CRITICAL AREAS SPECIAL STUDY

THE RESERVE AT WOODINVILLE

WOODINVILLE, WASHINGTON

Prepared For:
Panattoni Development Company, Inc.
Renton, WA

Prepared By:
TALASAEA CONSULTANTS, INC.
Woodinville, WA

15 January 2016

Critical Areas Special Study

The Reserve at Woodinville

Woodinville, Washington

Prepared For:

Panattoni Development Company, Inc.
900 SW 16th Street, Suite 330
Renton, WA 98057

Prepared By:

Talasaea Consultants, Inc.
15020 Bear Creek Road NE
Woodinville, Washington 98077
(425) 861-7550

15 January 2016

EXECUTIVE SUMMARY

PROJECT NAME: The Reserve at Woodinville

CLIENT: Panattoni Development Company, Inc.

SITE LOCATION: The Reserve at Woodinville property is an approximately 12.4-acre assemblage of three parcels, located at 15900 Woodinville-Redmond Road, Woodinville, Washington. It is bounded on the east side by the Sammamish River and on the west side by the Woodinville-Redmond Road (State Route 202). The King County Tax Parcel numbers for the site are 1526059053, 1526059060, and 1526059068. The Public Land Survey System location of the property is the NW ¼ of Section 15, T26N, R5E, Willamette Meridian.

PROJECT STAFF: Bill Shiels, Principal; Ann Olsen, Senior Project Manager; David R. Teesdale, PWS, Senior Wetland Ecologist, Alicia Schulz, Landscape Designer.

FIELD SURVEY: 20 May and 11 August 2011.

DETERMINATION: The Sammamish River flows north along the eastern property boundary of the site. The Sammamish River within the Woodinville City limits is confined by levees. The Sammamish River is classified by the City of Woodinville as a Type 1 Stream. According to the Woodinville Municipal Code (WMC) Chapter 21.24.380, Type 1 streams require a standard buffer width of 150 feet, measured from the ordinary high water mark (OHWM).

An additional critical area was identified off-site on the west side of SR-202. This critical area is a palustrine wetland, delineated by Shockey Planning Group, and extending to a roadside ditch alongside SR-202. Shockey Planning Group classified this as Class 3 wetland (WMC §21.24.320(2)), with a standard buffer width of 50 feet (WMC §21.24.330(1)(c)). This wetland is outside of the project area and will not be affected by the project. Regulatory buffers would end at the west edge of SR-202.

STREAM BUFFER CONDITION: The on-site portion of the stream buffer is currently vegetated with reed canarygrass and non-native blackberries. Some native trees and shrubs occur in spots along the bank and these include: Douglas fir, western red cedar, red alder, black cottonwood, common snowberry, rose sp., and a few clusters of tall Oregongrape. A 10-foot-wide sanitary sewer easement is located on top of the levee and this area is routinely mowed for maintenance access. An existing biofiltration swale is constructed at the toe of the interior portion of the levee. Runoff from this swale flows north into a ditch at approximately the mid-point of the buffer. This ditch flows east and through a culvert in the levee before discharging directly to the Sammamish River. The outer half of the existing buffer is developed with buildings and parking areas.

CRITICAL SPECIES: The StreamNet and SalmonScape databases identify the following salmonids utilizing the reach of the Sammamish River adjacent to the Site.

Table 1. StreamNet Database Salmonid Presence

Species	Usage Designation and Source	Federal and State Listing
Fall chinook (*Oncorhynchus tshawytscha*)	StreamNet – Spawning and Rearing SalmonScape – Documented Spawning	Federal – Threatened State - Candidate
Coho (*Onchorhynchus kisutch*)	StreamNet – Rearing and Migration SalmonScape – Documented Rearing	Federal – Species of Concern State - Candidate
Winter steelhead (*Onchorhynchus mykiss*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – Threatened State - Candidate
Sockeye (*Onchorynchus nerka*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – None State – None
Bull trout (*Salvelinus confluentus*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – Threatened State - Candidate

There are no indications by either resource agency that any of the salmonid species listed above utilize any portion of the Site other than the Sammamish River.

Copyright © 2016 Talasaea Consultants, Inc.

PROPOSED PROJECT: Panattoni Development Company proposes to redevelop the Woodinville Lumber property. The proposed project consists of two speculative warehouse buildings with a combined footprint of about 199,700 square feet (sf) with a future second floor area totaling approximately 30,000 sf. Parking will be developed for approximately 200 cars. Paved areas for parking and access will be located on all sides of the new buildings, and the warehouse portion of the structure will have loading docks on both the east and west sides. Portions of the proposed buildings, along with paved parking and loading areas, will be located within the Urban Conservancy shoreline environment (the outer 100 feet) of the 200-foot shoreline zone. These uses are permitted in the Urban Conservancy shoreline environment per Woodinville's SMP. No development will occur within the Conservancy shoreline environment (the inner, or waterward 100 feet) of the 200-foot shoreline zone.

The site will be fully developed in a single phase including offsite improvement along Woodinville Redmond road (SR-202) and driveway improvement inside a vested access across the King County Park property from the public street. On site work will include grading, storm drainage, connections to existing on site sewer and water lines, building construction and associated site improvements along with connections to offsite wet and dry utilities.

Proposed stormwater management facilities will include several components. An enhanced basic water quality treatment facility with constructed treatment wetland will be located at the southeast corner of the site and will treat runoff from pollutant-generating surfaces (e.g., parking areas). Treated runoff from this facility will be discharged to the Sammamish River via an existing outfall. A media filter strip with plantings will treat and infiltrate direct runoff from parking adjacent to the river buffer. Clean rooftop runoff will be discharged directly to an existing outfall within the Sammamish River buffer.

Two short paths accessing two shoreline viewpoints will be constructed within the stream buffer to provide shoreline access per the requirements of Woodinville's Shoreline Management Plan (SMP).

ASSESSMENT OF DEVELOPMENT IMPACTS: No impacts to the Sammamish River is proposed with the redevelopment proposal. The project is proposing to reduce the standard buffer and there will be temporary impacts to floodplain storage. These are described below.

Stream Buffer Reduction: The project proposes to reduce the on-site portion of the Sammamish River buffer from the 150-foot standard buffer to a reduced 100-foot minimum buffer. WMC §21.24.380(1)(a) allows reduction of the 150-foot standard buffer to a reduced 115-foot buffer with enhancement, and then a further reduction to a minimum 100-foot buffer when a special study, based upon best available science, determines that the functions achieved in 100 feet are equal to the functions achieved in the 115 feet for the site in question. It should be noted that the buffer is already effectively reduced below the 100-foot minimum. Existing development currently encroaches into the outer portion of the 150-foot standard buffer, and the existing vegetated buffer width primarily ranges between approximately 32 and 87 feet. The project will actually restore existing paved areas to native buffer in order to achieve a consistent 100-foot width.

Floodplain Storage Loss: The project proposes to fill small portions of an existing stormwater discharge ditch and an existing grass-lined swale that are both located within the FEMA 100-year flood zone, also referred to as the flood hazard area. This zone is referenced on the plans as Flood Zone AE. A total of 3,740 cubic feet (cf) of flood storage will be lost.

PROPOSED MITIGATION: Mitigation for the impacts listed above will provide a vastly improved stream buffer condition over the current partially developed and degraded buffer on the Site. A total of 95,720 sf of buffer will be provided with this development proposal. The following mitigation is proposed:

Stream Buffer Re-establishment: The project proposes re-establishing approximately 21,420 sf of existing impervious surface to a functioning stream buffer. The re-establishment of the existing impervious surface area to native vegetated stream buffer will increase the total vegetated stream buffer to a width that is greater than existing conditions.

Stream Buffer Enhancement: To mitigate for reducing the 150-foot stream buffer to 100 feet, the project will enhance 74,300 sf of existing vegetated but degraded buffer.

Copyright © 2016 Talasaea Consultants, Inc.

Critical Area Fencing and Signs: Following construction completion, a split-rail fence (or similar type) will be installed along the entire buffer boundary. Where shoreline viewpoints are located in the buffer, split-rail fencing will also be installed around the viewpoints and associated access paths to deter pedestrian intrusion into the buffer areas.

Per WMC §21.24.160(2): The boundary between a critical area tract and contiguous land shall be identified with permanent signs. Per Section Three of the City of Woodinville *Wetland and Stream Mitigation Guidelines, Part 1 – Design Guidelines, Section 4.0 – Structures, 4.2: "Critical Area Signs shall be mounted on posts set into the ground at 100' intervals or 1 per lot for smaller lots".*

Replace Floodplain Storage: To mitigate for the loss of floodplain volume, the existing grass-lined swale located at the toe of the landward side of the existing levee will be graded deeper and wider to replace the 3,740 cf of floodplain storage lost due to construction impacts. Approximately 5,430 cf of replacement flood storage volume will be provided, which will significantly exceed the minimum needed to compensate for the lost flood storage volume. All re-graded swale areas will be restored with native vegetation. The bottom of the swale will be seeded and stabilized per the engineering plans, and the side slopes of the swale will be planted with native shrubs per the buffer mitigation plans.

PERFORMANCE MONITORING: All of the re-established and enhanced stream buffer areas will be monitored for ten years to ensure compliance with the mitigation goals, objectives, and performance standards defined in this report and as approved by the City.

FINANCIAL SURETY: In addition, a performance security will be provided to ensure that the monitoring and maintenance is carried out as specified in the approved mitigation plan for the duration of the monitoring period.

Copyright © 2016 Talasaea Consultants, Inc.

TABLE OF CONTENTS

Executive Summary i
Table of Contents iv
Lists of Figures, Tables, and Appendices vi

Chapter 1. Introduction 1
1.1 Statement of Accuracy 1
Chapter 2. General Property Description and Land Use 2
2.1 Project Location 2
2.2 Existing Site Development 2
2.3 Adjacent Land Use 2
2.4 Land Use and Zoning 2
Chapter 3. Methodology 2
3.1 Background Data Reviewed 3
3.2 Field Investigation 3
Chapter 4. Results 4
4.1 Analysis of Existing Information 4
4.1.1 National Wetlands Inventory 4
4.1.2 Natural Resources Conservation Service 4
4.1.3 King County GIS Database 4
4.1.4 Resource Agency Fish Presence Databases 5
4.1.5 WDNR Natural Heritage Database 5
4.1.6 WDFW Priority Habitats and Species Database 5
4.1.7 Washington State's Water Quality Assessment 303(d) 6
4.2 Analysis of Existing Field Conditions 6
4.2.1 Sammamish River 6
4.2.2 Sammamish River Buffer – Existing Conditions 7
4.2.3 Functions and Values of the Sammamish River Buffer 7
4.3 Off-Site Features 8
Chapter 5. Regulatory Review 8
5.1 City of Woodinville Municipal Code 8
5.1.1 Streams (WMC 21.24.370-400) 8
5.1.2 Fish and Wildlife Habitat Conservation Areas (WMC 21.24.410-440) 9
5.1.3 Floodplain Development (WMC 21.24.210-260) 9
5.2 City of Woodinville Shoreline Regulations 10
5.3 ESA Review for Development within the FEMA Floodplain 11
Chapter 6. Proposed Development and Critical Areas Impacts 12
6.1 Project Description 12
6.1.1 Stormwater Management Design 12
6.1.2 Shoreline Viewpoints 13
6.2 Assessment of Development Impacts 14
6.2.1 Stream Buffer Reduction 14
6.2.2 Floodplain Storage Loss 14
6.2.3 Off-Site Improvements 14
Chapter 7. Proposed Mitigation 14
7.1 Mitigation Measures 14
7.1.1 Stream Buffer Re-establishment 14
7.1.2 Stream Buffer Enhancement 15
7.1.3 Critical Area Fencing and Signs 15

Copyright © 2016 Talasaea Consultants, Inc.

7.1.4 Floodplain Storage Replacement 15
7.2 Mitigation Design Elements 16
7.2.1 Plantings 16
7.2.2 Habitat Features 16
7.2.3 Temporary Irrigation 16
7.3 Mitigation Goal, Objectives and Performance Standards 16
Chapter 8. Stream Buffer Functional Value Analysis with Mitigation 18
Chapter 9. Construction management 19
9.1 Mitigation Construction Sequence 19
9.2 Post-Construction Approval 19
9.3 Post-Construction Assessment 19
Chapter 10. Monitoring plan 19
10.1 Monitoring Schedule 19
10.2 Monitoring Reports 20
10.3 Methods for Monitoring Vegetation Establishment 20
10.4 Photo Documentation 21
10.5 Wildlife Use and Condition of Habitat Features 21
10.6 Site Stability 21
Chapter 11. Maintenance and Contingency 21
Chapter 12. Performance Security 22
Chapter 13. Summary 22
Chapter 14. References 24

Copyright © 2016 Talasaea Consultants, Inc.

LIST OF FIGURES

Figure 1: Vicinity Map and Driving Directions
Figure 2: Site Map
Figure 3: NWI Map
Figure 4: King County GIS Map
Figure 4A: Off-Site Drainages
Figure 5: Site Photos – Sammamish River Buffer Existing Conditions
Figure 6: Proposed SR-202 Improvements

Note: All figures are located at the end of the report before the appendices.

LIST OF TABLES

Table 1. StreamNet Database Salmonid Presence.....i
Table 2. Federal and State Status and Stock Heath of Local Salmon and Trout Populations.... 6
Table 3. Functional Value Analysis of Existing Buffer Conditions..... 7
Table 4. Functional Value Analysis Summary.....18
Table 5. Projected Schedule for Performance Monitoring and Maintenance Events. 20

LIST OF APPENDICES

Appendix A: FEMA Letter of Map Amendment (LOMA) dated 10 January 2012
Appendix B: Buffer Mitigation Plan (full-size plan sheets)
Sheet W1.0: Existing Conditions Plan
Sheet W1.1: Proposed Site Plan, Impacts and Mitigation Overview
Sheet W1.2: Clearing and Grubbing Plan, Notes & Details
Sheet W2.0: Planting Plan, Plant Schedule & Notes
Sheet W2.1: Planting Plan & Details
Sheet W2.2: Planting Specifications

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 1. INTRODUCTION

This report is the result of a critical areas study of the Woodinville Lumber property (referred to hereinafter as the Project Site or Site) located in Woodinville, Washington (**Figure 1**). The purpose of this report is to identify and describe critical areas (wetlands, streams, water bodies, etc.) and critical species on or adjacent to the Site, provide a regulatory review of applicable local, State, and Federal regulations that apply to the proposed project (including the Woodinville Municipal Code (WMC) §21.24) for site planning purposes, and describe the mitigation proposed for critical areas impacts. The Site is the location of a proposed redevelopment to construct two buildings with associated parking and infrastructure improvements.

The Project Site is located adjacent to the Sammamish River, which has known runs of Federally- and State-listed threatened and endangered salmonids. A portion of the property is contained within the 100-year floodplain for the Sammamish River.

This document will address the reporting requirements for the proposed project. Source Agencies for these requirements include:

- City of Woodinville Municipal Code;
- Washington Department of Fish and Wildlife;
- National Marine Fisheries Service; and,
- Federal Emergency Management Agency.

This report will provide and describe the following information:

- General Property Description;
- Methodology for Critical Areas Investigation;
- Results of Critical Areas Background Review and Field Investigation;
- Regulatory Review;
- Description of the Proposed Project;
- Assessment of Project Impacts to Critical Areas;
- Proposed Mitigation;
- Site Specific Goals, Objectives, and Performance Standards;
- Stream Buffer Functional Value Analysis
- Construction Management;
- Monitoring, Maintenance and Contingency Plans; and
- Performance Security.

1.1 Statement of Accuracy

Stream and wetland characterizations and ratings were conducted by trained professionals at Talasaea Consultants, Inc., and adhered to the protocols, guidelines, and generally accepted industry standards available at the time the work was performed. The conclusions in this report are based on the results of analyses performed by Talasaea Consultants and represent our best professional judgment. To that extent and within the limitation of project scope and budget, we believe the information provided herein is accurate and true to the best of our knowledge. Talasaea does not warrant any assumptions or conclusions not expressly made in this report, or based on information or analyses other than what is included herein.

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 2. GENERAL PROPERTY DESCRIPTION AND LAND USE

2.1 Project Location

The Project Site is an approximately 12.4-acre assemblage of three parcels, located at 15900 Woodinville-Redmond Road, Woodinville, Washington (**Figure 2**). It is bounded on the east side by the Sammamish River and on the west side by Woodinville-Redmond Road (State Route 202). The King County Tax Parcel numbers for the site are 1526059053, 1526059060 and 1526059068. The Public Land Survey System location of the property is the NW ¼ of Section 15, T26N, R5E, Willamette Meridian.

