<i>Thuja plicata</i>	Western redcedar	27.6	Good	Good	11	Retain.	At edge of streambed/wetland
560	<i>Acer macrophyllum</i>	Bigleaf maple	12.0	Good	Fair	14	Retain.	Co-dominant leaders at approximately 12 feet, lean to north.
561	<i>Alnus rubra</i>	Red alder	18.0	Good	Fair	12	Retain.	Dieback and breakage in canopy.
562	<i>Alnus rubra</i>	Red alder	12.2	Good	Fair	9	Retain.	Lost top.
563	<i>Acer macrophyllum</i>	Bigleaf maple	17.4	Good	Fair	13	Retain.	Large wound, response growth around wound, breakage in canopy.
564	<i>Thuja plicata</i>	Western redcedar	16.2	Good	Good	13	Retain.	
565	<i>Thuja plicata</i>	Western redcedar	13.8	Good	Good	16	Retain.	Small subdominant stem from base
566	<i>Populus trichocarpa</i>	Black cottonwood	24.2	Good	Good	21	Retain.	
567	<i>Populus trichocarpa</i>	Black cottonwood	17.8	Good	Good	23	Retain.	Growing directly adjacent to 568
568	<i>Thuja plicata</i>	Western redcedar	8.5, 11	Good	Fair	12	Retain.	Two stems twisting.
569	<i>Thuja plicata</i>	Western redcedar	14.5	Good	Good	11	Retain.	
570	<i>Pseudotsuga menziesii</i>	Douglas-fir	29.1	Good	Fair	25	Retain.	Lean to north west, crack in trunk, high bulging roots, schwienitzii at base.
571	<i>Pseudotsuga menziesii</i>	Douglas-fir	26.9	Good	Good	20	Retain.	
572	<i>Populus trichocarpa</i>	Black cottonwood	41.8	Good	Fair	32	Retain.	Some breakage in canopy, co-dominant leaders.
573	<i>Populus trichocarpa</i>	Black cottonwood	18.8	Good	Fair	26	Retain.	Directly adjacent to 572.
574	<i>Populus trichocarpa</i>	Black cottonwood	25.7	Good	Good	12	Retain.	
575	<i>Thuja plicata</i>	Western redcedar	21.9	Fair	Poor	12	Retain.	Co-dominant leaders - one dead, bird activity in stems.
576	<i>Thuja plicata</i>	Western redcedar	25.1	Fair	Poor	13	Retain.	Central decay, bird holes, kink in stem, co-dominant leaders.

Table of Trees
St. Edwards Park, Kenmore, WA

Date of Inventory: 3-9-2016
Table Prepared: 3-15-2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
577	<i>Pseudotsuga menziesii</i>	Douglas-fir	24.6	Good	Good	17	Retain.	Phototropic lean to north east.
578	<i>Pseudotsuga menziesii</i>	Douglas-fir	33.4	Good	Good	19	Retain.	
579	<i>Thuja plicata</i>	Western redcedar	8.2	Good	Fair	10	Retain.	Swept base, lost top.
580	<i>Acer macrophyllum</i>	Bigleaf maple	13.7	Good	Good	14	Retain.	A little suppressed.
581	<i>Acer macrophyllum</i>	Bigleaf maple	10, 8.6	Poor	Poor	16	Retain.	Codominant stems, lost top, one stem nearly dead.
582	<i>Acer macrophyllum</i>	Bigleaf maple	12, 7.1	Good	Fair	26	Retain.	
583	<i>Populus trichocarpa</i>	Black cottonwood	17.1	Good	Fair	31	Retain.	
584	<i>Populus trichocarpa</i>	Black cottonwood	23.2	Good	Good	20	Retain.	Lost top, regrown.
585	<i>Thuja plicata</i>	Western redcedar	11.4	Good	Good	13	Retain.	
586	<i>Thuja plicata</i>	Western redcedar	22.6	Good	Good	14	Retain.	
587	<i>Thuja plicata</i>	Western redcedar	19.0	Good	Good	12	Retain.	
588	<i>Populus trichocarpa</i>	Black cottonwood	13.3	Good	Poor	30	Retain.	
589	<i>Populus trichocarpa</i>	Black cottonwood	45.7	Good	Fair	27	Retain.	Three leaders.
590	<i>Thuja plicata</i>	Western redcedar	8.4	Good	Good	12	Retain.	
591	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.8	Good	Good	11	Retain.	
592	<i>Thuja plicata</i>	Western redcedar	32.5	Good	Fair	17	Retain.	Co-dominant leaders twisting.
593	<i>Thuja plicata</i>	Western redcedar	13.3	Good	Good	10	Retain.	
594	<i>Thuja plicata</i>	Western redcedar	11.0	Good	Good	10	Retain.	
595	<i>Thuja plicata</i>	Western redcedar	16.6	Good	Good	11	Retain.	
596	<i>Thuja plicata</i>	Western redcedar	10.2, 9.6	Good	Good	8	Retain.	Co-dominant stems from base - good attachment.
597	<i>Thuja plicata</i>	Western redcedar	11.9	Good	Good	12	Retain.	Small subdominant stem from base
598	<i>Pseudotsuga menziesii</i>	Douglas-fir	12.5	Good	Fair	12	Retain.	

