

Charlie Carroll MSc AvDip.Hort (Arb)
Arboricultural Consultant
ISA Cert # PN - 7835AM TRAQ
(503) 707-6793 | charlie@nwtreespecialists.com



AAI Engineering – JAE Oregon Building Expansion

Arboricultural Impact Assessment and Inventory

INTRODUCTION

A pre-construction arboricultural inspection and survey of 110 trees was carried out on September 19th, 2019 at approximately 7:00am to assess the impact of the proposed construction of the JAE Building Expansion (Tualatin OR). Tree species identification and condition assessment was requested by the project manager to address Tualatin Development Code TDC 73B.070(3) for Tree Preservation. This assessment is aimed to directly address the Tualatin Tree Code and provide a suitable protection plan for the trees impacted by the proposed building expansion construction.

A base survey/site plan has been supplied identifying the trees and area for arboricultural impact assessment for the Land Use Application associated with this project. In response, all of the relevant trees on site have been inspected and subject to arboricultural assessment to address, in particular, the 24 trees proposed for removal, and an additional 8 trees that are within close proximity development that may have modified post-construction growing mediums.

Of the 110 trees, there are in fact 41 trees that show technical measurements (DBH >12") that would otherwise qualify for onsite protection during construction/demolition activities. The assessment is summarized as follows, and further information is contained within the 'Tree Information and Construction Assessment' section of this document:

- **Tree Removals (*Northern Section of Project*)** – this portion of the subdivision proposes initial excavation and construction activities that will necessitate the removal 24 of 97 trees that range of conditions in terms health, structural stability, and retention value. The majority of the trees in question cannot be considered 'significant' from an arboricultural perspective, and several have poor structural stability and are located at the eastern section of edge-effected and marginally fragmented woodland. There is however one tree (ID#1972) that is a Specimen tree that has significant preservation value and may form part of a remnant grove of riparian vegetation in this area. This tree is of noteworthy arboricultural merit and is one of three dominant trees surveyed in relation to this portion of the proposed development.
- **Tree Retention (*Southern Section of Project*)** – the proposed development in this section proposes to retain and protect 13 trees that range in condition, genus, and retention value.

An additional stormwater detention pond is proposed to be "reconditioned" around tree numbers 1922 – 1930. The proposal is to retain and protect these trees with fencing to follow the limits of construction. It is recommended that on-site arboricultural supervision during any associated excavation works in this area be required and tree roots greater than 2" diameter be retained and any root pruning documented.

- **Trees at the Edge of Construction:** Additional arboricultural supervision is highly recommended during excavation and building activities at the western edge of the proposed building extension. Given the close proximity to development, any work near the dip line or at closest proximity to this collective group of trees should be supervised by the project arborist to ensure they remain viable in a post construction medium.
- **Trees Recommended for removal** – it is recommended that two Black Cottonwoods (ID#2040 & 2041) be subject to removal and replacement in association with this development. Both trees displayed clear visual evidence symptomatic of trees approaching or at the end of their Safe Useful Life Expectancies. Although

October 2nd, 2019

they are outside of the building's footprint, they do form part of the grove of vegetation that should be managed appropriately in relation to this project.

- **Significant or Specimen tree preservation** – these trees have been included in this assessment to document their overall condition and contribution to the local urban forest. Tree 1972 36" DBH Black Cottonwood, Tree 1982 24" DBH Douglas fir, and Tree 1940 28" DBH Western red cedar have can be referenced and are not considered in the building foot print in this instance. These trees are considered to have a "high" to "significant" preservation value and work including tree removal should not negatively impact these individual trees.
- **Mature Tree Preservation** - For this portion of the development project, the applicant has demonstrated that development has been designed to avoid damaging mature trees, and provided a justification for the need to remove trees in association with this project from an developmental perspective, The applicant has identified a stand of native trees to the west of the proposed development and has provided protection measures with targeted/minimalized tree removal to preserve this section of vegetation.
- **Impact to Urban Forest** – the removal of the trees in this location does involve the removal of native trees that are dominant in the landscape. There are a few that are significant from an urban forestry perspective and would otherwise preclude appropriate development as it is proposed. However, the most dominant and noteworthy specimens for the most part are proposed for retention as part of this project, and the general condition of the urban forest will not be substantially modified provided tree protection measures are in place to minimize the impact to indivual trees.
- **Tree protection measures for project** - Standard tree protection fencing (6' chain-link, ANSI A300) should be erected and follow the tree protection plan provided in the 'Concept Tree Protection plan'. Absolutely NO encroachment beyond this area is permitted and no access into this area is allowed without permission from the project arborist. To avoid the removal of specimen trees and measures taken to protect tree health and structural stability, each trees drip line should also be considered during all construction activity <https://www.tualatinoregon.gov/developmentcode/chapter-73b-landscaping-standards>.

October 2nd, 2019

RECOMMENDATIONS

It is recommended that the seven trees proposed for removal are subject to a suitable mitigation/replacement strategy. All other trees subject to this assessment should be preserved at all stages of development with on-site arboricultural supervision and guidance provided as specified in this report.