2.2 Existing Site Development

The Site is the former location of a wholesale lumber and lumber prefabrication facility (Woodinville Lumber), which catered to residential and commercial property developments. Woodinville Lumber is no longer in business and the property is currently vacant (all existing buildings and have been removed). Approximately 532,310 sf of the approximately 597,064 sf site is paved with impervious surfaces or buildings (approximately 89%). Stormwater discharges to the river from two pipe outlets located near the property's northeast corner. One pipe (North Discharge Point) is approximately 140 feet southeast of the Site's northeast corner. The pipe discharges to a relatively short ditch, approximately 80 linear feet (lf), before entering the Sammamish River. The second pipe (South Discharge Point) is approximately 290 feet southeast of the Site's northeast property corner. Discharge from this pipe flows in a constructed ditch in an easterly direction for approximately 180 feet before comingling with the River. Both pipe outfalls are within the property boundaries.

Approximately 64,754 sf of the property along the Sammamish River is vegetated with both native trees and shrubs and non-native invasive species including: red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), rose (*Rosa spp*.), Himalayan blackberry (*Rubus armeniacus*) and others. Herbaceous vegetation includes reed canarygrass (*Phalaris arundinacea*). The remaining portions of the Site are landscaped with typical ornamental landscaping species.

2.3 Adjacent Land Use

Properties to the north and south of the Site consist of commercial businesses. Properties to the west across SR-202 include commercial businesses and two vacant parcels. Vegetation on the portions of the vacant parcels visible from SR-202 includes mixed grasses, areas of reed canarygrass, and dense patches of Himalayan blackberry. A currently unused railroad right-of-way runs between the project site and SR-202. East of the site on the right bank of the Sammamish River is the Sammamish River Trail corridor, a public park which contains the paved multi-use Sammamish River Trail. The properties to the east of the trail consist primarily of farmland.

2.4 Land Use and Zoning

The project site is located directly adjacent to the Sammamish River, a Shoreline of the State, and as such development on the Site must follow the regulations of Woodinville's Shoreline Master Program, in addition to all other applicable codes and development regulations.

CHAPTER 3. METHODOLOGY

The critical areas analysis of the Site involved a two-part effort. The first part consisted of a preliminary assessment of the Site and the immediate surrounding area using published environmental information. This information includes:

1) Wetland and soils information from resource agencies;
2) Critical Areas information from the City of Woodinville and King County, Washington,

Copyright © 2016 Talasaea Consultants, Inc.

3) Anadromous fish presence information from:
    a. StreamNet database
    b. SalmonScape database
4) Ortho-photography and LIDAR imagery; and,
5) Relevant studies completed or ongoing in the vicinity of the Site.

The second part consisted of site investigations where direct observations and measurements of existing environmental conditions were made. Observations included plant communities, soils, signs of wetland hydrology, and determination of the ordinary high water mark along the left bank of the Sammamish River. This information was used to help characterize the site and define the limits of critical areas onsite and offsite for regulatory purposes (see **Section 3.2 – Field Investigation** below).

3.1 Background Data Reviewed

Background information reviewed prior to field investigations included:

- U.S. Fish and Wildlife Service Wetlands Online Mapper (http://wetlandsfws.er.usgs.gov/wtlnds/launch.html):
- Natural Resources conservation Service, Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/);
- Natural Resources Conservation Service, National Hydric Soils List by State (http://soils.usda.gov/use/hydric/list/state.html);
- King County GIS database (King County, 2006);
- StreamNet database, 2014 (www.streamnet.org);
- SalmonScape database, 2014 (www.wdfw.wa.gov/mapping/salmonscape/databases);
- WDFW Priority Habitats and Species (PHS) Database on the Web (Washington State Department of Fish and Wildlife 2014) (http://wdfw.wa.gov/mapping/phs/);
- Washington Department of Natural Resources (WDNR) Natural Heritage Database;
- WDOE Washington State's Water Quality Assessment and 303(d) List (http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html); and
- Orthophotography from USDA's National Agricultural Imagery Program (NAIP 2009), EarthExplorer (USGS), and Google Earth.

3.2 Field Investigation

Talasaea consultants evaluated site conditions on 20 May 2011 and delineated the OWHM on 11 August 2011. The site evaluation consisted of a visual observation of existing conditions to identify the general location of critical areas and habitats. These critical areas and habitats included wetlands and streams. The OHWM for the Sammamish River was determined and delineated using the methodology described by Washington State Department of Ecology's "*Determining the Ordinary High Water Mark on Streams in Washington State".* (Olson and Stockdale 2008). This determination included examining the banks for signs of soil erosion or soil deposition patterns, wrack, matted vegetation, and patterns of vegetation. The location of the OHWM was marked in the field with numbered lathe and surveyed.

No wetlands were found on the Site itself. A wetland was identified on the two vacant lots to the west of the Site (i.e., the Asko Property). A roadside ditch is located on the west side of SR-202. This ditch extends northward parallel to the Site, but is located off-site on the opposite side of SR-202.

Plant species were identified according to the taxonomy of Hitchcock and Cronquist (Hitchcock, et al. 1969). Taxonomic names were updated and plant wetland status was assigned according to *North American Digital Flora: National Wetland Plant List*, *Version 2.4.0* (Lichvar, et al. 2012).

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 4. RESULTS

This section describes the results of our in-house research and field investigations. For the purpose of this report, the term "vicinity" describes an area approximately ½ mile around the Project Site. We found no evidence of wetlands on the Site. The Site has been completely paved and developed, with the exception of the Sammamish River buffer. This buffer area has been partially impacted by the existing development and the existing vegetated buffer width primarily ranges between approximately 32 and 87 feet.

4.1 Analysis of Existing Information

The following sources provided information on site conditions based on data compiled from resource agencies and local government:

4.1.1 National Wetlands Inventory

We reviewed the National Wetlands Inventory (NWI) maps for the Kirkland and Bothell Quadrangles (**Figure 3**). The Site is located near the north boundary of the Kirkland Quadrangle, which necessitated a review of the Bothell Quadrangle as well.

The NWI does not map any wetlands on the Site. It does, however, map the Sammamish River adjacent to the Site. The NWI identifies the Sammamish River as a lower perennial riverine system with an unconsolidated bottom (R2UBH).

The NWI maps several wetlands adjacent to the Site. These wetlands are all east of the Site in the vicinity of the right bank of the Sammamish River. These wetlands include palustrine emergent wetlands that are seasonally flooded and partially drained or ditched (PEMCd), palustrine emergent wetlands that are temporarily flooded and partially drained or ditched (PEMAd), and a palustrine scrub-shrub wetland that is seasonally flooded (PSSC).

4.1.2 Natural Resources Conservation Service

The Natural Resources Conservation Service (NRSC) identifies one soil type on the Site. This soil is Earlmont silt loam. Earlmont silt loam is made up of somewhat poorly drained soils that formed in diatomaceous materials located in floodplains. The surface layer is a dark grayish-brown silt loam about nine inches thick. The subsoil is typically grayish brown to brown silt loam and silty clay loam about 35 inches thick. The substratum is stratified very fine sandy loam, muck, and diatomite to a depth of approximately 60 inches. Earlmont silt loam is listed as a hydric soil by the National Technical Committee on Hydric Soils.

4.1.3 King County GIS Database

The King County GIS database contains information on wetlands and streams.

<u>King County SAO Wetlands</u>

King County does not indicate any wetlands on the Site. There are two wetlands adjacent to the Site (**Figure 4**). One wetland is mapped approximately 260 feet south of the Site. It is unlikely that this wetland exists because the area of the mapped wetland is shown to be a commercial-industrial property with five buildings and paved parking. The second wetland is approximately 1,200 feet northwest of the Site adjacent to 140th Place NE on properties that are mostly agricultural fields. There appear to be some buildings within the mapped wetland adjacent to 140th Place NE.

<u>King County GIS Streams</u>

King County does not indicate any streams on the Site. There are several drainages located on parcels around the Site (**Figure 4A**). Most of these drainages appear to be drainage ditches for the agricultural fields on the east side of the Sammamish River. Three drainages are in the vicinity of, but are not directly adjacent to the Site. One drainage is approximately 930 feet north of the north property line. The second drainage is approximately 1,045 feet south of the

Copyright © 2016 Talasaea Consultants, Inc.

south property line. A third drainage flows eastward towards the subject property, crossing SR-202 and the BN, Inc. road (aka Burlington Northern Railroad) approximately 260 feet to the southwest of the Site. This drainage enters the Sammamish River approximately 250 feet to the south of the Site.

4.1.4 Resource Agency Fish Presence Databases

The StreamNet and SalmonScape databases identify the following salmonids utilizing the reach of the Sammamish River adjacent to the Site.

Table1. StreamNet Database Salmonid Presence

Species	Usage Designation and Source	Federal and State Listing
Fall chinook (*Oncorhynchus tshawytscha*)	StreamNet – Spawning and Rearing SalmonScape – Documented Spawning	Federal – Threatened State - Candidate
Coho (*Onchorhynchus kisutch*)	StreamNet – Rearing and Migration SalmonScape – Documented Rearing	Federal – Species of Concern State - Candidate
Winter steelhead (*Onchorhynchus mykiss*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – Threatened State - Candidate
Sockeye (*Onchorynchus nerka*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – None State – None
Bull trout (*Salvelinus confluentus*)	StreamNet – Migration Only SalmonScape – Documented Presence	Federal – Threatened State - Candidate

There are no indications by either resource agency that any of the salmonid species listed above utilize any portion of the Site other than the Sammamish River.

4.1.5 WDNR Natural Heritage Database

The Washington Department of Natural Resources does not indicate any natural heritage species or habitats on the Site.

4.1.6 WDFW Priority Habitats and Species Database

There are no mapped PHS habitats on the Site and we observed none during our site evaluation. There are six wetlands mapped by WDFW within ½ mile of the site. Five of these wetlands are on the east side of the Sammamish River and are not likely to be affected by any activities on the subject property. The sixth wetland is on the west side of the Sammamish River, but upstream of the subject property. It, too, would not likely be affected by any activities on the subject property.

The PHS database lists several anadromous fish species as present in the vicinity of the Site. These species are Chinook salmon, coho salmon, sockeye salmon, bull trout, and steelhead (an anadromous form of rainbow trout). Other salmonids present include kokanee (a non-anadromous sockeye), rainbow trout, and coastal cutthroat trout. The PHS database provides information on the relative health of certain populations of these fish species in the vicinity of the Site. **Table 2** below contains the Federal and State status of each of these fish species along with the indication of the local health of the population.

Copyright © 2016 Talasaea Consultants, Inc.

Table 2. Federal and State Status and Stock Heath of Local Salmon and Trout Populations.

Species	Population Health*	Status of Local Population	
		Federal Listing	State Listing
Bull Trout	No data	Threatened	Candidate
Chinook	Healthy	Threatened	Candidate
Coho	Depressed	Threatened	Candidate
Kokanee	No data	Candidate	None
Sockeye	Healthy	None (Puget Sound)	Candidate
Steelhead	Critical	Threatened	None (Puget Sound)
Rainbow Trout	No data	None	None
Coastal Cutthroat Trout	No data	None	None

*Data from Washington Department of Fish and Wildlife Salmonid Stock Inventory.

4.1.7 Washington State's Water Quality Assessment 303(d)

The Sammamish River is listed on the approved 2008 Washington State 303(d) list for exceedances of temperature, dissolved oxygen, and fecal coliform standard levels (WDFW, accessed 28 February 2009). Summertime daytime temperatures in the river have been measured as high as 26.6° C, which is well above lethal limits for salmonids (SRCAP, 2002). Temperature issues in the Sammamish River begin at the head of the river where warm lake waters form the initial flow. Tributary flows from Big Bear Creek decrease these warmer lake waters to some extent. However, beginning in the City of Redmond, and north to the City of Woodinville, the river channel is devoid of almost all vegetative cover and is relatively straight, exposing it to almost constant solar insolation throughout a major portion of the daylight hours. West of the confluence with North Creek, downstream of the project site, the Sammamish River receives improved shading from trees and shrubs.

4.2 Analysis of Existing Field Conditions

We performed an initial site evaluation on 20 May 2011 to look for the presence of critical areas (wetland, streams), and delineated the OHWM for the Sammamish River on 11 August 2011. See **Sheet W1.0** for a plan of existing site conditions. These features are described below.

4.2.1 Sammamish River

The Sammamish River flows north along the eastern property boundary of the site. The Sammamish River within the Woodinville City limits is confined by levees. The slope of the left bank of the Sammamish River adjacent to the Site ranges between approximately 32% to approximately 60%. The levee, itself, appears to be stable with no signs of erosion or other damage. The Army Corps of Engineers is responsible for the maintenance of bank armoring the levees.

The Sammamish River is classified by the City of Woodinville as a Type 1 Stream. According to the Woodinville Municipal Code (WMC) Chapter 21.24.380, Type 1 streams require a standard buffer width of 150 feet, measured from the ordinary high water mark (OHWM). WMC §21.24.380(1)(a) allows reduction of the 150-foot standard buffer to a reduced 115-foot buffer with enhancement, and then a further reduction to a minimum 100-foot buffer when a special study, based upon best available science, determines that the functions achieved in 100 feet are equal to the functions achieved in the 115 feet for the site in question. It should be noted that the buffer is already effectively reduced below the 100-foot minimum. Existing development currently encroaches into the outer portion of the 150-foot standard buffer, and the existing vegetated buffer width primarily ranges between approximately 32 and 87 feet, less than even the minimum 100-foot width.

Copyright © 2016 Talasaea Consultants, Inc.

4.2.2 Sammamish River Buffer – Existing Conditions

The stream buffer for the left bank is currently vegetated predominantly with reed canarygrass (*Phalaris arundinaceae*) and non-native blackberries (*Rubus ameniacus* and *R. laciniatus*). Some native trees and shrubs occur in spots along the bank and these include: Douglas fir (*Pseudotsuga menziesii)*, western red cedar (*Thuja plicata)*, red alder, common snowberry *(Symphoricarpos albus)*, rose species *(Rosa spp.)*, and a few clusters of tall Oregon grape (*Mahonia aquifolium)*. A 10-foot-wide sanitary sewer easement is located on top of the levee and this area is routinely mowed for maintenance access. **Figure 5** provides photos of the current existing conditions of the buffer. An existing biofiltration swale is constructed at the toe of the interior portion of the levee. Runoff from this swale flows north into a ditch at approximately the mid-point of the buffer. This ditch flows east and through a pipe in the levee before discharging directly to the Sammamish River. The outer half of the existing buffer is developed with buildings and parking areas.

4.2.3 Functions and Values of the Sammamish River Buffer

The functions and values of the Sammamish River stream buffer were assessed qualitatively. Functions assessed included Shade/Temperature Control, Woody Debris Recruitment, Water Quality Improvement, Erosion Control, and Habitat Value (**Table 3**). Only the portion of the buffer on the Site was assessed.

Table 3. Functional Value Analysis of Existing Buffer Conditions.

Function	Shade/ Temperature Control	Woody Debris Recruitment	Water Quality Improvement	Erosion Control	Habitat Value
Existing Conditions (Rating & Explanation for Rating)	**Low/Moderate**: The buffer is predominantly vegetated by non-native blackberries and reed canarygrass. There are some trees on the interior portion of the buffer that will eventually provide shade to the river as they mature.	**Low**: Trees are not a major component of the buffer. Large woody debris recruitment potential is very low.	**Low**: Buffer currently ranges from 32 feet to 87 feet from the OHWM. Stormwater is discharged both directly to the Sammamish River and to a bioswale at the south end of the property.	**Moderate**: The portion of the buffer not paved is well vegetated with non-native blackberries or reed canarygrass. Stormwater is discharged to well vegetated ditches.	**Moderate**: Most of buffer is vegetated with non-native blackberries, which does provide some habitat value for birds and small mammals. However, there is little diversity in the habitat available due to the pre-dominance of blackberry.

The stream buffer currently has low to moderate value for providing shade and thus temperature control to the stream. Due to the absence of large trees, especially conifer trees in the majority of the buffer area, the stream buffer does not have a high level of function for shade/temperature control. The buffer lacks significant woody material and therefore rated low for the Woody Debris Recruitment function. The buffer was rated Low for water quality improvements. Water quality was rated low because the majority of the vegetated portion of the buffer ranges in width between approximately 32 to 87 feet wide (much smaller than the required standard 150-foot buffer) and because some stormwater is discharged directly to the Sammamish River. Only a portion of the stormwater collected on the Site under existing conditions is treated in a bioswale within the buffer prior to being released to the Sammamish River. The buffer was rated Moderate for erosion control and habitat value.

Copyright © 2016 Talasaea Consultants, Inc.

4.3 Off-Site Features

During a site reconnaissance, a critical area (a wetland) was identified on the two vacant lots to the west of the Site (i.e., the Asko Property). The wetland was delineated by the Shockey Planning Group in 2013, and is shown as extending to the western edge of the SR-202 fill prism. This wetland has been determined to be jurisdictional. Shockey Planning Group classified this wetland as Class 3 (WMC §21.24.320(2)). The City of Woodinville code specifies a standard buffer width of 50 feet for Class 3 wetlands (WMC §21.24.330(1)(c)).

The buffer for the wetland extends eastward to SR-202, but ends at the paved roadway surface. Therefore, we recommend that the west edge of paving at SR-202 remain in its current location to avoid impacting the wetland. This wetland and buffer are outside of the project area and will not be affected by the project.