Table of Trees
St. Edwards Park, Kenmore, WA

Date of Inventory: 3-9-2016
Table Prepared: 3-15-2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
599	<i>Arbutus menziesii</i>	Pacific madrone	10.3	Good	Good	35	Retain.	Lean to west.
600	<i>Thuja plicata</i>	Western redcedar	11.0	Good	Fair	13	Retain.	Co-dominant leaders twisting at 10 feet.
601	<i>Thuja plicata</i>	Western redcedar	15.6, 12.2	Good	Good	14	Retain.	
602	<i>Arbutus menziesii</i>	Pacific madrone	8.6	Good	Good	32	Retain.	Phototropic.
603	<i>Thuja plicata</i>	Western redcedar	19.2	Good	Good	12	Retain.	
604	<i>Thuja plicata</i>	Western redcedar	12.6, 10.8	Good	Fair	12	Retain.	
605	<i>Thuja plicata</i>	Western redcedar	12.5, 12.5, 5.5	Good	Fair	16	Retain.	
606	<i>Thuja plicata</i>	Western redcedar	6.4, 5.7	Good	Fair	11	Retain.	
607	<i>Thuja plicata</i>	Western redcedar	9.1	Good	Good	11	Retain.	
608	<i>Populus trichocarpa</i>	Black cottonwood	18.3	Good	Good	18	Retain.	
609	<i>Arbutus menziesii</i>	Pacific madrone	8.0	Good	Good	28	Retain.	Phototropic.
610	<i>Thuja plicata</i>	Western redcedar	15.8	Good	Good	12	Retain.	
611	<i>Thuja plicata</i>	Western redcedar	10.2, 11.5	Good	Good	16	Retain.	Well attached codominant stems.
612	<i>Thuja plicata</i>	Western redcedar	11.3	Good	Good	8	Retain.	Slight kinks in stem.
613	<i>Thuja plicata</i>	Western redcedar	8.1	Good	Good	12	Retain.	
614	<i>Thuja plicata</i>	Western redcedar	8.1	Good	Good	12	Retain.	
615	<i>Arbutus menziesii</i>	Pacific madrone	8.4	Good	Good	22	Retain.	
616	<i>Pseudotsuga menziesii</i>	Douglas-fir	27.9	Good	Good	22	Retain.	
617	<i>Thuja plicata</i>	Western redcedar	11.0	Good	Good	14	Retain.	
618	<i>Pseudotsuga menziesii</i>	Douglas-fir	17.5	Good	Good	18	Retain.	
619	<i>Thuja plicata</i>	Western redcedar	23.0	Good	Fair	20	Retain.	Measured at narrowest point below union of codominant stems.
620	<i>Thuja plicata</i>	Western redcedar	17.9	Good	Good	17	Retain.	
621	<i>Thuja plicata</i>	Western redcedar	9.9, 6.9	Good	Good	11	Retain.	
622	<i>Thuja plicata</i>	Western redcedar	8.1	Good	Good	9	Retain.	
623	<i>Acer macrophyllum</i>	Bigleaf maple	12.2, 4.4, 30.4, 4.7	Good	Good	31	Retain.	

Table of Trees
St. Edwards Park, Kenmore, WA

Date of Inventory: 3-9-2016
Table Prepared: 3-15-2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
624	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.2	Fair	Fair	16	Retain.	Suppressed, lost top, new leader has regrown.
625	<i>Pseudotsuga menziesii</i>	Douglas-fir	9.6	Good	Good	16	Retain.	
626	<i>Pseudotsuga menziesii</i>	Douglas-fir	20.1	Good	Good	21	Retain.	
627	<i>Acer macrophyllum</i>	Bigleaf maple	31, 3.4	Good	Good	21	Retain.	
628	<i>Pseudotsuga menziesii</i>	Douglas-fir	18.1, 15.9	Good	Fair	12	Retain.	
629	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.7	Good	Fair	17	Retain.	Lost top, a bit suppressed.
630	<i>Pseudotsuga menziesii</i>	Douglas-fir	8.8	Good	Fair	13	Retain.	Suppressed.
631	<i>Pseudotsuga menziesii</i>	Douglas-fir	9.8	Good	Good	8	Retain.	
632	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.2	Fair	Good	6	Retain.	
633	<i>Pseudotsuga menziesii</i>	Douglas-fir	12.8	Good	Good	9	Retain.	
634	<i>Pseudotsuga menziesii</i>	Douglas-fir	17.4	Good	Good	20	Retain.	Somewhat phototropic.
635	<i>Pseudotsuga menziesii</i>	Douglas-fir	9.6	Good	Good	9	Retain.	
636	<i>Pseudotsuga menziesii</i>	Douglas-fir	17.3	Good	Good	21	Retain.	
637	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.1	Good	Fair	7	Retain.	Small subdominant stem.
638	<i>Pseudotsuga menziesii</i>	Douglas-fir	13.6	Good	Good	14	Retain.	
639	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.4	Good	Good	11	Retain.	
640	<i>Pseudotsuga menziesii</i>	Douglas-fir	8.5	Good	Good	10	Retain.	Somewhat suppressed.