Although I do not normally recommend tree removal, in this instance this seems the best option to allow for fair urban forestry outcomes and to support fair and reasonable development.

Tree protection fencing is the most-common method for setting up a Root Protection Zone and is designed to act as a physical barrier of protective fencing at the edge of ANY construction activities which include the following:

- Soil disturbance of any kind.
- Storage of material of any kind.
- Preparation of materials.
- Pedestrian or vehicular access.

Any variations, modifications, or access inside of the prescribed Tree Protection Fencing must be approved and under the direct supervision of the project arborist.

Thank you for the opportunity for preparing this assessment and please feel free to contact me if you have any questions or would like to discuss this matter further.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Smith', is written in a cursive style.

October 2nd, 2019

TREE INFORMATION AND CONSTRUCTION ASSESSMENT:

ID	Common Name	Latin Name	Status	DBH	Critical Root Zone (CRZ)	Tree Protection Zone (TPZ)	Height Range	Crown Spread	Canopy Shape	Tree age	Condition (Health)	Condition (Structure)	Useful Life Expectancy	Crown Dieback (%)	Reason for Removal	Suitability to Location	Preservation Value
1922	Paper birch	Betula papyrifera	Alive/Suitable for Retention	14.21	7.105	14.21	30ft-50ft	30	Suppressed	Semi-mature	Good	Poor	10 to 20 years	<25%		Fair	Low
1923	Paper birch	Betula papyrifera	Alive/Suitable for Retention	12.21	6.105	12.21	30ft-50ft	30	Suppressed	Semi-mature	Good	Poor	10 to 20 years	<25%		Fair	Low
1924	Paper birch	Betula papyrifera	Alive/Suitable for Retention	9	4.5	9	30ft-50ft	30	Suppressed	Semi-mature	Good	Fair	10 to 20 years	<25%		Fair	Low
1925	Paper birch	Betula papyrifera	Alive/Suitable for Retention	13.3	6.65	13.3	30ft-50ft	30	Suppressed	Semi-mature	Good	Poor	10 to 20 years	<25%		Fair	Low
1926	Paper birch	Betula papyrifera	Alive/Suitable for Retention	7	3.5	7	30ft-50ft	30	Suppressed	Semi-mature	Good	Poor	10 to 20 years	<25%		Fair	Low
1927	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	30	15	30	75ft-100ft	35	Asymmetrical	Mature	Fair	Good	20 to 40 years	<25%		Good	Moderate
1928	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	29	14.5	29	75ft-100ft	35	Asymmetrical	Mature	Fair	Good	20 to 40 years	<25%		Good	Moderate
1929	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	30	15	30	75ft-100ft	35	Asymmetrical	Mature	Fair	Good	20 to 40 years	<25%		Good	Moderate
1930	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11	5.5	11	50ft-75ft	20	Suppressed	Mature	Fair	Fair	10 to 20 years	<25%		Fair	Low
1931	Common crabapple	Malus sylvestris	Alive/Suitable for Retention	7.81	3.905	7.81	15ft-30ft	15	Symmetrical	Semi-mature	Poor	Poor	5 to 10 years	25-50%		Fair	Very low
1932	Flowering dogwood	Cornus florida	Alive/Suitable for Retention	4	2	4	<15ft	8	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Low
1933	European white birch	Betula pendula	Alive/Suitable for Retention	11	5.5	11	30ft-50ft	35	Asymmetrical	Semi-mature	Poor	Fair	1 to 5 years	25-50%		Fair	Low
1934	European white birch	Betula pendula	Alive/Suitable for Retention	11	5.5	11	30ft-50ft	35	Symmetrical	Semi-mature	Poor	Fair	1 to 5 years	25-50%		Fair	Low
1935	European white birch	Betula pendula	Alive/Suitable for Retention	7	3.5	7	30ft-50ft	30	Asymmetrical	Semi-mature	Fair	Fair	10 to 20 years	<25%		Fair	Moderate
1936	European white birch	Betula pendula	Alive/Suitable for Retention	13	6.5	13	30ft-50ft	35	Asymmetrical	Semi-mature	Fair	Fair	10 to 20 years	<25%		Fair	Moderate
1937	Western red cedar	Thuja plicata	Alive/Suitable for Retention	14	7	14	30ft-50ft	30	Symmetrical	Semi-mature	Poor	Fair	5 to 10 years	<25%		Fair	Moderate
1938	Western red cedar	Thuja plicata	Alive/Suitable for Retention	6	3	6	15ft-30ft	10	Symmetrical	Semi-mature	Poor	Fair	5 to 10 years	<25%		Fair	Moderate
1939	Western red cedar	Thuja plicata	Alive/Suitable for Retention	13	6.5	13	30ft-50ft	30	Symmetrical	Semi-mature	Poor	Fair	5 to 10 years	<25%		Fair	Moderate
1940	Western red cedar	Thuja plicata	Alive/Suitable for Retention	27.75	13.875	27.75	30ft-50ft	35	Symmetrical	Mature	Good	Poor	10 to 20 years	<25%		Poor	High
1941	Western red cedar	Thuja plicata	Alive/Suitable for Retention	15.65	7.825	15.65	30ft-50ft	35	Symmetrical	Mature	Good	Fair	20 to 40 years	<25%		Poor	High
1944	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	10	5	10	30ft-50ft	35	Symmetrical	Semi-mature	Fair	Fair	10 to 20 years		Development		
1945	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	18.44	9.22	18.44	30ft-50ft	35	Symmetrical	Semi-mature	Fair	Poor	5 to 10 years		Development		
1948	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	16	8	16	30ft-50ft	30	Symmetrical	Semi-mature	Good	Poor	5 to 10 years		Development		
1950	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	14	7	14	30ft-50ft	30	Symmetrical	Semi-mature	Fair	Fair	5 to 10 years		Development		
1951	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	18.6	9.3	18.6	30ft-50ft	30	Symmetrical	Semi-mature	Poor	Very Poor	10 to 20 years		Development		
1952	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	13.89	6.945	13.89	30ft-50ft	30	Symmetrical	Semi-mature	Poor	Very Poor	10 to 20 years		Development		
1954	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	16.55	8.275	16.55	30ft-50ft	28	Symmetrical		Poor	Poor	5 to 10 years		Development	Poor	Low
1955	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	22.67	11.335	22.67	30ft-50ft	30	Symmetrical		Fair	Poor	10 to 20 years		Development	Poor	Low
1956	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	8	4	8	30ft-50ft	10	Symmetrical	Semi-mature	Fair	Poor	10 to 20 years		Development	Poor	Low
1957	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	9	4.5	9	30ft-50ft	10	Symmetrical	Semi-mature	Fair	Poor	10 to 20 years		Development	Poor	Low
1958	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	13.6	6.8	13.6	30ft-50ft	10	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Moderate
1959	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8.25	4.125	8.25	30ft-50ft	10	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Moderate
1960	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7.81	3.905	7.81	30ft-50ft	10	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Moderate
1961	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10	5	10	30ft-50ft	15	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Moderate