CHAPTER 5. REGULATORY REVIEW

5.1 City of Woodinville Municipal Code

We performed a regulatory review of the Woodinville Municipal Code, Chapter 21.24 – Development Standards – Critical Areas, to categorize the Sammamish River, its required buffer, and allowed activities in the buffer. The following summarizes code requirements and permitted alterations.

5.1.1 Streams (WMC 21.24.370-400)

Designation and Rating

The Sammamish River is classified by the City of Woodinville as a Type 1 Stream per WMC §21.24.370(1).

Development Standards

According to WMC §21.24.380(1), Type 1 streams require a 150-foot standard buffer width, established from the OHWM, or from the top of bank if the OHWM is not readily discernable. According to WMC 21.24.380(1)(a):

> *The standard buffer width will be established unless the existing stream buffer is significantly degraded. If the existing stream buffer is significantly degraded, the applicant may use the reduced buffer of 115 feet as long as enhancement measures are implemented to provide a net improvement in the overall stream and buffer function and value as determined by a qualified biologist.*

In addition, WMC §21.24.380(1)(a) states:

> *A 100-foot buffer may be allowed by the Development Services Director when a special study based upon best available science, determines that the functions achieved in 100 feet are equal to the functions achieved in 115 feet for the site in question.*

Permitted Alterations

WMC §21.24.390 allows alterations to streams and buffers as follows:

> WMC §21.24.390(4) allows for the following surface water management activities and facilities in stream buffers:
>
> *(a) Surface water discharge to a stream from a detention facility, presettlement pond or other surface water management activity or facility may be allowed if the discharge is in compliance with the King County Surface Water Design Manual (2009);*
> *(b) Storm Water Management Facilities. Grass-lined swales and dispersal trenches may be located in the outer 25 percent of the buffer areas.*

Copyright © 2016 Talasaea Consultants, Inc.

WMC §21.24.390(5) allows public and private trails, and visual access to the stream is encouraged in stream buffers provided:

(a) *Trail surface shall not be made of impervious materials, except that public multi-purpose trails may be made of impervious materials if they meet all other requirements including water quality.*

<u>*Critical Area Markers and Signs*</u>
Per WMC §21.24.160(2): The boundary between a critical area tract and contiguous land shall be identified with permanent signs. Per Section Three of the City of Woodinville *Wetland and Stream Mitigation Guidelines, Part 1 – Design Guidelines, Section 4.0 – Structures, 4.2: Critical Area Signs shall be mounted on posts set into the ground at 100' intervals or 1 per lot for smaller lots*.

5.1.2 Fish and Wildlife Habitat Conservation Areas (WMC 21.24.410-440)

The Sammamish River and its buffer are designated as a fish and wildlife habitat conservation area. WMC §21.24.430(1) (titled *Habitat Management Plan*) states the following:

> *A habitat management plan shall be required whenever the priority habitats and species maps or natural heritage program maps maintained by the City, or other information, indicate the presence of areas with which species listed as endangered or threatened under Federal law have a primary association, or which contain heron nests.*

A *Floodplain Habitat Assessment Report,* prepared by Talasaea Consultants, Inc. dated 16 January 2016, has been prepared and is enclosed for City review with this application. This report was prepared to meet FEMA requirements for a Floodplain Habitat Assessment required for development within the FEMA-regulated 100-year floodplain. The information provided in this report also meets the Habitat Management Plan requirements of WMC 21.24.430.

5.1.3 Floodplain Development (WMC 21.24.210-260)

WMC 21.24.210 through 260 specifies the regulations governing development within "flood hazard areas". Flood hazard areas are areas determined to be within a zone "for a flood having a one percent chance of being equaled or exceeded in any given year, often referred to as the '100 year flood' " (WMC 21.24.210(2). Flood hazard areas include the following components per WMC 21.24.210(1):

1. Floodplain
2. Flood fringe
3. Zero-rise floodway
4. FEMA floodway

For the purposes of officially defining the 100-year special flood hazard areas, the City of Woodinville has adopted the boundaries as defined in the scientific and engineering report prepared by FEMA entitled "Flood Insurance Study for King County" dated 8 November 1999, with accompanying Flood Insurance Rate Maps (FIRMs). The map that contains the project site is FIRM map panel no. 53033C0360G.

The flood hazard area (100-year flood zone) on the project site as previously depicted on FIRM map panel no. 53033C0360G has been amended as outlined in the Letter of Map Amendment (LOMA) dated 10 January 2012, issued by FEMA under case no. 11-10-1973A (the 100-year flood zone is referred to as the Special Flood Hazard Area (SFHA) in the LOMA). A copy of this letter is included in **Appendix A**. The revised SFHA/100-year floodplain has been substantially reduced vs. the existing boundary depicted on the FIRM map. This was based on a detailed topographic survey of the project site, which allowed for more accurate, site-specific mapping of the base flood elevation on the site. The base flood elevation per the LOMA has been defined

Copyright © 2016 Talasaea Consultants, Inc.

as 25.4 feet based on NGVD29 (the equivalent elevation using the NAVD88 datum is 29.01 feet)

The proposed development does not propose any new buildings within the updated SFHA/100-year floodplain. However, a portion of the proposed parking area will impact and fill a small portion of the 100-year floodplain. WMC 21.24.230 states that "development shall not reduce the effective base flood storage volume of the floodplain". Therefore, compensatory flood volume storage is required for the proposed project for this impact.

5.2 City of Woodinville Shoreline Regulations

Washington State's Shoreline Management Act (SMA §90.58 RCW, the Shoreline Act of 1971) established a cooperative agreement between the State and local jurisdictions to define frameworks for regulating and defining growth along State shorelines. The purpose was to prevent unregulated and uncoordinated growth from irreparably harming the shoreline environment. Local governments respond to the provisions of the SMA through developing Shoreline Master Programs (SMP). The Washington Department of Ecology works with the local jurisdictions to ensure that each SMP complies with the SMA, and, in turn, will support the implementation of the local SMP. Each jurisdiction's SMP regulates development activities and uses within shorelands. By definition, shorelands include all land 200 feet landward from the OHWM of a State shoreline, or the boundary of the 100-year floodplain[1], whichever is greater.

The Project Site is directly adjacent to the Sammamish River, which is a Shoreline of the State. Thus, all land on the project site within 200 feet of the OHWM of the Sammamish River is defined as shorelands (also referred to herein as the shoreline zone) and all development in this zone is subject to the City of Woodinville's SMP regulations. For any development within the shoreline zone the applicant must obtain a Shoreline Substantial Development Permit (SSDP) from the City of Woodinville, in addition to other applicable permits.

The City of Woodinville's latest SMP was adopted August 2008 and revised December 2009. It defines four shoreline environmental designations, based on location within the 200-foot shoreline zone and sensitivity of the associated shoreline environment. These shoreline environmental designations are: Aquatic, Conservancy, Shoreline Residence, and Urban Conservancy. Each shoreline environmental designation has a defined list of allowed uses stemming from the guidelines and requirements contained in the SMA. Chapter 6 of Woodinville's SMP contains a shoreline use matrix (Table 6-1) that defines allowed uses for the four shoreline environmental designations.

Pursuant to the City of Woodinville Shoreline Designation Map, the Project Site contains both Conservancy and Urban Conservancy shoreline environmental designations. The Conservancy environment consists of the inner (waterward) 100 feet of the 200-foot shoreline zone, and the Urban Conservancy environment consists of the outer (landward) 100 feet of the 200-foot shoreline zone.

In general, development is prohibited in the Conservancy environment. Per Section 5.2.2 of the SMP, the purpose of the Shoreline Conservancy environment is to "protect and restore ecological functions, while making the areas available for limited human use, when appropriate and non-destructive of critical areas…Allowed uses should meet the Shoreline Management Act guideline (WAC 173-26-211(2)(a)) of being non-consumptive of the physical and biological

[1] A floodplain (based on 44 CFR Ch.1 §59.1) means any land area susceptible to being inundated by water from any source. Floodway, or regulatory floodway, means the channel of a river or other water course and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (i.e., development will not increase upstream flooding).

Copyright © 2016 Talasaea Consultants, Inc.

resources of the area". In contrast, certain development activities are allowed in the Urban Conservancy environment. Section 5.2.4 of the SMP states: "The purpose of the Urban Conservancy designation is to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses as established by the Comprehensive Plan". Per the shoreline use matrix in Table 6-1 of the SMP, both commercial office space and warehousing are allowed uses in the Urban Conservancy environment on the Woodinville Lumber property. These uses are prohibited, however, in the Conservancy environment.

5.3 ESA Review for Development within the FEMA Floodplain

All local jurisdictions (cities and counties) participating in the National Flood Insurance Program (NFIP) administered by FEMA must adopt regulations at the local level governing development within flood hazard areas (the FEMA-designated 100-year floodplain) that are consistent with established FEMA criteria and requirements for floodplain development. Property owners within local jurisdictions are not eligible to obtain flood insurance through the NFIP unless their local jurisdiction has adopted such regulations. The City of Woodinville participates in the NFIP and has adopted such regulations as detailed in WMC sections 21.24.210-280, as described previously in **Section 5.1.3**.

On September 22, 2008, the National Marine Fisheries Service (NMFS) issued a Biological Opinion stating that the National Flood Insurance Program (NFIP), as currently administered by FEMA, encouraged development actions within floodplain areas that adversely affect federally-listed (ESA threatened and endangered) species in the Puget Sound Watershed. This Biological Opinion outlined changes needed to the way the NFIP is administered by FEMA for communities within the Puget Sound Watershed in order to bring the NFIP into compliance with ESA requirements. The Biological Opinion articulated a comprehensive Reasonable and Prudent Alternative (RPA) that describes necessary changes to the NFIP in order to avoid adverse effects to listed species resulting from floodplain development activities permitted by local jurisdictions.

In response to the NMFS Biological Opinion, FEMA (Region X) developed a "three-door" approach under which local jurisdictions have three options for ensuring that floodplain development within their jurisdictions is consistent with the RPA (and is therefore also compliant with ESA requirements). Local jurisdictions may either: a) adopt the Model Ordinance developed by FEMA ("Door 1"), b) show that their existing ordinances (e.g., growth management, zoning, or critical areas) enforce the same requirements as the Model Ordinance ("Door 2"), or c) demonstrate on a permit-by permit basis that proposed floodplain development projects are ESA-compliant ("Door 3").

The City of Woodinville chose to pursue the "Door 3" option, which requires that each project applicant assess potential impacts to listed species vis-à-vis ESA, and demonstrate that there will be no adverse effects to the habitat functions (direct, indirect, or cumulative) of the floodplain that would result in a take of listed species pursuant to ESA. This typically requires that the project applicant prepare and submit a Floodplain Habitat Assessment report to NMFS for review to ensure the project is ESA-compliant. FEMA has required that communities choosing the "Door 3" option ensure that all project applicants have completed and submitted the necessary Floodplain Habitat Assessment report to NMFS for review and consultation prior to issuing any permits for floodplain development within their jurisdiction. Because the Reserve at Woodinville project proposes development within a portion of the 100-year floodplain on the project site, the City of Woodinville is requiring that a Floodplain Habitat Assessment report be prepared (per FEMA guidance) and submitted to NMFS for review prior to issuing development permits for the project. This report has been prepared by Talasaea Consultants as a stand-alone document and separate from this *Critical Areas Special Study* report.

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 6. PROPOSED DEVELOPMENT AND CRITICAL AREAS IMPACTS

6.1 Project Description

Panattoni Development Company proposes to redevelop the Woodinville Lumber property. The proposed project consists of two speculative warehouse buildings with a combined footprint of about 199,700 square feet (sf) with a future second floor area totaling approximately 30,000 sf. Parking will be developed for approximately 200 cars. Paved areas for parking and access will be located on all sides of the new buildings, and the warehouse portion of the structure will have loading docks on both the east and west sides. All but one existing building on the site will be removed. The building to remain is located in the northwest corner of the site and will serve as office space. The new buildings will take up the majority of the eastern portion of the site. Site landscaping will be provided per Woodinville code requirements and will include parking lot landscaping, perimeter landscaping, and landscaping adjacent to the office spaces.

Portions of the proposed buildings, along with paved parking and loading areas, will be located within the Urban Conservancy shoreline environment (the outer 100 feet) of the 200-foot shoreline zone. These uses are permitted in the Urban Conservancy shoreline environment per Woodinville's SMP. No development is allowed and none is proposed within the inner 100-foot shoreline Conservancy environment directly adjacent to the Sammamish River. The 100-foot shoreline Conservancy environment is also concurrent with the 100-foot reduced stream buffer defined by the City of Woodinville critical areas regulations.

The site will be fully developed in a single phase including offsite improvement along Woodinville Redmond road (SR-202) and driveway improvement inside a vested access across the King County Park property from the public street. On site work will include grading, storm drainage, connections to existing on site sewer and water lines, building construction and associated site improvements along with connections to offsite wet and dry utilities.

Proposed stormwater management facilities will include several components. An enhanced basic water quality treatment facility with constructed treatment wetland will be located at the southeast corner of the site and will treat runoff from pollutant-generating surfaces (e.g., parking areas). Treated runoff from this facility will be discharged to the Sammamish River via an existing outfall. A media filter strip with plantings will treat and infiltrate direct runoff from parking adjacent to the river buffer. Clean rooftop runoff will be discharged directly to an existing outfall within the Sammamish River buffer.

Two short paths accessing two shoreline viewpoints will be constructed within the stream buffer to provide shoreline access per the requirements of Woodinville's Shoreline Management Plan (SMP).

Stormwater management infrastructure will also be included in the proposed design as described in the following section.

6.1.1 Stormwater Management Design

The proposed stormwater management for the Project will be improved over existing conditions, but discharge to the Sammamish River will still occur at the two existing discharge points (North Discharge Point and South Discharge Point). Improvements to be implemented include enhanced basic water quality treatment. Stormwater detention is not currently provided on the site and is not proposed or required for the proposed redevelopment. Stormwater management and treatment will be designed according to the 2009 King County Surface Water Design Manual, per City of Woodinville municipal code.

Stormwater Treatment for Pollutant-Generating Surfaces

The new stormwater system will include a series of catch basins and tightlines to convey water from pollutant-generating surfaces (primarily paved areas for parking and loading) to a

Copyright © 2016 Talasaea Consultants, Inc.

stormwater treatment water quality facility at the southeast corner of the site. This facility will consist of a pre-settlement pond to capture sediment and a constructed wetland treatment area. The constructed wetland treatment area will consist of a depression with a low-gradient swale at the bottom to allow water to slowly flow through. The depression and swale will be planted with native emergents to enhance treatment. The side slopes of the facility will be planted with native shrubs. The treated stormwater from this facility will be conveyed via tightline and discharged at the South Discharge Point within the Sammamish River buffer.

Clean Rooftop Runoff

In addition to stormwater treatment within the water quality facility described above, clean rooftop runoff will be collected and conveyed without treatment and discharged at the North Discharge Point within the river buffer.

Media Filter Strip for Parking Lot Runoff

The project also proposes to utilize a filter strip to directly treat runoff from the parking area between the new warehouse building and the river buffer. Stormwater will sheet flow to the edge of the buffer where it will be infiltrated and treated within an engineered media filter strip. The filter strip will consist of several different zones of engineered permeable soil and gravel mixtures designed to treat and infiltrate the majority of the runoff from this area of pavement. The filter strip will also be planted with native shrubs adapted to both wet and dry conditions for enhanced treatment, soil stabilization, and aesthetics. Any runoff that is not infiltrated will be collected in a shallow swale and conveyed to the southernmost existing stormwater outfall ditch, where it will discharge to the Sammamish River. The filter strip has been designed in accordance with the general water quality maintenance standards of the 2009 King County Surface Water Design Manual.

Stormwater Management Facilities Allowed Within Stream Buffers

According to WMC §21.24.390(4), the following surface water management activities and facilities may be allowed in stream buffers:

a) *Surface water discharge to a stream from a detention facility, presettlement pond or other surface water management activity or facility may be allowed if the discharge is in compliance with the King County Surface Water Design Manual.*
b) *Storm Water Management Facilities. Grass-lined swales and dispersal trenches may be located in the outer 25 percent of the buffer area.*

The discharge of stormwater from the proposed site will meet or exceed all current stormwater design standards and will not adversely affect the quality of water within the Sammamish River adjacent to the Site. The engineered media filter strip for treatment of parking lot runoff will be located within the outer 25 percent of the Sammamish river buffer as allowed pursuant to “b” above.

6.1.2 Shoreline Viewpoints

WMC §21.24.390(5) allows public and private trails, and visual access to the stream is encouraged in stream buffers provided:

a. *Trail surface shall not be made of impervious materials, except that public multi-purpose trails may be made of impervious materials if they meet all other requirements including water quality.*
b. *Buffers shall be expanded, where possible, equal to the width of the trail corridor including disturbed areas.*

The proposed project includes two short paths accessing two shoreline viewpoints within the stream buffer. Each viewpoint will have a bench for seating, and the paths and viewpoint areas will be surfaced with woodchips, per WMC §21.24.390(5)(a) noted above (condition “b” above

Copyright © 2016 Talasaea Consultants, Inc.

does not apply). These viewpoints are being provided as amenities to occupants and users of the new buildings and associated offices, and also to provide shoreline access per the requirements of Woodinville's SMP. See the mitigation plans in **Appendix B** for a depiction of the viewpoint locations.