Table of Trees
St. Edwards Park, Kenmore, WA

Date of Inventory: 3-9-2016
Table Prepared: 3-15-2016

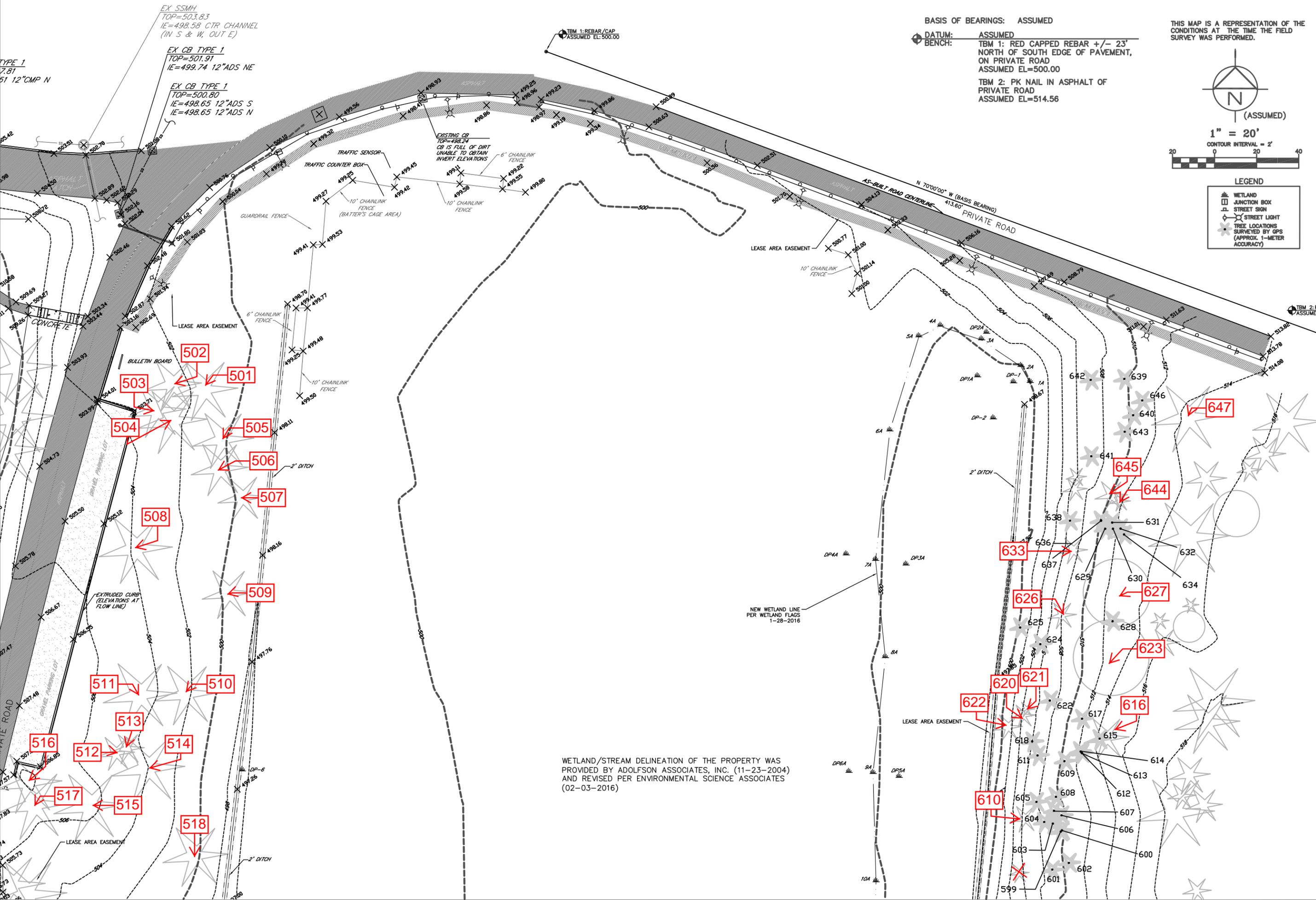
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Drip Line (feet)	Recommended Action	Notes
641	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.5	Good	Fair	12	Retain.	Co-dominant leaders at approximately 30 feet.
642	<i>Pseudotsuga menziesii</i>	Douglas-fir	17.9	Good	Good	17	Retain.	
643	<i>Pseudotsuga menziesii</i>	Douglas-fir	8.8	Good	Fair	15	Retain.	
644	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.5	Good	Good	11	Retain.	
645	<i>Pseudotsuga menziesii</i>	Douglas-fir	15.6	Good	Good	18	Retain.	Broken reiteration.
646	<i>Pseudotsuga menziesii</i>	Douglas-fir	8.8	Good	Good	15	Retain.	
647	<i>Pseudotsuga menziesii</i>	Douglas-fir	38.2	Good	Good	27	Retain.	