October 2nd, 2019

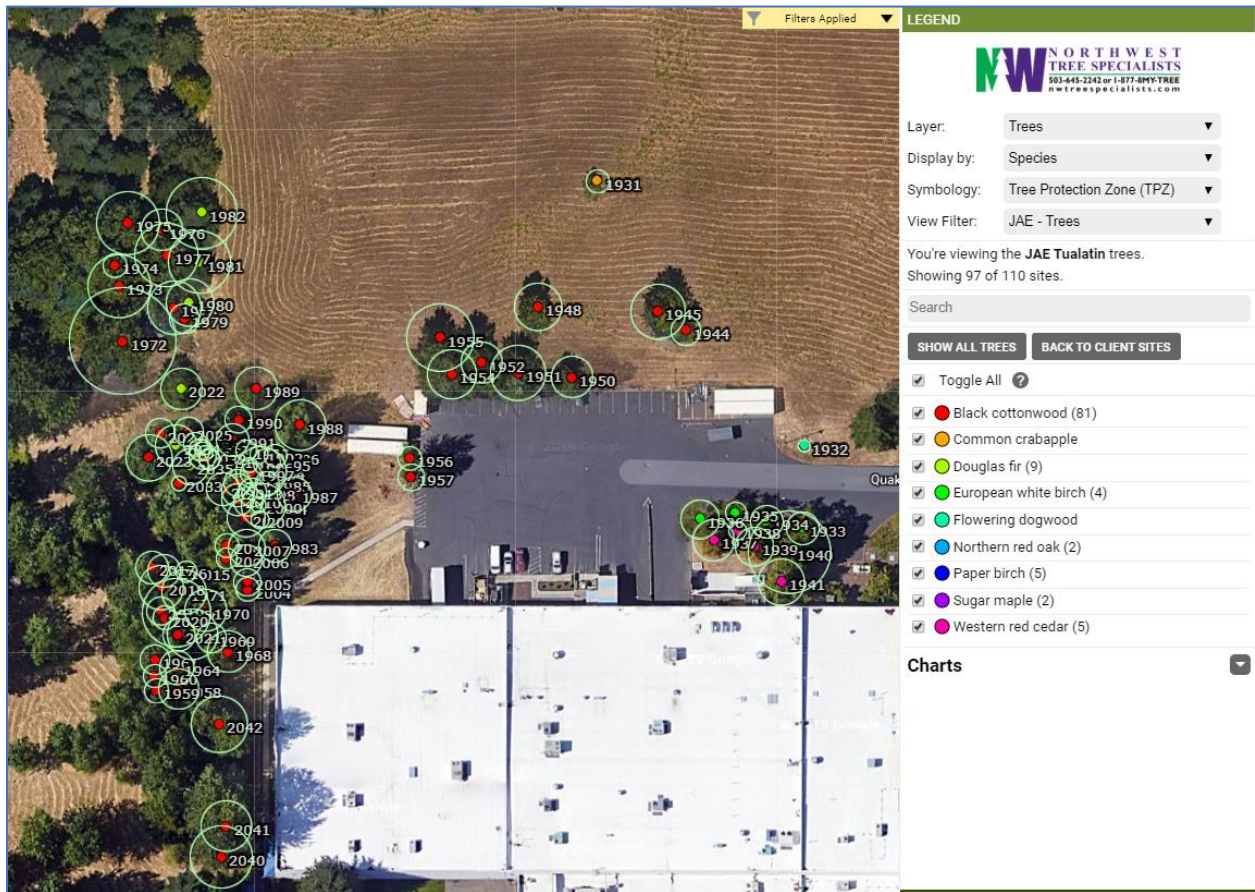
ID	Common Name	Latin Name	Status	DBH	Critical Root Zone (CRZ)	Tree Protection Zone (TPZ)	Height Range	Crown Sprea	Canopy Shape	Tree age	Condition (Health)	Condition (Structu)	Useful Life Expectancy	Crown Dieback (%)	Reason for Removal	Suitability to Locati	Preservation Value
1964	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11.49	5.745	11.49	30ft-50ft	20	Symmetrical	Young	Fair	Poor	10 to 20 years	<25%		Good	Moderate
1966	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	23	11.5	23	50ft-75ft	30	Asymmetrical	Semi-mature	Good	Good	40 years +			Good	High
1967	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	17	8.5	17	50ft-75ft	30	Asymmetrical	Semi-mature	Good	Good	40 years +			Good	High
1968	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	14	7	14	30ft-50ft	25	Symmetrical	Semi-mature	Fair	Fair	20 to 40 years	<25%		Good	Moderate
1969	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10	5	10	30ft-50ft	15	Symmetrical	Semi-mature	Fair	Fair	20 to 40 years	<25%		Good	Moderate
1970	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	14.14	7.07	14.14	30ft-50ft	25	Symmetrical	Semi-mature	Fair	Poor	5 to 10 years	<25%		Good	Moderate
1971	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	15	7.5	15	50ft-75ft	30	Symmetrical	Semi-mature	Poor	Poor	5 to 10 years	<25%		Good	Moderate
1972	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	36	18	36	75ft-100ft	45	Symmetrical	Mature	Fair	Poor	20 to 40 years	<25%		Excellent	Significant
1973	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	21.21	10.605	21.21	75ft-100ft	35	Symmetrical	Mature	Fair	Poor	20 to 40 years	<25%		Good	High
1974	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8	4	8	50ft-75ft	10	Symmetrical	Semi-mature	Very Poor	Poor	1 to 5 years	<25%		Good	Low
1975	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	21.21	10.605	21.21	75ft-100ft	35	Symmetrical	Mature	Fair	Poor	20 to 40 years	<25%		Excellent	High
1976	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	14	7	14	50ft-75ft	35	Symmetrical	Mature	Fair	Good	20 to 40 years	<25%		Excellent	High
1977	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	21.38	10.69	21.38	75ft-100ft	35	Symmetrical	Mature	Fair	Poor	10 to 20 years	<25%		Excellent	High
1978	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	18	9	18	75ft-100ft	35	Symmetrical	Mature	Good	Fair	40 years +	<25%		Excellent	High
1979	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10	5	10	30ft-50ft	12	Suppressed	Mature	Fair	Fair	10 to 20 years	<25%		Fair	Moderate
1980	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	16	8	16	30ft-50ft	25	Symmetrical	Semi-mature	Good	Poor	20 to 40 years	<25%		Good	High
1981	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	21	10.5	21	50ft-75ft	30	Symmetrical	Semi-mature	Good	Good	40 years +	<25%		Good	High