6.2 Assessment of Development Impacts

The proposed project will have two main critical areas impacts, stream buffer reduction, and floodplain storage loss, as described in the following sections.

6.2.1 Stream Buffer Reduction

The project proposes to reduce the on-site portion of the Sammamish River buffer from the 150-foot standard buffer to a reduced 100-foot minimum buffer. WMC §21.24.380(1)(a) allows reduction of the 150-foot standard buffer to a reduced 115-foot buffer with enhancement, and then a further reduction to a minimum 100-foot buffer when a special study, based upon best available science, determines that the functions achieved in 100 feet are equal to the functions achieved in the 115 feet for the site in question. It should be noted that the buffer is already effectively reduced below the 100-foot minimum. Development currently encroaches into the outer portion of the 150-foot standard buffer, and the existing vegetated buffer width primarily ranges between approximately 32 and 87 feet, less than even the minimum 100-foot width. The project will actually restore paved areas to native buffer in order to achieve a consistent 100-foot width, as described in **Section 7.1.1**.

6.2.2 Floodplain Storage Loss

The project proposes to fill small portions of an existing stormwater discharge ditch and an existing grass-lined swale that are both located within the FEMA 100-year flood zone, also referred to as the flood hazard area. This zone is referenced on the plans as Flood Zone AE. See **Sheet W1.1** for a graphic depiction of these areas. A total of 3,740 cubic feet (cf) of flood storage will be lost.

6.2.3 Off-Site Improvements

The proposed project also includes off-site frontage improvements within the SR-202 right-of-way. These improvements would widen the east side of SR-202, within the road right-of-way, to provide three 11-foot lanes, and would remain within the existing paved road surface on the west.

Off-site critical areas are likely present to the west of SR-202, but any critical areas or related buffers would terminate at the existing paved roadway surface. Since frontage improvement work on the west side of SR-202 would be confined to existing paved roadway, the project will not affect any off-site critical areas or their buffers. Based on the potential presence of these critical areas west of SR-202, <u>we recommend that no work be done beyond the west paved edge of SR-202</u>.

CHAPTER 7. PROPOSED MITIGATION

7.1 Mitigation Measures

Mitigation for the impacts listed above will provide a vastly improved stream buffer condition over the currently degraded buffer on the Site (see mitigation plan sheets, **Appendix B**). A total of 95,720 square feet (sf) of native vegetated buffer will be provided with this development proposal. The following sections describe the proposed mitigation.

7.1.1 Stream Buffer Re-establishment

Buffer re-establishment is defined in the Department of Ecology manual, *Wetland Mitigation in Washington State* (DOE, 2006) as the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former buffer area. The project proposes re-establishing approximately 21,420 sf of existing impervious

Copyright © 2016 Talasaea Consultants, Inc.

surface to a functioning stream buffer (**Sheet W1.1**). The re-establishment of the existing impervious surfaces to native vegetated buffer area will increase the total vegetated stream buffer to a width that is greater than existing conditions. The re-establishment measures will include:

- Removal of the existing asphalt paved areas, including parking, storage areas, and drive isles,
- Removal of all buildings and sidewalks,
- Removal of non-native/invasive species,
- Soil decompaction in the areas of removed asphalt and buildings,
- Providing soil amendments or imported topsoil as necessary,
- Installation of habitat features (e.g., snags with swallow nest boxes and large woody debris (LWD) such as down logs and stumps),
- Placement of 3-inches of bark mulch, and
- Revegetation with a wide variety of native evergreen and deciduous trees, shrubs and groundcovers.

7.1.2 Stream Buffer Enhancement

To mitigate for reducing the 150-foot stream buffer to 100 feet, the project will enhance 74,300 sf of degraded buffer. Enhancement measures will include:

- Clearing and grubbing of non-native/invasive species in the buffer above the OHWM,
- Providing soil amendments or imported topsoil as necessary in all cleared and grubbed areas,
- Installation of habitat features (e.g., snags with swallow nest boxes and large woody debris (LWD) such as down logs and stumps),
- Placement of 3 inches of bark mulch around new plantings, and
- Enhancement of existing vegetation by planting native trees, shrubs, and groundcovers in all cleared and grubbed areas.

These enhancement measures will provide an increase in the functions and values of the buffer over existing conditions. See **Chapter 8** for a functional value analysis of the proposed mitigation.

7.1.3 Critical Area Fencing and Signs

Following construction completion, a split-rail fence (or similar type) will be installed along the entire buffer boundary. Where shoreline viewpoints are located in the buffer, split-rail fencing will also be installed around the viewpoints and associated access paths to deter pedestrian intrusion into the buffer areas.

Per WMC §21.24.160(2): The boundary between a critical area tract and contiguous land shall be identified with permanent signs. Per Section Three of the City of Woodinville *Wetland and Stream Mitigation Guidelines, Part 1 – Design Guidelines, Section 4.0 – Structures, 4.2: "Critical Area Signs shall be mounted on posts set into the ground at 100' intervals or 1 per lot for smaller lots".*

7.1.4 Floodplain Storage Replacement

To mitigate for the loss of floodplain volume, the existing grass-lined swale located at the toe of the landward side of the existing levee will be graded deeper and wider to replace the 3,740 cf of floodplain storage lost due to construction impacts. Approximately 5,430 cf of replacement flood storage volume will be provided, which will significantly exceed the minimum needed to compensate for the lost flood storage volume. All re-graded swale areas will be restored with native vegetation. The bottom of the swale will be seeded and stabilized per the engineering plans, and the side slopes of the swale will be planted with native shrubs per the buffer mitigation plans.

Copyright © 2016 Talasaea Consultants, Inc.

7.2 Mitigation Design Elements

7.2.1 Plantings

A variety of evergreen and deciduous native trees and shrubs species will be used to plant the mitigation areas (**Sheet W2.0-2.1**). A Plant Schedule on **Sheet W2.0** provides a full list of proposed species. Plant materials will generally consist of a combination of balled-and-burlapped, bare-root, and container stock. Plant species were chosen for a variety of qualities, including: adaptation to specific water regimes, value to wildlife, value as a physical or visual barrier, pattern of growth (structural diversity), and aesthetic values. Native tree and shrub species were chosen to increase both the structural and species diversity of the mitigation areas, thereby increasing the value of the mitigation areas to wildlife for food and cover. Planting will be planned to occur during the dormant season (late fall, winter, or early spring) to maximize the chance for successful plant establishment and survival. Detailed planting specifications are included on **Sheet W2.2**.

7.2.2 Habitat Features

Snags, down logs, and stumps will be incorporated into the buffer mitigation areas to provide ecologically important habitat features for wildlife. All down woody material shall be coniferous species (western red cedar, Douglas fir, western hemlock, or Sitka spruce). Snags shall be cedar or fir species.

Snags provide perching, feeding, and nesting sites for a variety of native birds. Cavity nesting bird species, such as tree swallows, violet-green swallows, chickadees, and woodpeckers would be expected to utilize such features. A bird-nesting box will be attached to each installed snag to initially augment the natural habitat for swallow species. Down logs and stumps provide the slow release of nutrients as the wood decays and also provide cover for amphibians, small mammals, and other wildlife. If boulders are recovered from site excavation they will be placed in small piles within the mitigation areas where appropriate. These piles can provide habitat for reptiles and small mammals.

7.2.3 Temporary Irrigation

An above-ground temporary irrigation system capable of full head to head coverage will be provided to the cleared/grubbed and graded buffer mitigation areas. The temporary irrigation system shall either utilize controller and point of connection (POC) from the existing site landscaping irrigation system or shall include a separate POC and controller with a backflow prevention device per water jurisdiction inspection and approval. The system shall be zoned to provide optimal pressure and uniformity of coverage, as well as separation for areas of full sun or shade and slopes in excess of 5 percent.

The system shall be operational by June 15 (or at time of planting) and winterized by October 15. Irrigation shall be provided for the first 2 years of the monitoring period. The irrigation system shall be programmed to provide 1/2" of water every three days (one cycle with two start times per week or every three days). A chart describing the location of all installed or open zones and corresponding controller numbers shall be placed inside the controller and given to the owner's representative. Prior to release of the bond at the end of the monitoring period, all components of the irrigation system shall be removed from all mitigation areas.

7.3 Mitigation Goal, Objectives and Performance Standards

The overall goal of the mitigation plan is to enhance the functions and values of the reduced 100-foot Sammamish River Buffer. To accomplish this goal the proposed mitigation plan will:

- Re-establish 21,420 sf of existing impervious surface to fully-functioning stream buffer.
- Enhance 74,300 sf of existing degraded stream buffer.

Copyright © 2016 Talasaea Consultants, Inc.

Mitigation actions will be evaluated through the following objectives and performance standards. Mitigation monitoring will be performed by a qualified biologist.

Objective A: Create structural and plant species diversity in both the re-established and enhanced stream buffer areas (95,720 sf total).

Performance Standard A1: At least 15 species of desirable native plants will be present in the mitigation buffer areas during the monitoring period. Percent survival of planted woody species must be at least 100% at the end of Year 1 (per contractor warranty), and at least 80% for each subsequent year of the monitoring period.

Performance Standard A2--Years 1-3: Native woody species (planted or volunteer) will achieve an average stem density of at least 0.03 stems per square foot by the end of Year 1, and an average stem density of at least 0.04 stems per square foot by the end of Year 3.

Performance Standard A3 -- Years 4-5: Total percent aerial woody plant coverage must be at least 35% by Year 4 and 50% by Year 5. Woody coverage may be comprised of both planted and recolonized native species; however, to maintain species diversity, at no time shall a recolonized species (i.e., red alder) comprise more than 35% of the total woody coverage. There must be at least three native species providing at least 20% each, or four native species providing at least 15% each, or five native species providing at least 10% each of the total aerial woody plant coverage in the re-established buffer area.

Objective B: Increase the overall habitat functions of the stream buffer by incorporating habitat features (i.e., snags with swallow nest boxes, down logs, stumps, and boulder piles, as appropriate) into the mitigation buffer areas.

Performance Standard B: After construction and for the entirety of the monitoring period, the mitigation buffer areas will contain at least 17 habitat features per acre (1 piece/2,500 sf) including down woody material (logs, stumps, etc.) and snags. Large down logs shall be a minimum of 20 feet in length and 15" diameter at breast height, with or without roots. Stumps shall be either well-decayed relocated stumps, or fresh cut stumps with roots with a minimum 3-foot length of trunk. Stumps will be placed both upright and horizontally. Additional habitat features can be placed within the mitigation areas only after specified quantities and sizes have been met. Each snag shall have a swallow nest box installed.

Objective C: Limit the amount of invasive and exotic species within the re-established and enhanced buffer areas.

Performance Standard C1: For discretely rooted woody invasive species such as Himalayan and evergreen blackberry, Scot's broom, purple loosestrife, hedge bindweed, creeping nightshade, etc., 100% removal shall be achieved during mitigation construction (to be documented at the baseline assessment). For years 1-5 of the monitoring period, coverage of discretely rooted invasive species shall be maintained at 10% or less**.*

Performance Standard C2: For rhizomatous colonizing invasive species such as Japanese knotweed, reed canarygrass, etc., overtopping with native canopy species must reach 100% by year 5, and documented reductions of vigor and density must be recorded by year 5*.*

* Per Chapter 8 of Section Two of the City of Woodinville *Wetland and Stream Mitigation Guidelines*.
** Per Chapter 8 (sub-section 8.5) of Section One of the City of Woodinville *Wetland and Stream Mitigation Guidelines*.

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 8. STREAM BUFFER FUNCTIONAL VALUE ANALYSIS WITH MITIGATION

Table 4 below evaluates the stream buffer in terms of five different functions, and provides a qualitative comparison of functions provided by the proposed enhanced 100-foot buffer vs. existing conditions and a hypothetical 115-foot buffer.

Table 4. Functional Value Analysis Summary.

Function	Existing Conditions	With Enhancement (100-foot Buffer)	Difference Between 100-foot and 115-foot Buffer
Shade/ Temperature Control	**Low/Moderate**: The buffer is predominantly vegetated by non-native blackberries and reed canarygrass. There are few trees that provide shade to the river.	**Moderate/High**: The current vegetated portion of the buffer will increase from a minimum of 32 feet to a uniform 100 feet. Trees and shrubs will be planted up to the OHWM of the river, which will eventually provide shade and temperature control to the river.	**No Change**: The reduced 115-foot buffer would still require mitigation, but the additional 15 feet would not provide any additional shade or temperature control to the river. Only the trees and shrubs planted nearest to the OHWM will provide shade and temperature control to the river.
Woody Debris Recruitment	**Low**: Trees are not a major component of the buffer. Large woody debris recruitment potential is very low	**Moderate/High**: Large woody debris will be installed outside of the OHWM as part of the mitigation plan. In addition, trees will be planted throughout the buffer, which will provide for woody debris recruitment.	**No Change**: The reduced 115-foot buffer would still require mitigation and would likely have woody debris and trees planted as mitigation. Trees will provide woody debris recruitment as they mature.
Water Quality Improvement	**Low**: Buffer currently ranges from 32 feet to 87 feet from the OHWM. Stormwater is discharged both directly to the Sammamish River and to a bioswale at the south end of the property.	**High**: The buffer will be a uniform, vegetated 100 feet along the Sammamish River. The existing non-native blackberries and reed canarygrass will be removed and replaced with native species. All stormwater will be treated on site through filter strips or stormwater wetlands before release to the river.	**No Change**: The outer 15-feet of vegetated buffer will not significantly increase water quality improvement, but the adjacent development will treat, detain and provide controlled release of stormwater.
Erosion Control	**Moderate**: The portion of the buffer not paved is well vegetated with non-native blackberries or reed canarygrass. Stormwater is discharged to well vegetated ditches.	**High**: Non-native blackberries can intercept precipitation, but are typically devoid of any vegetation under the blackberry canes. Sheetflow of water under the canes can lead to erosion. Removal of the non-native blackberries and replacement with native trees and shrubs will provide better vegetative cover for the soil..	**No Change**: The reduced 115-foot buffer would still require mitigation and would have the non-native blackberries replaced with native trees and shrubs.
Habitat Value	**Moderate**: Most of buffer is vegetated with non-native blackberries, which does provide some habitat value for birds and small mammals. However, there is little diversity in the habitat available due to the predominance of blackberry.	**High**: The buffer will be revegetated with native trees and shrubs. In addition, snags and large woody debris will be provided. Vegetative diversity as well as structural diversity will increase the value of the buffer habitat compared to existing conditions.	**No Change**: The reduced 115-foot buffer would still require mitigation and would likely have the same combinations of native trees and shrubs with large woody debris installed.

Copyright © 2016 Talasaea Consultants, Inc.

Shade will be provided to the stream corridor through the installation of both evergreen and deciduous trees. Trees and shrubs will also eventually provide a future source of woody debris to the stream as they mature. Installing native trees and shrubs will enhance the wildlife habitat value. These plants will provide both food and cover for wildlife. Wildlife habitat will be significantly enhanced through the placement of snags, down logs, and stumps in the enhanced buffer area. These features will provide habitat for nesting, perching, and shelter for which the existing buffer is lacking.

As demonstrated in **Table 4** above, the proposed buffer re-establishment and enhancement measures will result in a significant increase in the functions and values of the stream buffer over existing conditions, and the functions and values achieved in the proposed 100-foot buffer (existing buffer ranges from 32 feet to 87 feet wide) will be equal to the functions and values that would be achieved in a 115-foot buffer.

CHAPTER 9. CONSTRUCTION MANAGEMENT

9.1 Mitigation Construction Sequence

The following provides the general sequence of activities anticipated to be necessary to complete this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

1. Conduct a site meeting between the Contractor, Talasaea Consultants, and the Owner's Representative to review the project plans.
2. Survey clearing limits.
3. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the mitigation areas.
4. Construct project per civil plans.
5. Clear and grub non-native/invasive vegetation from buffer.
6. Amend soil, as necessary, and place large woody material.
7. Complete site cleanup and install plant material as indicated on the Buffer Mitigation Planting Plans.
8. Install split-rail fence at buffer boundary and post critical area signs.

9.2 Post-Construction Approval

Talasaea Consultants shall notify the City in writing when the mitigation planting is completed for a final site inspection and subsequent final approval. Once final approval is obtained in writing from the City, the monitoring period will begin.

9.3 Post-Construction Assessment

Once construction is approved, a qualified wetland biologist/ecologist from Talasaea Consultants shall conduct a post-construction assessment. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment report including “as-built” drawings will be submitted to the City. The as-built plan set will identify and describe any changes in grading, planting or other constructed features in relation to the original approved mitigation plan.