Additional notes:

DSH (Diameter at Standard Height) is measured 4.5 feet above grade.

Multi-stem trees are noted, and a single stem equivalent is calculated using the method defined in the Guide for Plant Appraisal 9th Ed.

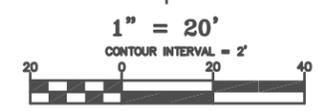
Drip line is measured from the center of the tree to the outermost extent of the canopy



BASIS OF BEARINGS: ASSUMED

DATUM: ASSUMED
 BENCH: TBM 1: RED CAPPED REBAR +/- 23' NORTH OF SOUTH EDGE OF PAVEMENT, ON PRIVATE ROAD ASSUMED EL=500.00
 TBM 2: PK NAIL IN ASPHALT OF PRIVATE ROAD ASSUMED EL=514.56

THIS MAP IS A REPRESENTATION OF THE CONDITIONS AT THE TIME THE FIELD SURVEY WAS PERFORMED.



- LEGEND
- WETLAND
 - JUNCTION BOX
 - STREET SIGN
 - STREET LIGHT
 - TREE LOCATIONS SURVEYED BY GPS (APPROX. 1-METER ACCURACY)

EX SSMH
 TOP=503.83
 IE=498.58 CTR CHANNEL
 (IN S & W, OUT E)

EX CB TYPE 1
 TOP=501.91
 IE=499.74 12"ADS NE

EX CB TYPE 1
 TOP=500.80
 IE=498.65 12"ADS S
 IE=498.65 12"ADS N

EXISTING CB
 TOP=498.24
 CB IS FULL OF DIRT
 UNABLE TO OBTAIN
 INVERT ELEVATIONS

WETLAND/STREAM DELINEATION OF THE PROPERTY WAS PROVIDED BY ADOLFSON ASSOCIATES, INC. (11-23-2004) AND REVISED PER ENVIRONMENTAL SCIENCE ASSOCIATES (02-03-2016)

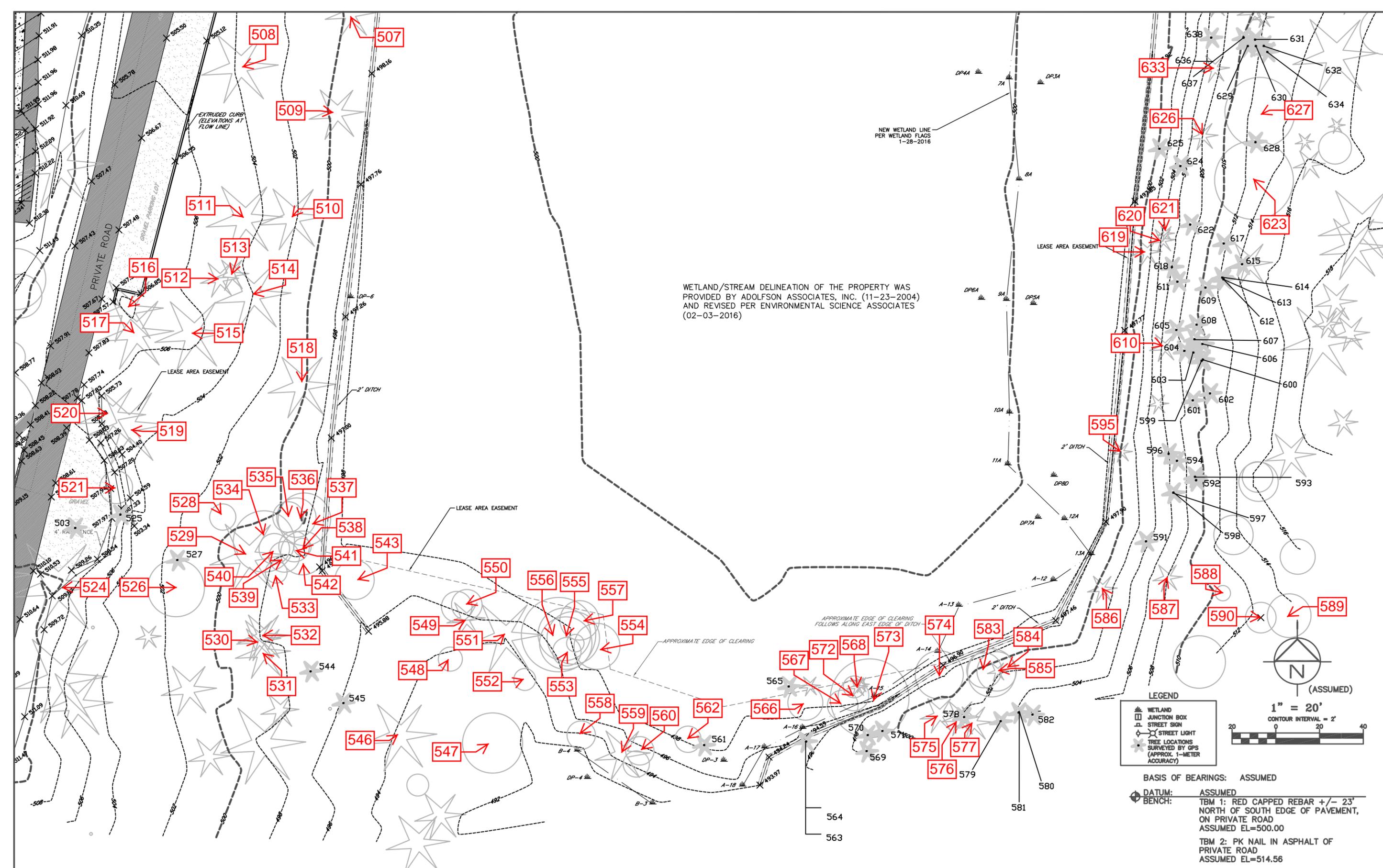
DATE: 02-18-2016 DMR
 REVISION: WETLAND REVISION PER ESM
 1