1982	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	24	12	24	50ft-75ft	30	Symmetrical	Semi-mature	Good	Good	40 years +	<25%		Good	High
1983	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	11	5.5	11	50ft-75ft	35	Symmetrical	Semi-mature	Good	Good	40 years +		Development	Fair	Moderate
1984	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	14.87	7.435	14.87	50ft-75ft	30	Symmetrical	Semi-mature	Fair	Poor	20 to 40 years		Development	Fair	Moderate
1985	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	8	4	8	50ft-75ft	12	Suppressed	Semi-mature	Fair	Good	40 years +		Development	Fair	Moderate
1986	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	7.62	3.81	7.62	30ft-50ft	12	Suppressed	Semi-mature	Fair	Fair	40 years +		Development	Fair	Moderate
1987	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	11.58	5.79	11.58	50ft-75ft	25	Suppressed	Semi-mature	Fair	Poor	20 to 40 years		Development	Fair	Moderate
1988	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	17.03	8.515	17.03	50ft-75ft	35	Symmetrical	Semi-mature	Fair	Poor	20 to 40 years		Development	Fair	Moderate
1989	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	14.42	7.21	14.42	50ft-75ft	30	Symmetrical	Semi-mature	Fair	Poor	20 to 40 years		Development	Fair	Moderate
1990	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9	4.5	9	50ft-75ft	15	Symmetrical	Semi-mature	Poor	Good	20 to 40 years	<25%		Fair	Low
1991	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11	5.5	11	50ft-75ft	15	Symmetrical	Semi-mature	Fair	Fair	20 to 40 years	<25%		Fair	Low
1992	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	50ft-75ft	10	Suppressed	Semi-mature	Fair	Good	40 years +	<25%		Fair	Low
1993	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	6	3	6	30ft-50ft	10	Suppressed	Semi-mature	Fair	Fair	40 years +	<25%	Development	Fair	Low
1994	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	17	8.5	17	50ft-75ft	30	Symmetrical	Semi-mature	Fair	Good	40 years +		Development	Fair	High
1995	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	9.22	4.61	9.22	30ft-50ft	15	Suppressed	Semi-mature	Fair	Poor	10 to 20 years	<25%	Development	Fair	Low
1996	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	5	2.5	5	30ft-50ft	10	Suppressed	Semi-mature	Poor	Fair	20 to 40 years	<25%		Fair	Low
1997	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	30ft-50ft	10	Suppressed	Semi-mature	Poor	Fair	20 to 40 years	<25%		Fair	Low
1998	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9.64	4.82	9.64	30ft-50ft	25	Suppressed	Semi-mature	Poor	Poor	10 to 20 years	<25%		Fair	Low
1999	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9.85	4.925	9.85	50ft-75ft	15	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%		Fair	Low
2000	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	5	2.5	5	30ft-50ft	15	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%	Development	Fair	Low