CHAPTER 10. MONITORING PLAN

10.1 Monitoring Schedule

All of the buffer mitigation areas will be monitored for ten years to ensure compliance with the stated mitigation goals, objectives and performance standards approved by the City. Monitoring

Copyright © 2016 Talasaea Consultants, Inc.

events will be conducted according to the schedule presented in **Table 5** below. Monitoring will be performed by a qualified biologist or ecologist.

Table 5. Projected Schedule for Performance Monitoring and Maintenance Events.

Year	Date	Maintenance Review	Performance Monitoring	Report Due to City
Year 0, As-built and Baseline Assessment	Fall	X	X	X
1	Spring	4 times/year	X	
	Fall		X	X
2	Spring	4 times/year	X	
	Fall		X	X
3	Spring	4 times/year		
	Fall		X	X
4	Spring	4 times/year		
	Fall		X	X
5	Spring	4 times/year		
	Fall		X	X
6	Spring	2 times/year		
	Fall			
7	Spring	2 times/year		
	Fall		X	X
8	Spring	2 times/year		
	Fall			
9	Spring	2 times/year		
	Fall			
10	Spring	2 times/year		
	Fall		X	X*

*Obtain final approval from the City of Woodinville (presumes performance criteria are met).

10.2 Monitoring Reports

Monitoring reports shall follow the general guidelines in Chapter 8 of Section I and Chapter 8 of Section II of the *City of Woodinville Wetland and Stream Mitigation Guidelines* document. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. If the performance criteria are met, monitoring for the City will cease at the end of year five, unless objectives are met at an earlier date and the City accepts the mitigation project as successfully completed prior to year 5.

10.3 Methods for Monitoring Vegetation Establishment

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the permitting agency or agencies. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment.

Percent areal cover of woody vegetation (forested and/or scrub-shrub plant communities) will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded.

Copyright © 2016 Talasaea Consultants, Inc.

Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

Percent areal cover of herbaceous vegetation (emergent plant communities) in created or enhanced wetland areas will be measured using quadrats and/or sampling plots. Quadrats may be randomly located throughout the herbaceous community, or may be located along established transects. Larger sampling plots may also be established to evaluate large areas.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment, and will be evaluated during each monitoring event to determine percent survival. .

10.4 Photo Documentation

Locations will be established within the mitigation areas from which panoramic photographs will be taken throughout the monitoring period. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan. Vegetation sampling plot and photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports.

10.5 Wildlife Use and Condition of Habitat Features

Birds, mammals, reptiles, amphibians, and invertebrates observed in the mitigation areas (either by direct or indirect means) will be identified and recorded during scheduled monitoring events, and at any other times observations are made. Direct observations include actual sightings, while indirect observations include tracks, scat, nests, song, or other indicative signs. The kinds and locations of the habitat with greatest use by each species will be noted, as will any breeding or nesting activities. Installed habitat features (e.g., stumps, snags, down logs) will be monitored to ensure that they remain in place and are functioning as intended.

10.6 Site Stability

Observations will be made on the stability of slopes in the mitigation areas. Any erosion or slumping of the slopes will be recorded and corrective measures will be taken.

CHAPTER 11. MAINTENANCE AND CONTINGENCY

Regular maintenance reviews will be performed according to schedule presented in **Table 5** to address any conditions that could jeopardize the success of the mitigation project. Following maintenance reviews by the biologist or ecologist, required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a Contingency Plan shall be submitted to City by December 31st of any year when deficiencies are discovered.

Copyright © 2016 Talasaea Consultants, Inc.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During year one, replace all dead woody plant material (M).
- Water plantings in the buffer restoration/creation areas at a rate of 1" of water every week between June 15 – October 15 during the first two years after installation, and for the first two years after any replacement plantings (C & M).
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to Talasaea and agency approval (C).
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- After consulting with City staff, minor excavations, if deemed to be more beneficial to the existing conditions than currently exists, will be made to correct surface drainage patterns (C).
- Remove/control weedy or exotic invasive plants (e.g., Scot's broom, reed canarygrass, Himalayan blackberry, purple loosestrife, Japanese knotweed, etc.) by manual or chemical means approved by permitting agencies. Use of herbicides or pesticides within the mitigation area would only be implemented if other measures failed or were considered unlikely to be successful, and would require prior agency approval. All non-native vegetation must be removed and disposed of off-site. (C & M).
- Weed all trees and shrubs to the dripline and provide 3-inch deep mulch rings 24 inches in diameter for shrubs and 36 inches in diameter for trees (M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Talasaea Consultants to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased portions of trees/shrubs) (M).
- Repair or replace damaged structures including: signs, fences (M).

CHAPTER 12. PERFORMANCE SECURITY

Pursuant to WMC 21.24.150, a performance security device shall be secured by the applicant to ensure that all mitigation work is constructed and completed according to the approved plans. A separate performance security device shall also be secured to ensure monitoring and maintenance is carried out as specified in the approved mitigation plan for the duration of the required monitoring period. Per the City of Woodinville's Wetland and Stream Mitigation Guidelines, the performance security shall be in the amount of 150% of the cost of the installed mitigation work. A mitigation cost worksheet, per the provided template in Appendix E of the Wetland and Stream Mitigation Guidelines, will be provided to the City to determine the required amount of the performance security.

CHAPTER 13. SUMMARY

Panattoni Development Company proposes to redevelop the Woodinville Lumber property. The project site is located directly adjacent to the Sammamish River, a Shoreline of the State, and as such development on the Site must follow the regulations of Woodinville's Shoreline Master Program, in addition to all other applicable codes and development regulations. The proposed project consists of two speculative warehouse buildings with a combined footprint of about 199,700 square feet (sf) with a future second floor area totaling approximately 30,000 sf. Parking will be developed for approximately 200 cars. Portions of the proposed building, along

Copyright © 2016 Talasaea Consultants, Inc.

with paved parking and loading areas, will be located within the Urban Conservancy shoreline environment (the outer 100 feet) of the 200-foot shoreline zone. These uses are permitted in the Urban Conservancy shoreline environment per Woodinville's SMP. No development will occur within the Conservancy shoreline environment (the inner, or waterward 100 feet) of the 200-foot shoreline zone.

The site will be fully developed in a single phase including offsite improvement along Woodinville Redmond road (SR-202) and driveway improvement inside a vested access across the King County Park property from the public street. Two short paths accessing two shoreline viewpoints will be constructed within the stream buffer to provide shoreline access per the requirements of Woodinville's Shoreline Management Plan.

The project proposes to reduce the on-site portion of the Sammamish River buffer from the 150-foot standard buffer to a reduced 100-foot minimum buffer per WMC §21.24.380(1)(a). A small portion of the FEMA 100-year floodplain will be filled to accommodate construction of the proposed parking lot.

Although critical areas were identified off-site to the west of the proposed project, the project in this vicinity is confined to the existing paved roadway on the west side of SR-202. As a result, there will be no impacts to these off-site critical areas or their buffers, which would end at the paved roadway.

Mitigation for the impacts listed above will provide a vastly improved condition for the Sammamish River buffer, which is currently degraded and partially developed. The project has been designed to actually increase the overall area of functioning river buffer on site vs. existing conditions, and the project proposes re-establishing approximately 21,420 sf of existing impervious surface to functioning vegetated buffer. To mitigate for reducing the 150-foot standard Sammamish River buffer to 100 feet, the project will enhance 74,300 sf of existing vegetated but degraded buffer. A total of 95,720 square feet (sf) of enhanced and re-established buffer will be provided with this development proposal. Mitigation for the loss of floodplain volume will be provided with a net increase of 1,690 cf.

All of the re-established and enhanced buffer areas will be monitored for ten years to ensure compliance with the stated mitigation goals, objectives, and performance standards approved by the City. In addition, a performance security will be provided to ensure that the monitoring and maintenance is carried out as specified in the approved mitigation plan for the duration of the required monitoring period.

Copyright © 2016 Talasaea Consultants, Inc.

CHAPTER 14. REFERENCES

ESA Adolfson. 2009. *City of Woodinville Shoreline Master Program.*

Hitchcock, C.L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. 730 pp.

Iowa State University. 1995. Hydric Soils of Washington State. U.S. Department of Agriculture, Natural Resources Conservation Service.

King County GIS database (King County, 2006);

Munsell Color. 1988. *Munsell Soil Color Charts*. Kollmorgen Instruments Corp., Baltimore, Maryland.

Natural Resources Conservation Service. 2006. National Technical Committee for Hydric Soils. 2006 List [Online]. Accessed June 12, 2006. <www.soils.usda.gov/use/hydric/ntchs/>

NOAA's National Marine Fisheries Service (NMFS). 2011. *Current Pacific Coast Salmon Species Listed as Protected Under the Federal Endangered Species Act.* <www.nwr.noaa.gov/ESA-Salmon-Listings> (accessed online June 2012, updated August 11, 2011).

Reed, P.B. Jr. 1988. *National List of Plant Species that Occur in Wetlands: Northwest* (Region 9). USF&WS Biol. Report 88.

Reed, P.B. Jr. 1993. *Supplement to: National List of Plant Species that Occur in Wetlands: Northwest* (Region 9). USF&WS Biol. Report 88.

Reed, P.B. Jr. 1998. *National List of Plant Species that Occur in Wetlands: Northwest* (Region 9). USF&WS Update.

Soil Survey Staff, Natural Resources Conservation Service, U.S. Department of Agriculture, *Web Soil Survey*. [accessed 5-2-12] <http://websoilsurvey.nrcs.usda.gov/>

StreamNet, *StreamNet Mapper,* [online], Portland, OR: StreamNet, [accessed 5-12-2012]. <http://map.streamnet.org/website/bluesnetmapper/viewer.htm>

U.S. Department of Agriculture, Soil Conservation Service. June, 1991. *Hydric Soils of the United States*.

U.S. Fish and Wildlife Service. 2012. *Federally-Listed and Proposed Endangered and Threatened species and critical habitat; Candidate Species; and Species Of Concern in Snohomish County* <www.fws.gov/wafwo/speciesmap/SnohomishCounty0312.pdf>

U.S. Fish and Wildlife Service. May 2008. *National Wetlands Inventory Map*. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. [accessed 5-2-12] <http://www.fws.gov/nwi/>

Washington State Department of Fish and Wildlife. 2012. *SalmonScape* [online], Olympia, WA: [accessed 5-2-2012]. <http//wdfw.wa.gov/mapping/salmonscape/index.html>

Washington State Department of Fish and Wildlife. 2012. *Priority Habitats and Species Database* [online], Olympia, WA. [accessed June 2012]. <www.wdfw.wa.gov/mapping/phs/>

Washington State Department of Fish and Wildlife. 2011. *Priority Habitat and Species List.* Olympia, WA. 177 pp.

Washington State Natural Heritage Program. 2012. *Natural Heritage Program Database Report.* Olympia, Washington.

Copyright © 2016 Talasaea Consultants, Inc.

Woodinville Municipal Code, February 2013, Chapter 21.24 – Development Standards – Critical Areas

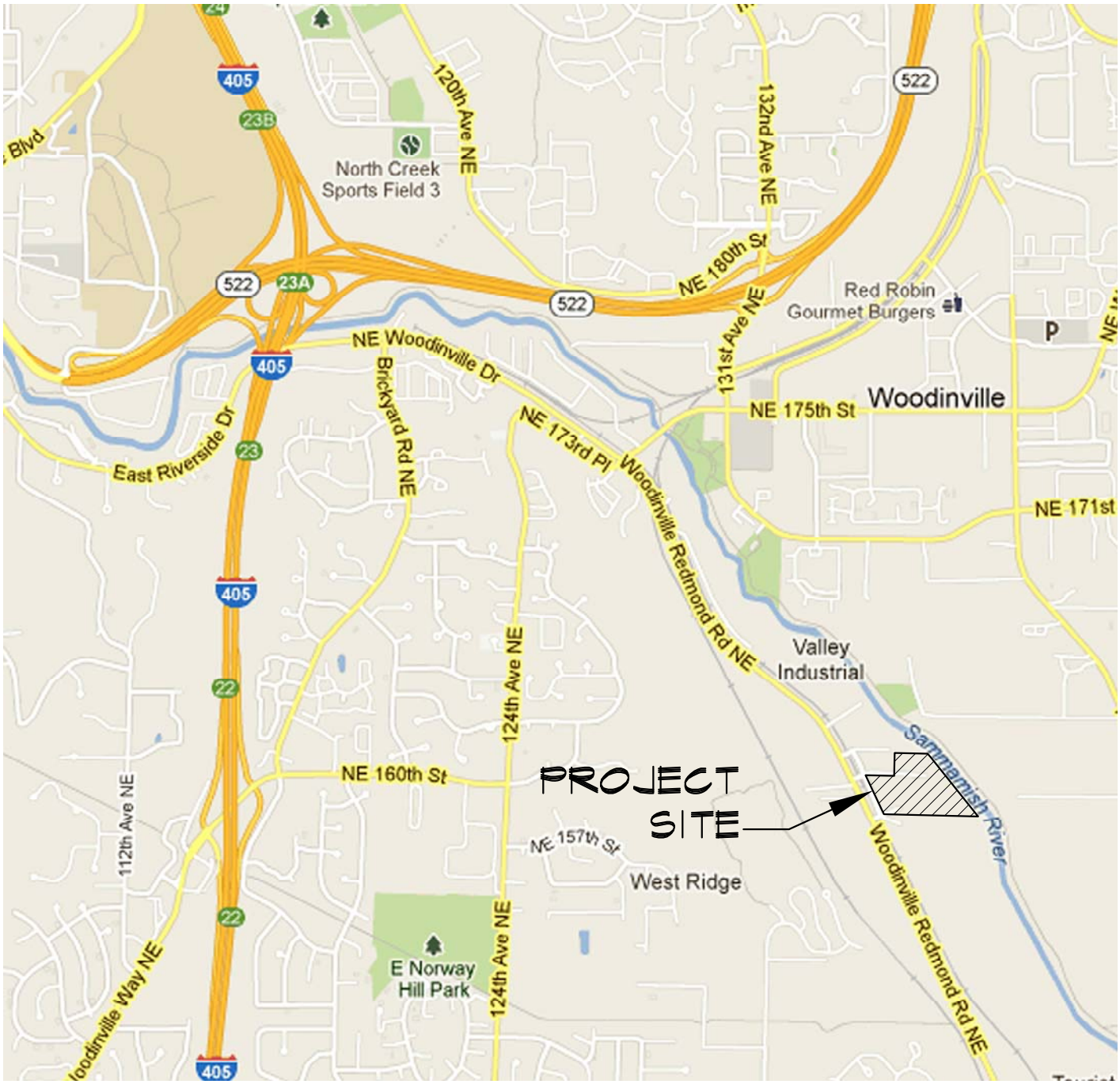
Woodinville, City of, *Wetland and Stream Mitigation Guidelines*, April 30, 2007.

Copyright © 2016 Talasaea Consultants, Inc.

FIGURES

Figure 1: Vicinity Map and Driving Directions
Figure 2: Site Map
Figure 3: NWI Map
Figure 4: King County GIS Map
Figure 4A: Off-Site Drainages
Figure 5: Site Photos – Sammamish River Buffer Existing Conditions
Figure 6: Proposed SR-202 Improvements

Copyright © 2016 Talasaea Consultants, Inc.



MAP SOURCE: WWW.MAPS.GOOGLE.COM (accessed 12-17-12)

DRIVING DIRECTIONS:

1. FROM I-405 NORTH OR SOUTH TAKE THE EXIT FOR SR 522 EAST TOWARDS WOODINVILLE.
2. TAKE THE FIRST EXIT. TURN RIGHT AT THE END OF THE EXIT RAMP ONTO 131ST AVE NE.
3. MAKE ANOTHER RIGHT AT THE SECOND LIGHT ONTO NE 175TH ST.
4. CROSS THE SAMMAMISH RIVER AND MAKE A LEFT AT THE NEXT LIGHT ONTO WOODINVILLE-REDMOND RD. NE (SR 202).
5. CONTINUE ON WOODINVILLE-REDMOND RD. NE FOR APPROXIMATELY 0.8 MILES. SITE WILL BE ON THE LEFT.

NORTH

TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 1

VICINITY MAP

THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

DESIGN	DRAWN	PROJECT
	ELW	1349D
SCALE NTS		
DATE 1-15-2016		1
REVISED		

Z:\DRAWING\1300-1399\TAL1349D\Outgoing\2016-1-13\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.