GROUP FOUR, Inc.
 SURVEYING • ENGINEERING • PLANNING • MANAGEMENT
 16030 JUANITA-WOODINVILLE WAY NE
 BOTHELL, WASHINGTON 98011
 (425)775-4581 • (206)362-4244 • FAX(206)362-3819

**CITY OF KENMORE BALL FIELDS
 TOPOGRAPHY**

WASHINGTON
 KING COUNTY

SHEET	OF
1	2
04-4046	



DATE: 02-18-2016 DMR
REVISION: WETLAND REVISIONS PER ESM
NO. 1

GF GROUP FOUR, Inc.
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CITY OF KENMORE BALL FIELDS TOPOGRAPHY

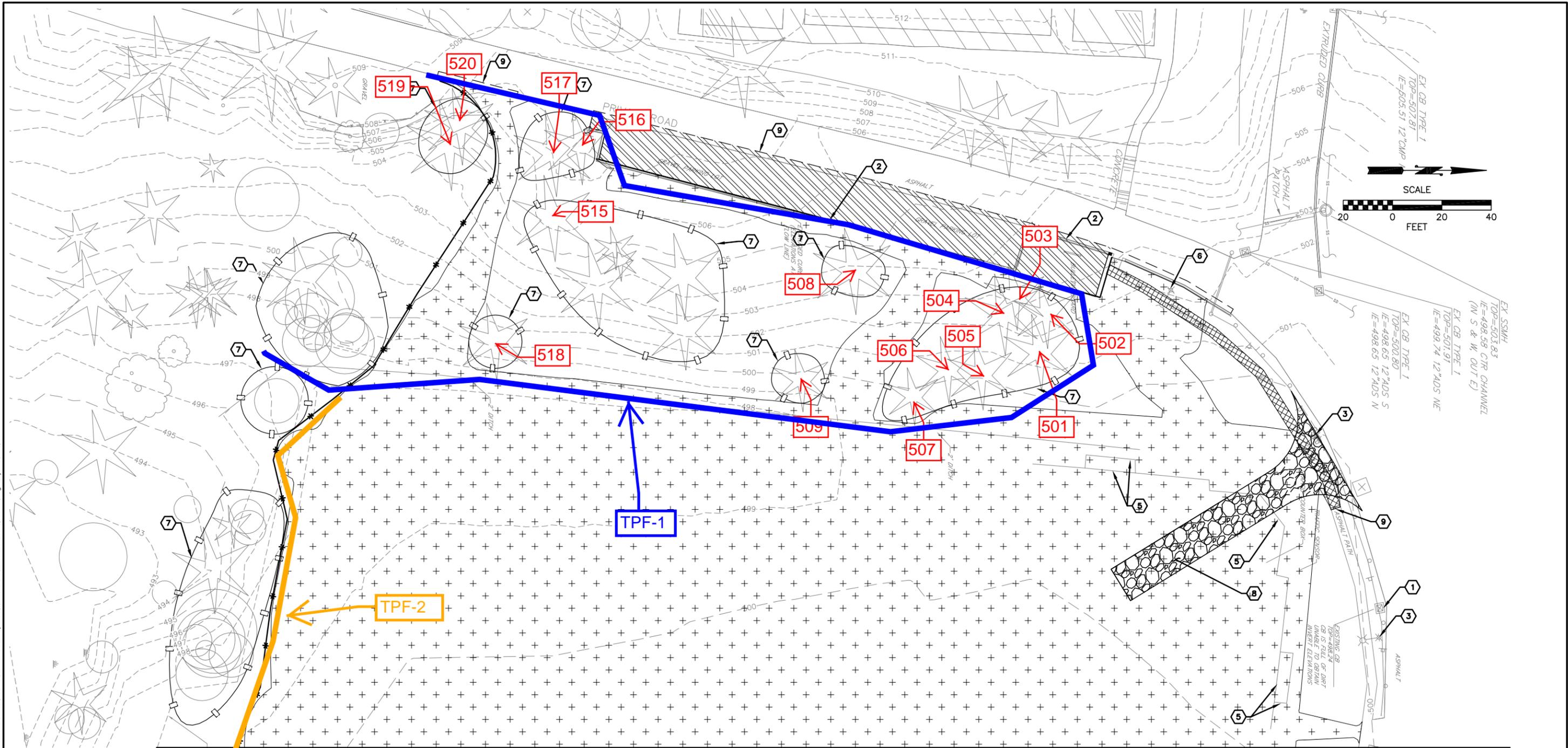
WASHINGTON
KING COUNTY

SHEET	OF
2	2

04-4046

THIS MAP IS A REPRESENTATION OF THE CONDITIONS AT THE TIME THE FIELD SURVEY WAS PERFORMED.

Jul 29, 2016 - 2:59pm - main - X:\kenmore, City of Projects\20170170 - Professional Services Contract 12-C-1082.035 - St. Edwards Park Sports Field\CADD\Plan Sheet\20170170.035-SP.dwg - Layout Name: SP1



GENERAL NOTES:

- ONLY REMOVE TREES CALLED OUT FOR REMOVAL ON THESE PLANS, OR AS DIRECTED BY ENGINEER IN FIELD. ALL OTHER TREES TO BE PROTECTED.