October 2nd, 2019

ID	Common Name	Latin Name	Status	DBH	Critical Root Zone (CRZ)	Tree Protection Zone (TPZ)	Height Range	Crown Spread	Canopy Shape	Tree age	Condition (Health)	Condition (Structural)	Useful Life Expectancy	Crown Dieback (%)	Reason for Removal	Suitability to Location	Preservation Value
2002	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8	4	8	30ft-50ft	15	Suppressed	Semi-mature	Fair	Good	20 to 40 years	<25%		Good	Moderate
2003	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	30ft-50ft	15	Suppressed	Semi-mature	Fair	Good	20 to 40 years	<25%		Good	Moderate
2004	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8	4	8	30ft-50ft	15	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%		Fair	Low
2005	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9.22	4.61	9.22	30ft-50ft	15	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%		Fair	Low
2006	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10.63	5.315	10.63	30ft-50ft	20	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Fair	Low
2007	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	12.45	6.225	12.45	50ft-75ft	35	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Fair	Low
2008	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	12.81	6.405	12.81	50ft-75ft	30	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Fair	Low
2009	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	6	3	6	30ft-50ft	10	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%	Development	Fair	Low
2010	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10.77	5.385	10.77	50ft-75ft	25	Suppressed	Semi-mature	Poor	Fair	20 to 40 years	<25%		Fair	Low
2011	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9	4.5	9	50ft-75ft	20	Suppressed	Semi-mature	Fair	Fair	20 to 40 years	<25%		Fair	Low
2012	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11.05	5.525	11.05	50ft-75ft	25	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Fair	Low
2013	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	11.05	5.525	11.05	50ft-75ft	25	Suppressed	Semi-mature	Good	Good	40 years +	<25%		Good	High
2015	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	50ft-75ft	12	Suppressed	Semi-mature	Fair	Good	40 years +	<25%		Good	Moderate
2016	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11	5.5	11	50ft-75ft	25	Symmetrical	Semi-mature	Good	Good	20 to 40 years	<25%		Good	High
2017	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	11	5.5	11	50ft-75ft	25	Symmetrical	Semi-mature	Good	Good	20 to 40 years	<25%		Good	High
2018	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	15	7.5	15	50ft-75ft	35	Symmetrical	Semi-mature	Good	Good	40 years +	<25%		Good	High
2019	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9.49	4.745	9.49	50ft-75ft	18	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Good	Moderate
2020	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8.06	4.03	8.06	50ft-75ft	18	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Good	Moderate
2021	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10.82	5.41	10.82	50ft-75ft	18	Suppressed	Semi-mature	Fair	Poor	20 to 40 years	<25%		Good	Moderate
2022	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	14	7	14	30ft-50ft	35	Symmetrical	Semi-mature	Good	Good	40 years +			Good	High
2023	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	15.65	7.825	15.65	50ft-75ft	35	Symmetrical	Mature	Good	Poor	20 to 40 years			Good	High
2024	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10	5	10	50ft-75ft	25	Symmetrical	Mature	Good	Poor	20 to 40 years			Good	Moderate
2025	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	10	5	10	50ft-75ft	25	Symmetrical	Semi-mature	Good	Good	40 years +			Good	Moderate
2026	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	8	4	8	50ft-75ft	15	Suppressed	Semi-mature	Good	Good	40 years +			Good	Moderate
2027	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	5	2.5	5	50ft-75ft	10	Suppressed	Young	Good	Good	40 years +			Good	Moderate
2028	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7.21	3.605	7.21	50ft-75ft	10	Suppressed	Young	Good	Fair	40 years +			Good	Moderate
2029	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	5	2.5	5	50ft-75ft	10	Suppressed	Young	Good	Fair	40 years +			Good	Moderate
2030	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	50ft-75ft	10	Suppressed	Young	Good	Good	40 years +			Good	Moderate
2031	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	7	3.5	7	50ft-75ft	10	Suppressed	Young	Good	Fair	40 years +			Good	Moderate
2032	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	9.17	4.585	9.17	50ft-75ft	15	Suppressed	Young	Good	Poor	20 to 40 years			Good	Moderate
2033	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	5	2.5	5	50ft-75ft	10	Suppressed	Young	Fair	Fair	20 to 40 years			Good	Moderate
2034	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	14	7	14	50ft-75ft	30	Symmetrical	Semi-mature	Good	Good	40 years +	<25%		Good	High
2035	Douglas fir	Pseudotsuga menziesii	Alive/Suitable for Retention	12	6	12	50ft-75ft	30	Symmetrical	Semi-mature	Good	Good	40 years +	<25%		Good	High
2036	Northern red oak	Quercus rubra	Alive/Suitable for Retention	12	6	12	30ft-50ft	30	Symmetrical	Semi-mature	Good	Fair	40 years +	<25%		Good	Moderate
2037	Northern red oak	Quercus rubra	Alive/Suitable for Retention	10	5	10	15ft-30ft	30	Symmetrical	Semi-mature	Fair	Fair	40 years +	<25%		Good	Moderate
2038	Sugar maple	Acer saccharum	Alive/Suitable for Retention	5	2.5	5	15ft-30ft	15	Symmetrical	Young	Good	Good	40 years +	<25%		Good	Low
2039	Sugar maple	Acer saccharum	Alive/Suitable for Retention	5	2.5	5	15ft-30ft	15	Symmetrical	Young	Good	Good	40 years +	<25%		Good	Low
2040	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	21	10.5	21	75ft-100ft	30	Asymmetrical	Semi-mature	Good	Good	40 years +		Diseased, Infrastructure Conflict	Poor	Low
2041	Black cottonwood	Populus balsamifera ssp. trichocarpa	Proposed Tree Removal	17	8.5	17	75ft-100ft	45	Asymmetrical	Semi-mature	Good	Very Poor	5 to 10 years		Diseased, Infrastructure Conflict	Poor	Moderate
2042	Black cottonwood	Populus balsamifera ssp. trichocarpa	Alive/Suitable for Retention	19	9.5	19	75ft-100ft	35	Asymmetrical	Semi-mature	Good	Good	20 to 40 years			Fair	Moderate