MAP SOURCE: KING COUNTY iMAP (accessed 1-15-2016)

NORTH

TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 2

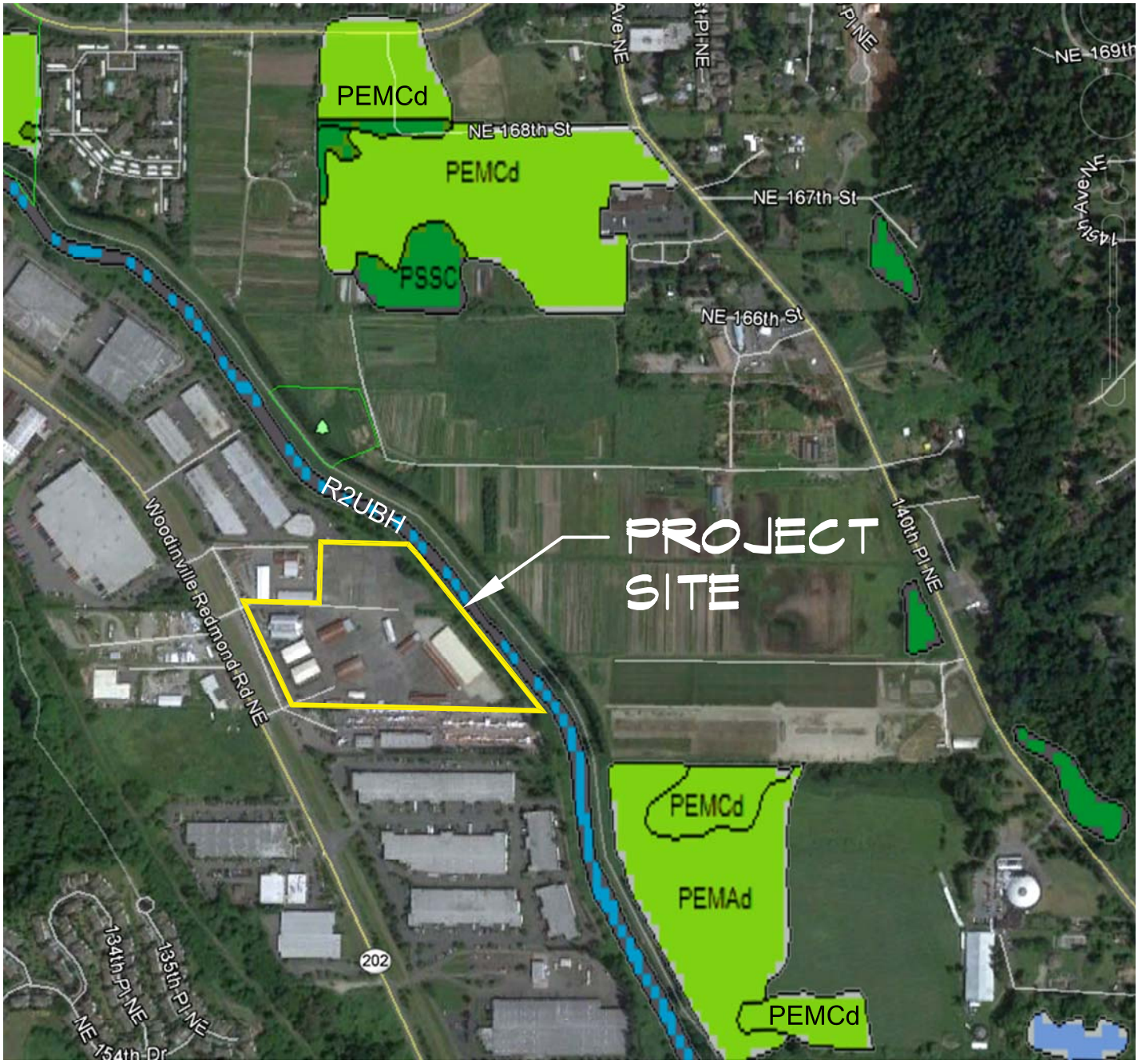
SITE MAP

THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

DESIGN	DRAWN	PROJECT
	ELW	1349D
SCALE NTS		
DATE 1-15-2016		2
REVISED		

Z:\DRAWING\1300-1399\TAL1349B\Plans\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.



LEGEND

TYPE	DESCRIPTION
PEMCd	PALUSTRINE EMERGENT, SEASONALLY FLOODED, PARTIALLY DRAINED/DITCHED
PSSC	PALUSTRINE SCRUB-SHRUB, SEASONALLY FLOODED
PEMAd	PALUSTRINE EMERGENT, TEMPORARILY FLOODED, PARTIALLY DRAINED/DITCHED
R2UBH	RIVERINE LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, PERMANENTLY FLOODED (SAMMAMISH RIVER)

SOURCE: U.S. FISH AND WILDLIFE SERVICE, MAY 2008. NATIONAL WETLANDS INVENTORY MAP, U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, WASHINGTON D.C. http://www.fws.gov/nwi/

NORTH

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 3

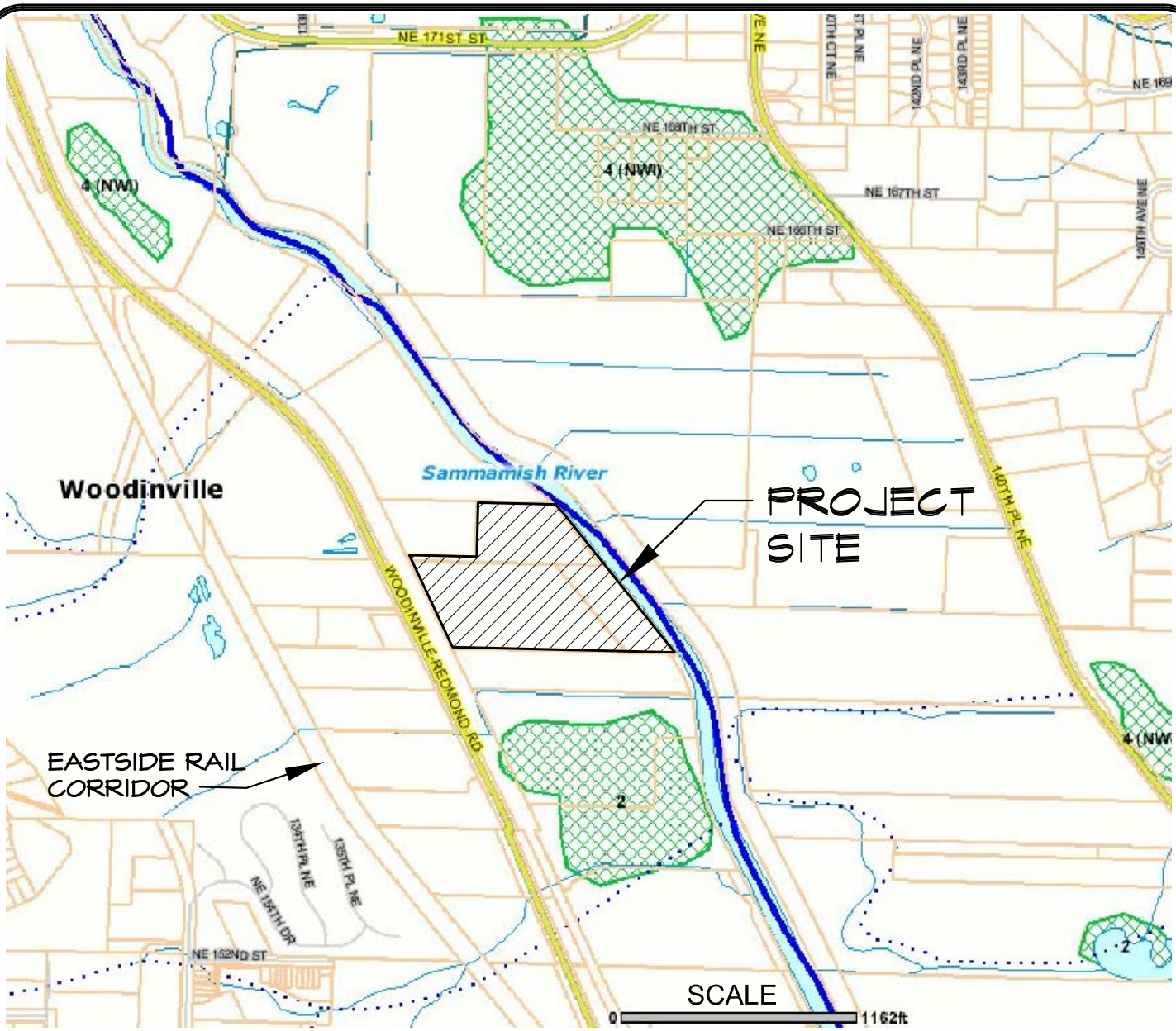
NATIONAL WETLANDS INVENTORY MAP

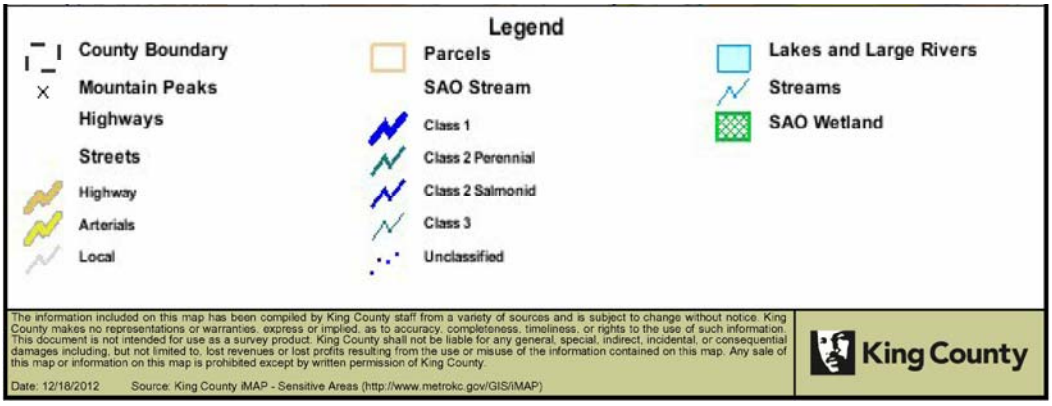
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

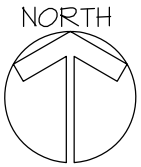
DESIGN	DRAWN	PROJECT
	ELW	1349D
SCALE NTS		
DATE 1-15-2016		3
REVISED		

Z:\DRAWING\1300-1399\TAL1349D\Outgoing\2016-1-13\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.







TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 4

KING COUNTY GIS DATA

THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

DESIGN	DRAWN	PROJECT
	ELW	1349D

SCALE
AS SHOWN

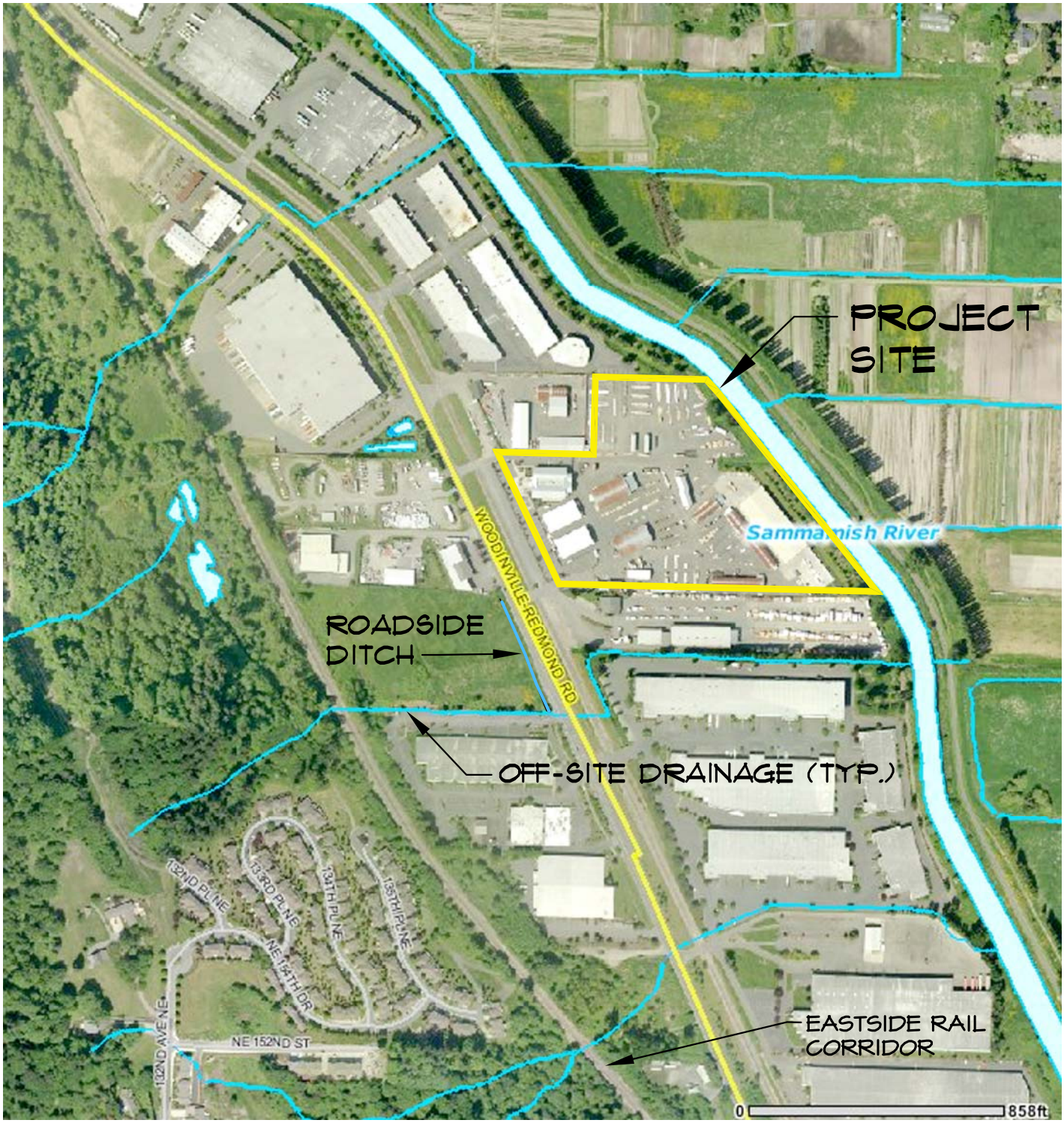
DATE
1-15-2016

REVISED

4

Z:\DRAWING\1300-1399\TAL1349D\Outgoing\2016-1-13\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.



SOURCE: KING COUNTY IMAP
(WWW.METROKC.GOV/GIS/IMAP)

NORTH

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 4A

OFF-SITE DRAINAGES

THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

DESIGN	DRAWN	PROJECT
	ELW	1349D
SCALE AS SHOWN		
DATE 1-15-2016		4A
REVISED		

Z:\DRAWING\1300-1399\TAL1349D\Outgoing\2016-1-13\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.

VIEW OF STREAM BUFFER AND EXISTING WAREHOUSE BUILDING ON PROJECT SITE FROM ACROSS SAMMAMISH RIVER

LOOKING NORTH ALONG SEWER EASEMENT WITHIN STREAM BUFFER FROM SE PROPERTY CORNER

LOOKING SOUTH FROM NORTH PROPERTY LINE AT AREA OF PROPOSED BUFFER RE-ESTABLISHMENT

LOOKING SOUTH AT STREAM BUFFER FROM NE PROPERTY CORNER

TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE 5

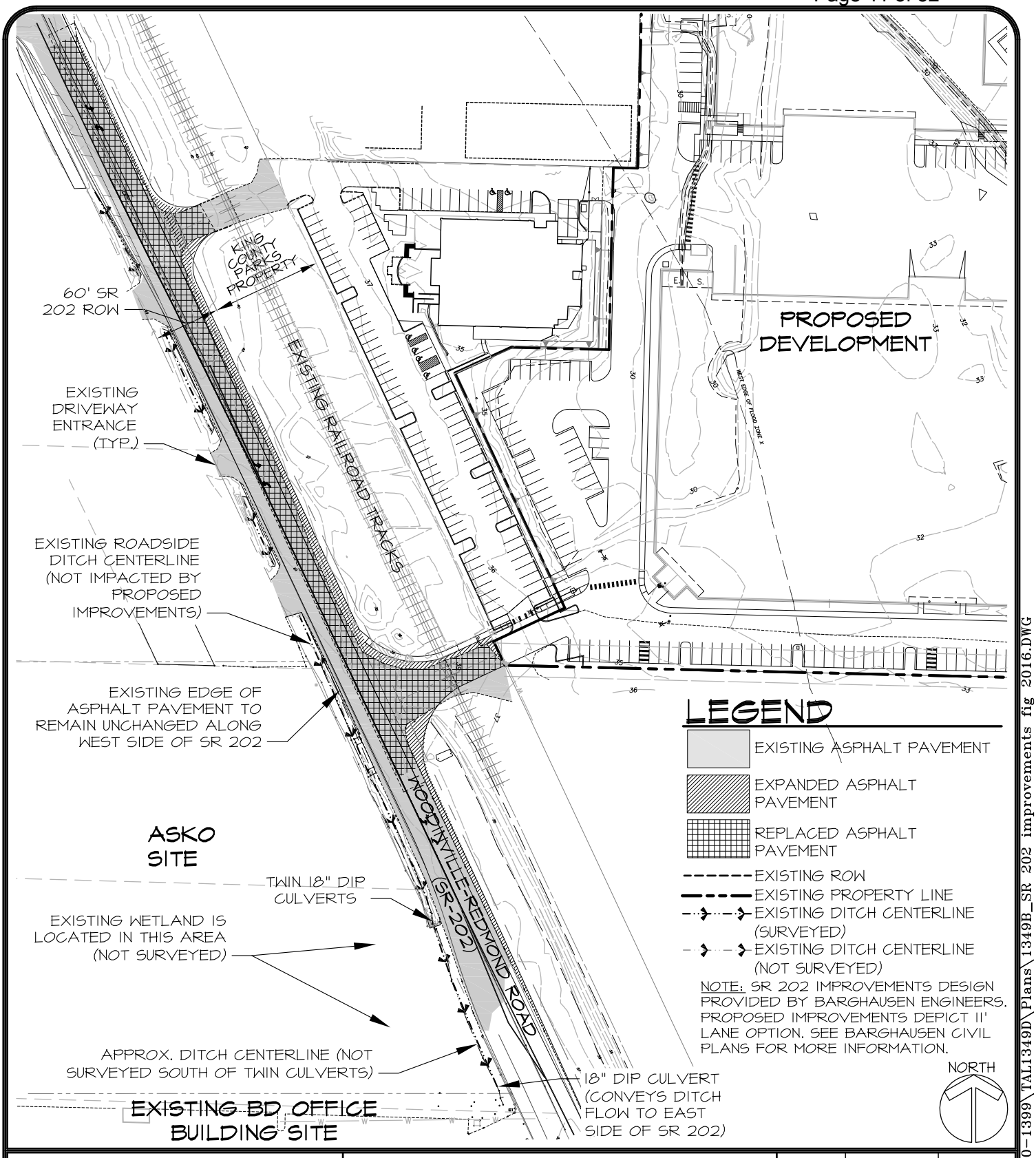
SITE PHOTOS

THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

DESIGN	DRAWN	PROJECT
	ELW	1349D
SCALE AS SHOWN		
DATE 1-15-2016		5
REVISED		

Z:\DRAWING\1300-1399\TAL1349D\Outgoing\2016-1-13\1349B-FIGURES.dwg

© Copyright - Talasaea Consultants, INC.



TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #6

PROPOSED SR 202 IMPROVEMENTS
THE RESERVE AT WOODINVILLE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ABS	1349D
SCALE 1"=120'		
DATE 1-15-2016		6
REVISED		

Z:\DRAWING\1300-1399\TAL1349D\Plans\1349B_SR 202 improvements fig 2016.DWG

© Copyright - Talasaea Consultants, INC.

APPENDIX A

FEMA Letter of Map Amendment (LOMA) dated 10 January 2012

Copyright © 2016 Talasaea Consultants, Inc.

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF WOODINVILLE, KING COUNTY, WASHINGTON	A parcel of land, as described in the Statutory Warranty Deed, recorded as Document No. 20020509001041, in the Office of the Auditor, King County, Washington The portion of property is more particularly described by the following metes and bounds:
	COMMUNITY NO.: 530324	
AFFECTED MAP PANEL	NUMBER: 53033C0360G	
	DATE: 11/8/1999	
FLOODING SOURCE: SAMMAMISH RIVER		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 47.743, -122.157 SOURCE OF LAT & LONG: STREETS & TRIPS 2009 DATUM: WGS 84

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NGVD 29)	LOWEST ADJACENT GRADE ELEVATION (NGVD 29)	LOWEST LOT ELEVATION (NGVD 29)
--	--	--	15900 Woodinville Redmond Road	Portion of Property	X (shaded)	25.4 feet	--	25.4 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE FLOODWAY
STUDY UNDERWAY

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the described portion(s) of the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT
DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

COMMENCING at the Southwest corner of that property described in the Statutory Warranty Deed; thence S88°37'46"E, a distance of 1090.00 feet to the POINT OF BEGINNING; thence N35°42'00"W, a distance of 230.00 feet; thence, N41°00'00"W, a distance of 115.00 feet; thence N75°20'00"W, a distance of 15.00 feet; thence N48°00'00"W, a distance of 15.00 feet; thence N04°00'00"E, a distance of 7.50 feet; thence N36°45'00"W, a distance of 180.00 feet; thence S89°00'00"W, a distance of 70.00 feet; thence S36°00'00"E, a distance of 35.00 feet; thence S42°10'00"E, a distance of 37.50 feet; thence S16°00'00"E, a distance of 7.50 feet; thence S43°20'00"E, a distance of 45.00 feet; thence S40°20'00"E, a distance of 140.00 feet; thence S36°30'00"E, a distance of 95.00 feet; thence S36°00'00"E, a distance of 65.00 feet; thence S28°10'00"E, a distance of 35.00 feet; thence N44°10'00"W, a distance of 120.00 feet; thence N16°20'00"W, a distance of 15.00 feet; thence N39°10'00"W, a distance of 220.00 feet; thence N43°40'00"W, a distance of 12.00 feet; thence N36°50'00"W, a distance of 105.00 feet; thence N85°30'00"W, a distance of 85.00 feet; thence N04°00'00"W, a distance of 15.00 feet; thence S88°50'00"E, a distance of 135.00 feet; thence N68°10'00"E, a distance of 24.00 feet; thence N44°00'00"W, a distance of 65.00 feet; thence N33°15'00"W, a distance of 35.00 feet; thence N05°40'00"W, a distance of 10.00 feet; thence N38°37'03"W, a distance of 17.00 feet; thence N85°00'00"W, a distance of 8.00 feet; thence N39°10'00"W, a distance of 18.00 feet; thence S76°45'00"W, a distance of 35.00 feet; thence N85°00'00"W, a distance of 35.00 feet; thence N62°00'00"W, a distance of 15.00 feet; thence N36°50'00"E, a distance of 15.00 feet; thence N84°20'00"E, a distance of 60.00 feet; thence N41°57'00"W, a distance of 184.87 feet; thence N88°37'45"W, a distance of 193.00 feet; thence S56°00'00"E, a distance of 245.00 feet; thence S88°05'00"W, a distance of 300.00 feet; thence S40°45'00"E, a distance of 80.00 feet; thence S30°15'00"E, a distance of 75.00 feet; thence S17°35'00"E, a distance of 125.00 feet; thence S23°00'00"E, a distance of 150.00 feet; thence S11°55'30"E, a distance of 202.00 feet; thence S88°37'46"E, a distance of 652.56 feet to the POINT OF BEGINNING.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

PORTIONS OF THE PROPERTY REMAIN IN THE FLOODWAY (This Additional Consideration applies to the preceding 1 Property.)

A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. The NFIP regulatory floodway is the area that must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in an NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management. The NFIP regulatory floodway is provided to the community as a tool to regulate floodplain development. Modifications to the NFIP regulatory floodway must be accepted by both the Federal Emergency Management Agency (FEMA) and the community involved. Appropriate community actions are defined in Paragraph 60.3(d) of the NFIP regulations. Any proposed revision to the NFIP regulatory floodway must be submitted to FEMA by community officials. The community should contact either the Regional Director (for those communities in Regions I-IV, and VI-X), or the Regional Engineer (for those communities in Region V) for guidance on the data which must be submitted for a revision to the NFIP regulatory floodway. Contact information for each regional office can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/about/regoff.htm.

STUDY UNDERWAY (This Additional Consideration applies to all properties in the LOMA DETERMINATION DOCUMENT (REMOVAL))

This determination is based on the flood data presently available. However, the Federal Emergency Management Agency is currently revising the National Flood Insurance Program (NFIP) map for the community. New flood data could be generated that may affect this property. When the new NFIP map is issued it will supersede this determination. The Federal requirement for the purchase of flood insurance will then be based on the newly revised NFIP map.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

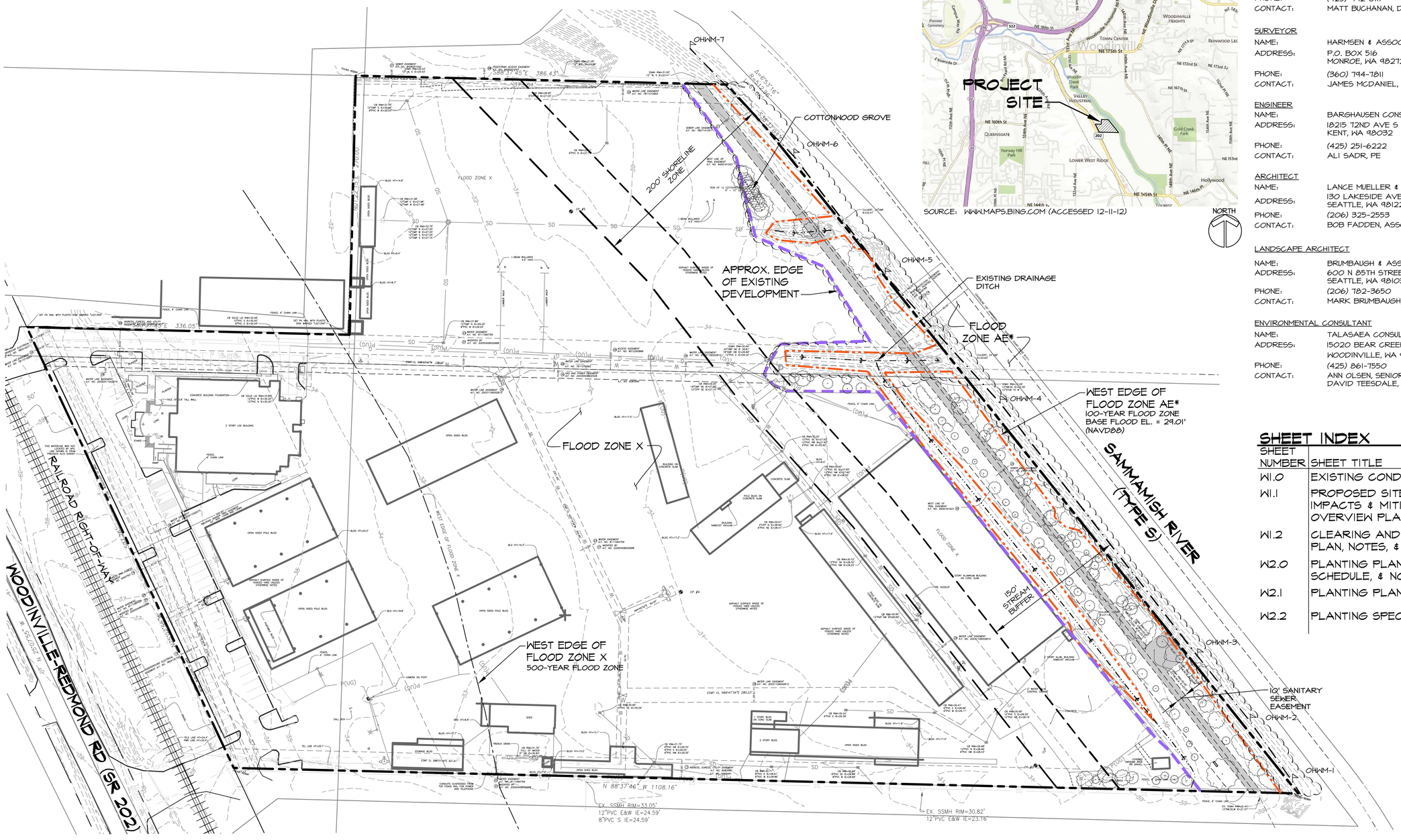
APPENDIX B

Buffer Mitigation Plan (full-size plan sheets)

Sheet W1.0: Existing Conditions Plan
Sheet W1.1: Proposed Site Plan, Impacts and Mitigation Overview
Sheet W1.2: Clearing and Grubbing Plan, Notes & Details
Sheet W2.0: Planting Plan, Plant Schedule & Notes
Sheet W2.1: Planting Plan & Details
Sheet W2.2: Planting Specifications

Copyright © 2016 Talasaea Consultants, Inc.

NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.



EXISTING CONDITIONS PLAN

GRAPHIC SCALE (IN FEET)
0 25 50 100
SCALE: 1"=50'

NORTH

PLAN LEGEND

- PROPERTY LINE
- STANDARD STREAM BUFFER
- 200' SHORELINE ZONE BOUNDARY
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- EXISTING DITCH CENTERLINE
- FLOOD ZONE AE BOUNDARY*
- 100 EXISTING CONTOUR
- OHWM-# OHWM FLAG LOCATION
- EXISTING CONIFEROUS/DECIDUOUS TREES
- EXISTING SHRUB VEGETATION
- EXISTING HIMALAYAN/EVERGREEN BLACKBERRY & REED CANARYGRASS
- APPROX. EDGE OF EXISTING DEVELOPMENT

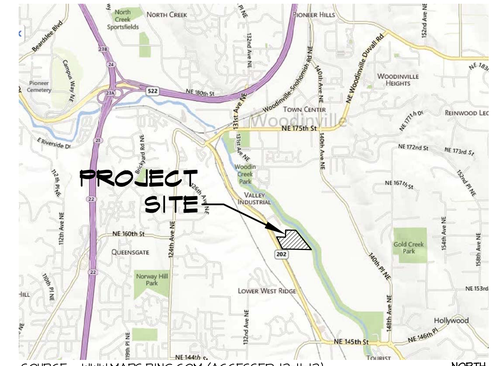
* 100-YEAR FLOOD ZONE NOTE:

THE 100-YEAR FLOOD ZONE BOUNDARY (ZONE AE) HAS BEEN OFFICIALLY REVISED FOR THE PROJECT SITE VIA A LETTER OF MAP AMENDMENT (LOMA) APPROVED BY FEMA. THE NEW 100-YEAR FLOOD BOUNDARY DEFINED IN THE LOMA SUPERSEDES THE BOUNDARY SHOWN ON THE EXISTING FIRM MAP (MAP PANEL # 53033C0360G, DATED 11/8/1999). SEE THE LOMA DOCUMENT DATED 10 JANUARY 2012, FEMA CASE # 11-10-1973A, FOR MORE INFORMATION. THE MODIFIED ZONE AE FLOOD BOUNDARY DEFINED IN THE LOMA APPLIES ONLY TO THE PROJECT SITE. PER THE LOMA, THE BASE FLOOD ELEVATION (BFE) FOR THE PROJECT SITE IS 25.4 FEET BASED ON THE NGVD29 DATUM.

NOTE: EXISTING AND PROPOSED TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS BASED ON THE NAVD88 DATUM, AND THE BASE FLOOD ELEVATION IS 29.01 FEET BASED ON NAVD88.

VICINITY MAP

NTS



SOURCE: WWW.MAPS.BING.COM (ACCESSED 12-11-12)

NORTH

CONTACTS

APPLICANT
NAME: PANATTONI DEVELOPMENT CO. INC.
ADDRESS: 900 SW 16TH STREET SUITE 330 RENTON, WA 98057
PHONE: (425) 442-6111
CONTACT: MATT BUCHANAN, DEVELOPMENT MANAGER

SURVEYOR
NAME: HARMSEN & ASSOCIATES, INC.
ADDRESS: P.O. BOX 516 MONROE, WA 98272
PHONE: (360) 794-7811
CONTACT: JAMES MCDANIEL, PLS

ENGINEER
NAME: BARGHAUSEN CONSULTING ENGINEERS, INC.
ADDRESS: 18215 72ND AVE S KENT, WA 98032
PHONE: (425) 251-6222
CONTACT: ALI SADR, PE

ARCHITECT
NAME: LANCE MUELLER & ASSOCIATES
ADDRESS: 130 LAKESIDE AVE, SUITE 250 SEATTLE, WA 98122
PHONE: (206) 325-2553
CONTACT: BOB FADDEN, ASSOCIATE ARCHITECT

LANDSCAPE ARCHITECT
NAME: BRUMBAUGH & ASSOCIATES
ADDRESS: 600 N 85TH STREET, SUITE 102 SEATTLE, WA 98103
PHONE: (206) 782-3650
CONTACT: MARK BRUMBAUGH, RLA

ENVIRONMENTAL CONSULTANT
NAME: TALASAEA CONSULTANTS, INC.
ADDRESS: 15020 BEAR CREEK RD. NE WOODINVILLE, WA 98077
PHONE: (425) 861-7550
CONTACT: ANN OLSEN, SENIOR PROJECT MANAGER
DAVID TEESDALE, PWS, SENIOR ECOLOGIST

SHEET INDEX

SHEET NUMBER	SHEET TITLE
W1.0	EXISTING CONDITIONS PLAN
W1.1	PROPOSED SITE PLAN, IMPACTS & MITIGATION OVERVIEW PLAN
W1.2	CLEARING AND GRUBBING PLAN, NOTES, & DETAILS
W2.0	PLANTING PLAN, PLANT SCHEDULE, & NOTES
W2.1	PLANTING PLAN & DETAILS
W2.2	PLANTING SPECIFICATIONS

Know what's **below.** **Call** before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC.; P.O. BOX 516, MONROE, WA 98272; (360) 794-7811
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast – Woodinville, Washington 98077
Bus (425) 861-7550 – Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
EXISTING CONDITIONS PLAN
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