- TREE PROTECTION FENCING SHALL BE PLACED OUTSIDE OF THE DRIP LINE. IF GRADING EXTENDS INTO DRIP LINE, FENCING SHALL BE PLACED AS CLOSE TO GRADING LIMITS AS POSSIBLE.

CONSTRUCTION NOTES:

- INLET PROTECTION PER WSDOT STD PLAN I-40.20-00.
- REMOVE EXISTING CURB.
- PROTECT EXISTING LUMINAIRE.
- REMOVE EXISTING TREE.
- REMOVE EXISTING FENCE.
- REMOVE LUMINAIRE AND FOUNDATION.
- TREE PROTECTION.
- STABILIZED CONSTRUCTION ENTRANCE PER WSDOT STD PLAN I-80.10-01.
- SAWCUT FULL DEPTH PAVEMENT OR SIDEWALK.

MATCHLINE SEE SHEET SP2

LEGEND:

- SILT FENCE PER WSDOT STD DETAIL I-30.15-02.
- SAWCUT
- HIGH VISIBILITY FENCE PER WSDOT STD DETAIL I-10.10-01
- CLEARING & GRUBBING.
- ROADWAY EXCAVATION.
- REMOVE EXISTING ASPHALT PATH.

CALL 2 BUSINESS DAYS BEFORE YOU DIG
 1 800 424 5555
 UTILITIES UNDERGROUND LOCATION CENTER

No.	Date	Revision	By	Appr.

Pertec
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 2707 Colby Avenue, Suite 900
 Everett, Washington 98201