October 2nd, 2019

Tree Locations and Summary: Tree by location (ID#), species, and DBH with RPZ displayed (NORTHERN ZONE)



Total Trees = 97

Total Regulated (where standards apply) = 41 having a DBH greater than 12".

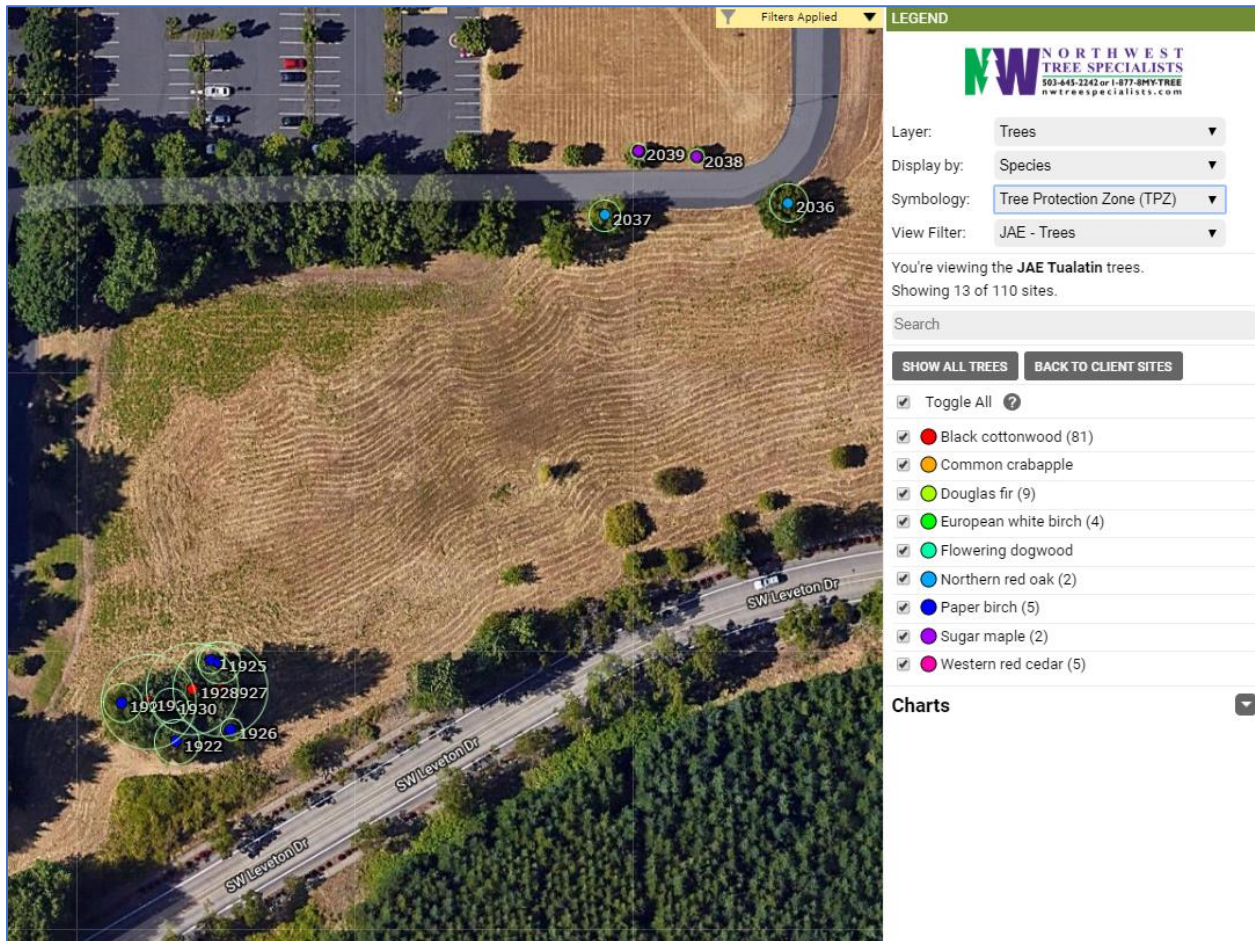
Total Specimen Trees (where standards apply) = 3 (Tree 1972 36" DBH Black Cottonwood, Tree 1982 24" DBH Douglas fir, and Tree 1940 28" DBH Western red cedar).