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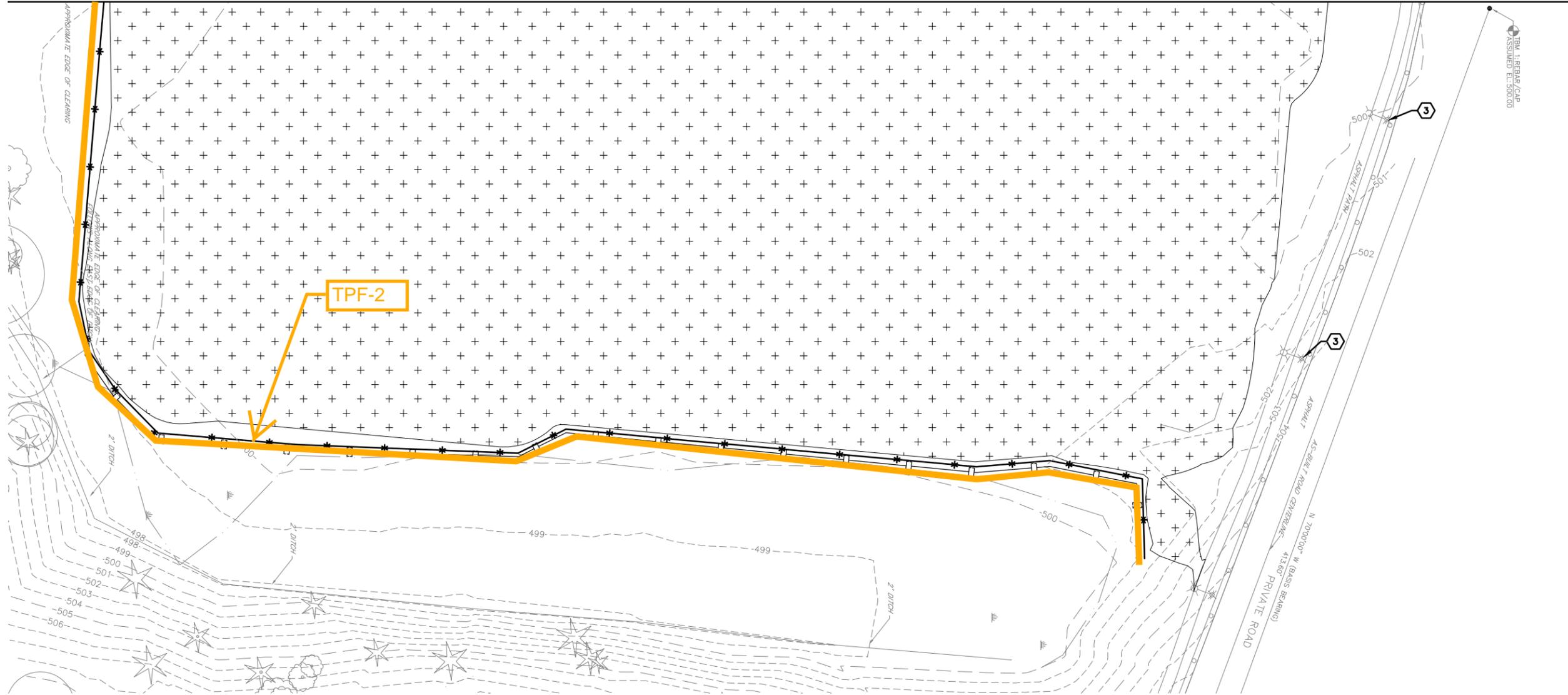
Drawn By	Date
Designed By	07/29/16
Checked By	07/29/16
Approved By	07/29/16

Project Number
 20120170.035

CITY OF KENMORE
 ST. EDWARD STATE PARK SPORTS FIELD
 SITE PREPARATION PLAN

Drawing No.
SP1
 Sheet No.
 of Total

MATCHLINE SEE SHEET SP1



GENERAL NOTES:

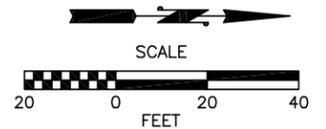
1. ONLY REMOVE TREES CALLED OUT FOR REMOVAL ON THESE PLANS, OR AS DIRECTED BY ENGINEER IN FIELD. ALL OTHER TREES TO BE PROTECTED.
2. TREE PROTECTION FENCING SHALL BE PLACED OUTSIDE OF THE DRIP LINE. IF GRADING EXTENDS INTO DRIP LINE, FENCING SHALL BE PLACED AS CLOSE TO GRADING LIMITS AS POSSIBLE.

CONSTRUCTION NOTES:

- 1 INLET PROTECTION PER WSDOT STD PLAN I-40.20-00.
- 2 REMOVE EXISTING CURB.
- 3 PROTECT EXISTING LUMINAIRE.
- 4 REMOVE EXISTING TREE.
- 5 REMOVE EXISTING FENCE.
- 6 REMOVE LUMINAIRE AND FOUNDATION.
- 7 TREE PROTECTION.
- 8 STABILIZED CONSTRUCTION ENTRANCE PER WSDOT STD PLAN I-80.10-01.
- 9 SAWCUT FULL DEPTH PAVEMENT OR SIDEWALK.

LEGEND:

- SILT FENCE PER WSDOT STD DETAIL I-30.15-02.
- SAWCUT
- HIGH VISIBILITY FENCE PER WSDOT STD DETAIL I-10.10-01
- CLEARING & GRUBBING.
- ROADWAY EXCAVATION.
- REMOVE EXISTING ASPHALT PATH.



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Jul 29, 2016 - 2:59pm main - X:\kenmore, City of Projects\20170170 - Professional Services Contract 12-C1082,035 - St. Edwards Park Sports Field\CADD\Plan Sheet\20170170.035-SP.dwg Layout Name: SP2

No.	Date	Revision	By	Appr.