Number of Exempt Trees in Survey = Trees 2041 and 2040 are in condition in terms of health and structure and should be removed as part of this development.

There are additional trees on site, however this is the initial tree survey for Tracks A and B and the associated development.

October 2nd, 2019

Tree Locations and Summary: Tree by location (ID#), species, and DBH with RPZ displayed (Southern Zone)



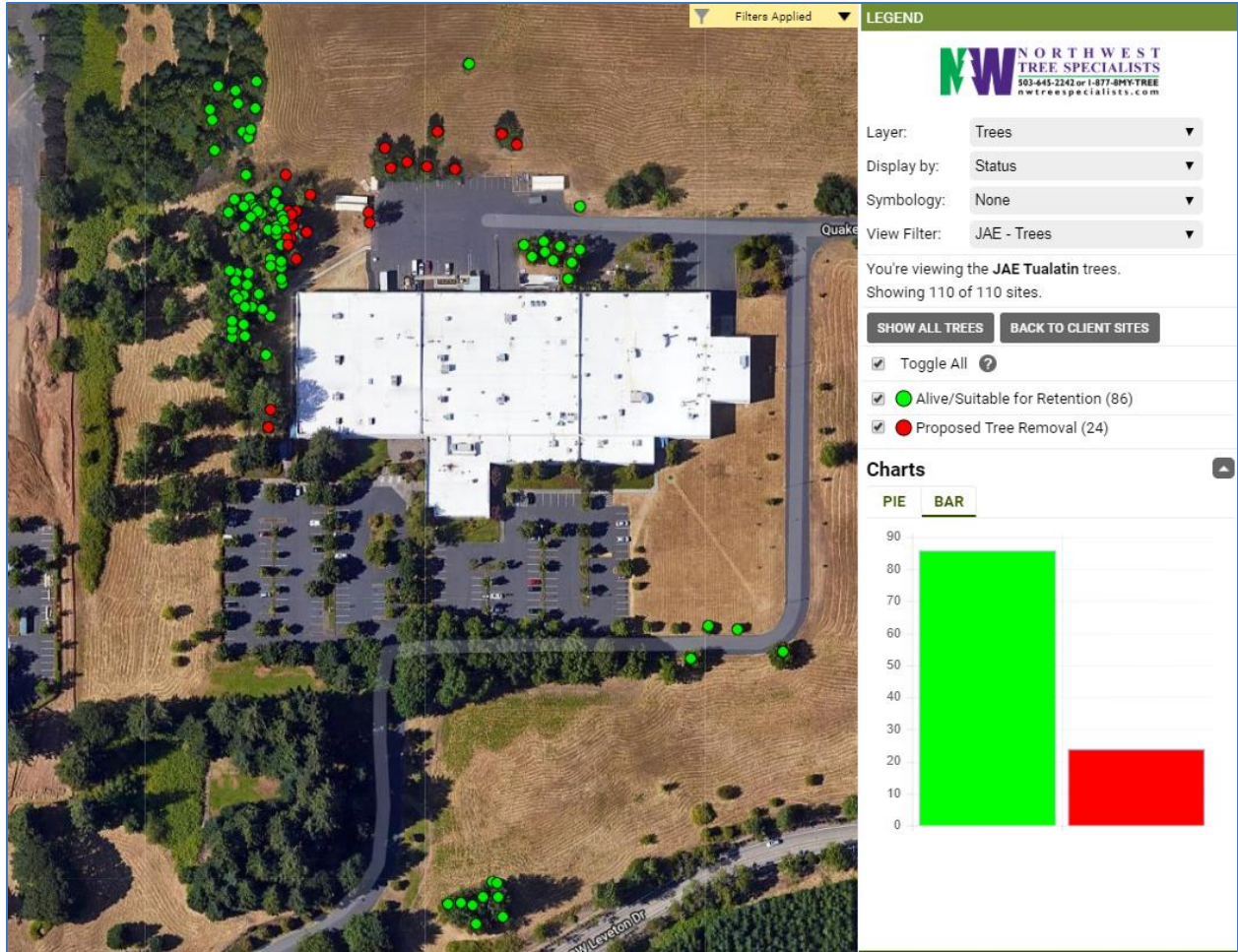
Total Trees = 13

Total Regulated (where standards apply) = 4 black cottonwoods are considered regulated considering condition and status.

Number of Exempt Trees in Survey = 5 Birch species may be considered invasive and may not be considered species of high retention value.

Tree Locations: Tree by location and status, and ID# for spatial reference (Northern and Southern Zones)

October 2nd, 2019



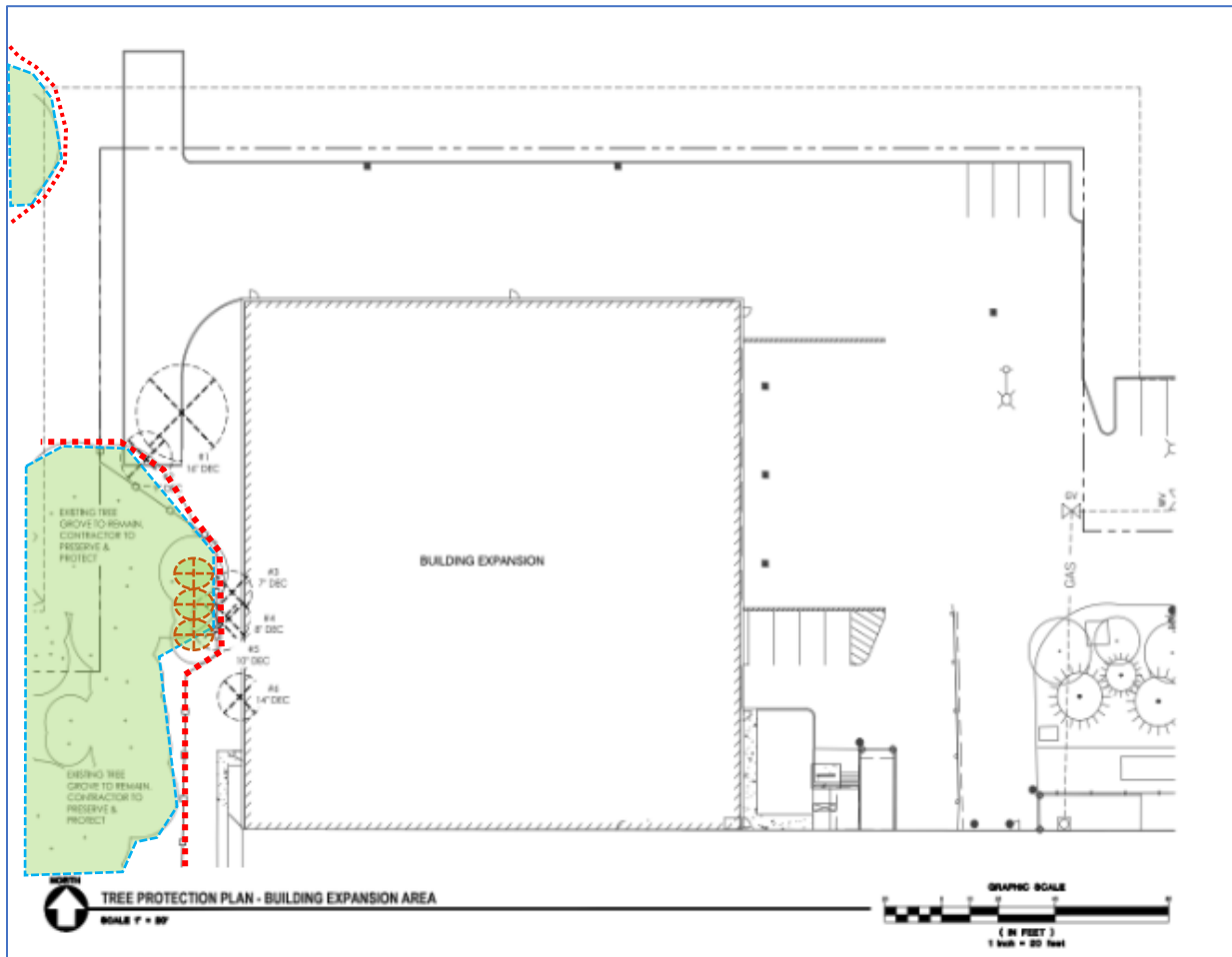
Trees Alive and Considered Suitable for Retention: 86, 78% (currently to be preserved during development)

Trees Proposed for removal: 24 trees, 21% (currently to be removed in the face of development)

Of the 24 trees proposed for removal, two trees are considered dying or diseased and not suitable for retention and would otherwise be recommended for removal/replacement, irrespective of development.

October 2nd, 2019

Concept Tree Protection/Demo Plan: Indicating trees to be removed as part of proposed demolition.



Showing trees proposed for removal.



Existing grove of vegetation to be preserved and to be subject to tree protection measures.



Proposed tree protection fencing at edge of excavation work – minimum 6' chain-link fencing.



Trees where on-site arboricultural supervision during excavation is recommended.