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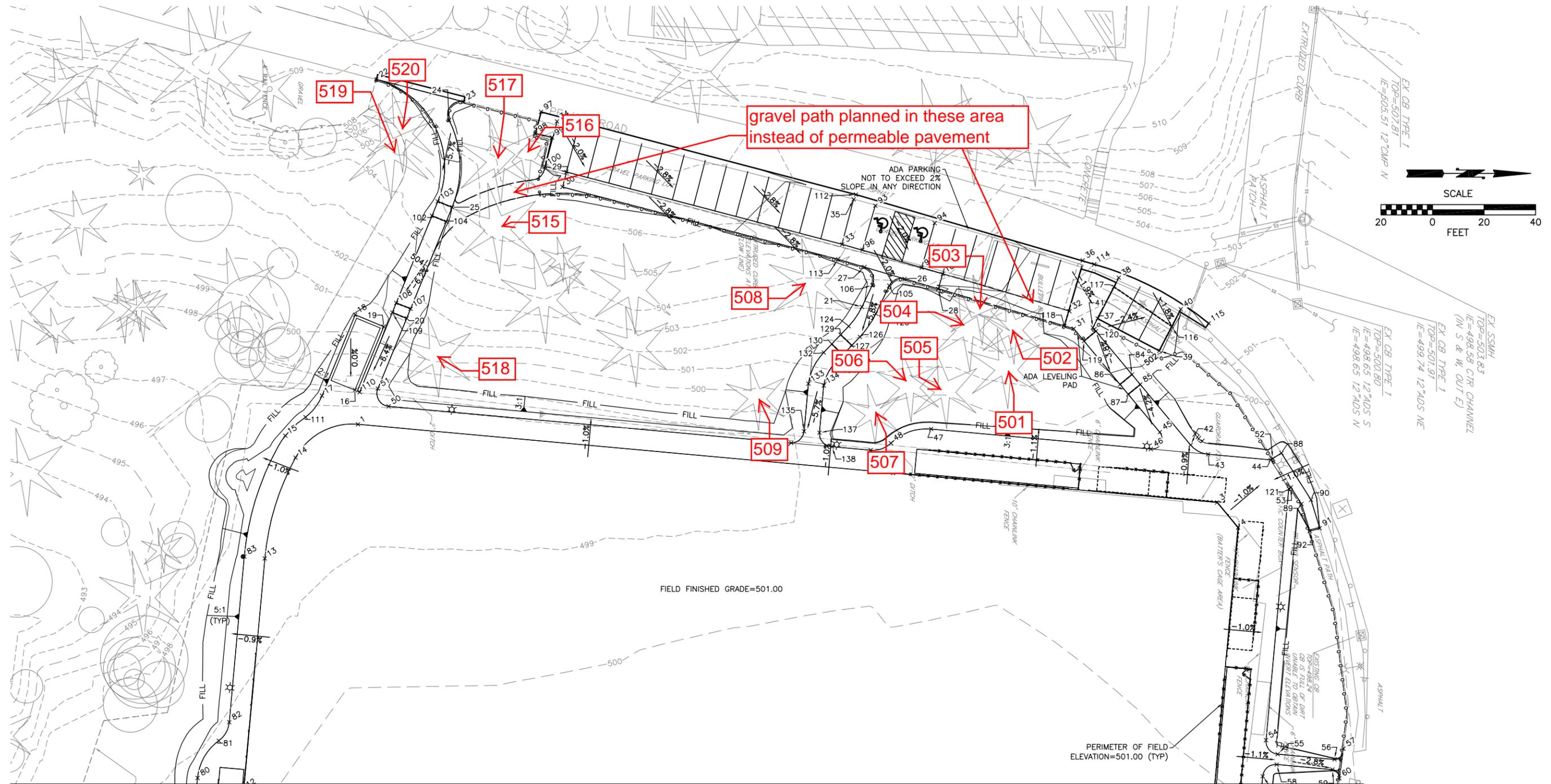
Drawn By	Date
MMC	07/29/16
Designed By	
MJ	07/29/16
Checked By	
DS	07/29/16
Approved By	

Project Number
 20120170.035

CITY OF KENMORE
 ST. EDWARD STATE PARK SPORTS FIELD
 SITE PREPARATION PLAN

Drawing No.
SP2
 Sheet No.
 of Total

Jul 29, 2016 - 3:00pm - main - X:\kenmore - City of Projects\2017070 - Professional Services Contract 12-C\1082\035 - St. Edwards Park Sports Field\CADD\Plan Sheet\2017070\035-GR.dwg - Layout Name: GR1



MATCHLINE SEE SHEET GR2

LEGEND

----- GRADE BREAK

GENERAL NOTES

- SEE GR3 FOR POINT LOCATIONS AND ELEVATIONS.
- CUT/FILL SLOPES TO BE 5:1 MAX UNLESS NOTED OTHERWISE.

CALL 2 BUSINESS DAYS BEFORE YOU DIG
 1 800 424 5555
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Drawn By	Date
MMC	07/29/16
Designed By	
MJ	07/29/16
Checked By	
DS	07/29/16
Approved By	

Project Number
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CITY OF KENMORE
 ST. EDWARD STATE PARK SPORTS FIELD
GRADING PLAN

Drawing No.
GR1
 Sheet No.
 of Total