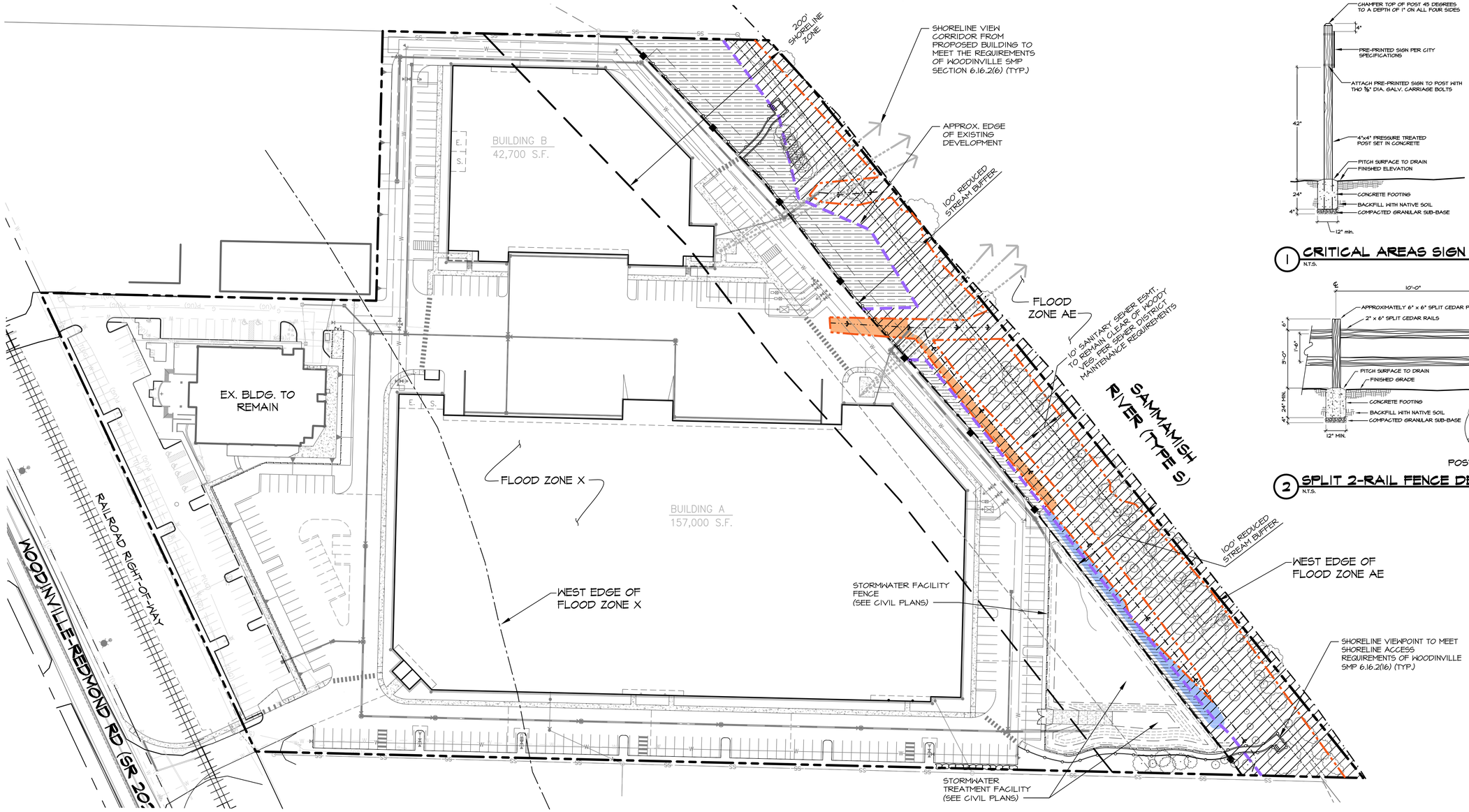
Date 1-15-2016
Scale AS NOTED
Designed AO
Drawn ABS
Checked AO
Approved AO

Project #13449D

Sheet # W1.0

© Copyright – Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TAL1349D\Plans\13449D WD_1-15-2016.dwg
Plotted January 14, 2016

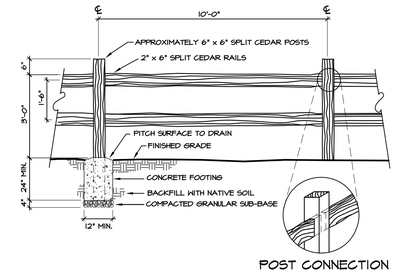
NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.



PROPOSED SITE PLAN, IMPACTS & MITIGATION OVERVIEW PLAN

GRAPHIC SCALE (IN FEET)
0 25 50 100
SCALE: 1"=50'
NORTH

1 CRITICAL AREAS SIGN DETAIL
N.T.S.



2 SPLIT 2-RAIL FENCE DETAIL
N.T.S.

IMPACT LEGEND

FLOOD STORAGE VOLUME REDUCTION WITHIN 100-YEAR FLOODPLAIN (ZONE AE)	± 3,740 CF

MITIGATION LEGEND

BUFFER RE-ESTABLISHMENT	± 21,420 SF
BUFFER ENHANCEMENT	± 74,300 SF
TOTAL BUFFER ENHANCEMENT/RE-ESTABLISHMENT:	± 95,720 SF
FLOOD STORAGE VOLUME REPLACEMENT PER WMC 21.24.230(1) (EXISTING SWALE WILL BE RE-GRADED TO INCREASE FLOOD STORAGE VOLUME)	± 5,430 CF

◆ CRITICAL AREAS SIGNS PER WMC 21.24.160 (1 PER)

CRITICAL AREA FENCE (SPLIT RAIL OR SIMILAR) (2 PER)

PLAN LEGEND

- PROPERTY LINE
- REDUCED STREAM BUFFER
- 200' SHORELINE ZONE BOUNDARY
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- EXISTING DITCH CENTERLINE
- FLOOD ZONE AE BOUNDARY
- EXISTING CONIFEROUS/DECIDUOUS TREES TO REMAIN
- EXISTING SHRUB VEGETATION TO REMAIN
- APPROX. EDGE OF EXISTING DEVELOPMENT

811 Know what's **below.** **Call** before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC.; P.O. BOX 516, MONROE, WA 98272; (360) 794-7611
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast – Woodinville, Washington 98077
Box (425) 861-7500 – Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
PROPOSED SITE PLAN, IMPACTS & MITIGATION OVERVIEW PLAN
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

Date	1-15-2016
Scale	AS NOTED
Designed	AO
Drawn	ABS
Checked	AO
Approved	AO

Project # 13490

Sheet # W1.1

© Copyright – Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TALI3490\Plans\13490 WF_1-15-2016.dwg
Plotted January 14, 2016

NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.

NOTES FOR CLEARING, GRUBBING, AND HABITAT FEATURE INSTALLATION

PART 1: GENERAL

1.1 SEQUENCING

A. GENERAL CONSTRUCTION:
1. CONTRACTOR SHALL GIVE TALASAEA CONSULTANTS A MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO BEGINNING CONSTRUCTION.
2. NO CONSTRUCTION WORK SHALL COMMENCE UNTIL THERE IS A MEETING BETWEEN THE CLIENT, TALASAEA CONSULTANTS, GENERAL CLEARING, AND/OR EARTHWORK CONTRACTORS, AND THE LANDSCAPE CONTRACTOR. THE APPROVED PLANS AND SPECIFICATIONS SHALL BE REVIEWED TO ENSURE THAT ALL PARTIES INVOLVED UNDERSTAND THE INTENT AND THE SPECIFIC DETAILS RELATED TO THE CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONSTRAINTS.
3. LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO: (1) INDEPENDENTLY VERIFY THE ACCURACY OF UTILITY LOCATIONS AND (2) DISCOVER AND AVOID ANY UTILITIES WITHIN THE MITIGATION PLAN AREA(S) THAT ARE NOT SHOWN, BUT WHICH MAY BE AFFECTED BY IMPLEMENTATION OF THE PLAN. SUCH AREA(S) ARE TO BE CLEARLY MARKED IN THE FIELD. TALASAEA CONSULTANTS SHALL REVIEW ANY CONFLICTS WITH THE APPROVED MITIGATION PLAN PRIOR TO START OF CONSTRUCTION.
4. A COPY OF THE APPROVED PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS, AND SHALL REMAIN ON SITE UNTIL PROJECT COMPLETION.
5. CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ALL AGENCY STANDARDS, RULES, CODES, PERMIT CONDITIONS, AND/OR OTHER APPLICABLE ORDINANCES AND POLICIES.
6. THE PROJECT OWNER/APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO THE START OF CONSTRUCTION.
7. A QUALIFIED ECOLOGIST SHALL BE ON SITE, AS NECESSARY, TO MONITOR MITIGATION CONSTRUCTION AND APPROVE MINOR REVISIONS TO THE PLAN.
8. DURING CONSTRUCTION, THE CONTRACTOR MUST USE MATERIALS AND CONSTRUCTION METHODS THAT PREVENT TOXIC SUBSTANCES AND OTHER POLLUTANTS FROM ENTERING MITIGATION AREAS OR OTHER NATURAL WATERS OF THE STATE.
9. PREVENTATIVE MEASURES SHALL BE USED TO PROTECT EXISTING STORM DRAINAGE SYSTEMS, EXISTING UTILITIES, AND ROADS.
10. THE CONTRACTOR SHALL PROVIDE SEDIMENT AND EROSION CONTROLS AROUND THE PROJECT AREA PRIOR TO SOIL DISTURBANCE FROM CONSTRUCTION ACTIVITY.

B. MITIGATION CONSTRUCTION: THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.
1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, TALASAEA CONSULTANTS, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS.
2. SURVEY CLEARING LIMITS.
3. INSTALL SILT FENCE AND ANY OTHER EROSION AND SEDIMENTATION CONTROL BMPS NECESSARY FOR WORK IN THE MITIGATION AREAS.
4. CONSTRUCT PROJECT PER CIVIL PLANS.
5. CLEAR AND GRUB NON-NATIVE/INVASIVE VEGETATION FROM BUFFER
6. AMEND SOIL AND PLACE LARGE WOODY MATERIAL.
7. CONSTRUCT SHORELINE VIEWPOINTS AND ACCESS PATHS WITHIN BUFFER.
8. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE BUFFER MITIGATION PLANTING PLAN.
9. INSTALL SPLIT-RAIL FENCE AND CRITICAL AREA SIGNS.

1.2 PROJECT CONDITIONS

A. PROTECTION AND MAINTENANCE OF OFF-SITE AREAS: CONTRACTOR SHALL ENSURE THAT CONSTRUCTION RELATED ACTIVITIES DO NOT DAMAGE OFF-SITE FEATURES OR ADJACENT VEGETATION. TALASAEA CONSULTANTS SHALL BE NOTIFIED IMMEDIATELY IF ACCIDENTAL DAMAGE OCCURS. CONTRACTOR SHALL ENSURE THAT ADJACENT ROADS ARE MAINTAINED AND KEPT CLEAR OF SOIL AND/OR OTHER DEBRIS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL COMPLY WITH THE GOVERNING JURISDICTIONS CODES REGARDING STREET MAINTENANCE/CLEANING DURING CONSTRUCTION.

B. PLAN CHANGES AND MODIFICATIONS: ANY CHANGES OR MODIFICATIONS TO THE MITIGATION PLANS OR SPECIFICATIONS MUST RECEIVE PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES.

1.3 WARRANTY

A. WARRANTY TERMS AND CONDITIONS: A CONTRACTOR-PROVIDED WARRANTY SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF PHYSICAL COMPLETION. PHYSICAL COMPLETION FOR THE WORK OF THIS SECTION IS THE DATE WHEN ALL CLEARING/GRUBBING, HABITAT FEATURE PLACEMENT, PLANTING, IRRIGATION, AND RELATED PHASES OF SUCH WORK HAVE BEEN COMPLETED AND ARE ACCEPTED BY THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES.

PART 2: PRODUCTS AND MATERIALS

2.1 HABITAT FEATURES

A. SHALLOW NESTING BOXES
1. SHALLOW NESTING BOXES AND SHALL BE CONSTRUCTED OF CEDAR OR CYPRESS.
2. CONTRACTOR MAY PURCHASE SHALLOW NESTING BOXES AT:
   a. TALASAEA CONSULTANTS, (425) 861-7550 OR,
   b. SEATTLE AUDUBON SOCIETY, (206) 523-4483 OR,
   c. WILD BIRDS UNLIMITED, (206) 575-4001

B. SNAGS: SNAGS SHALL BE CEDAR OR FIR SPECIES, 24-53 FEET LONG, WITH A MINIMUM OF EIGHT MAIN BRANCHES, AND A MINIMUM DIAMETER OF 20 INCHES AT GROUND LEVEL AFTER INSTALLATION.

C. DOWN LOGS: DOWN LOGS SHALL BE CEDAR OR FIR SPECIES, HAVE A 20 FOOT MINIMUM LENGTH, WITH OR WITHOUT ROOTS, AND A MINIMUM DIAMETER OF 20 INCHES AT GROUND LEVEL AFTER INSTALLATION.

D. STUMPS: STUMPS SHALL BE EITHER PART-DECAYED, RELOCATED STUMPS, OR CUT LIVE ROOTWADS WITH A MINIMUM OF THREE FEET OF TRUNK 20 INCHES IN DIAMETER MINIMUM. ENDS THAT HAVE BEEN CUT SHALL BE DISTRESSED AND NOT BLUNT.

2.2 WOODCHIP PATH

A. PATH SURFACING SHALL BE CLEAN WOODCHIPS. SEE DETAIL ON MITIGATION PLANS.

2.3 TOPSOIL

A. TOPSOIL: TOPSOIL THAT HAS BEEN STOCKPILED ON-SITE FOR REUSE IN PROJECT AREA(S) OR IMPORTED FROM OFF-SITE SOURCES SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.

B. ORGANIC CONTENT: IMPORTED TOPSOIL SHALL CONSIST OF ORGANIC MATERIALS AMENDED AS NECESSARY TO PRODUCE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.

2.4 MULCH

A. BARK OR WOODCHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE OR HEMLOCK SPECIES. THE MULCH SHALL NOT CONTAIN RESIN, TANNIN OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO ANIMAL, PLANT LIFE OR WATER QUALITY.

B. MULCH SHALL BE GROUND SO THAT A MINIMUM OF 95% OF THE MATERIAL WILL PASS THROUGH A 1.5-INCH SIEVE AND NOT MORE THAT 55%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.

PART 3: EXECUTION

A. SURVEY/STAKE/FLAG LIMITS OF CLEARING:
1. PRIOR TO ANY CONSTRUCTION, A LICENSED SURVEYOR SHALL SURVEY, STAKE, AND FLAG CLEARING LIMITS. CLEARING LIMITS ARE DEPICTED ON THE MITIGATION PLANS. TALASAEA CONSULTANTS SHALL REVIEW AND APPROVE FLAGGING OF CLEARING LIMITS PRIOR TO ANY VEGETATION REMOVAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATIONS OF VEGETATION TO BE SAVED AND REQUEST THAT TALASAEA CONSULTANTS MODIFY THE MITIGATION PLAN AS NECESSARY TO AVOID ALL SIGNIFICANT NATIVE VEGETATION.

B. FLAG AND PROTECT EXISTING VEGETATION TO REMAIN.
1. CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING DISTURBANCE TO EXISTING VEGETATION LOCATED OUTSIDE THE CLEARING LIMITS. NO REMOVAL OF ANY VEGETATION SHALL OCCUR WITHOUT PRIOR APPROVAL BY TALASAEA CONSULTANTS.
2. TALASAEA CONSULTANTS SHALL FLAG EXISTING VEGETATION TO REMAIN LOCATED WITHIN THE MITIGATION AREA. FLAGGED VEGETATION SHALL NOT BE DISTURBED, UNLESS APPROVED IN WRITING BY TALASAEA CONSULTANTS.
3. CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY TO THE TRUNK, ROOTS, AND BRANCHES OF TREES AND SHRUBS TO REMAIN. ANY WOODY PLANT TO REMAIN THAT IS DAMAGED DURING CONSTRUCTION SHALL BE TREATED IMMEDIATELY AFTER DAMAGE OCCURS, AND TALASAEA CONSULTANTS SHALL BE NOTIFIED OF INCIDENT. DAMAGE TREATMENT SHALL INCLUDE EVENLY CUTTING BROKEN BRANCHES, BROKEN ROOTS, AND DAMAGED TREE BARK. INJURED PLANTS SHALL BE THOROUGHLY WATERED AND ADDITIONAL MEASURES SHALL BE TAKEN, AS APPROPRIATE, TO AID IN PLANT SURVIVAL.

C. PLACE EROSION CONTROL MEASURES:
1. CONTRACTOR SHALL INSTALL SILT FENCING WHERE SHOWN ON THE MITIGATION PLANS PRIOR TO ANY MITIGATION CONSTRUCTION ACTIVITY. CONTRACTOR SHALL MAINTAIN EROSION CONTROL FACILITIES UNTIL COMPLETION OF CONSTRUCTION. TALASAEA CONSULTANTS SHALL VERIFY AND APPROVE LOCATIONS OF EROSION CONTROL MEASURES PRIOR TO COMMENCING MITIGATION CONSTRUCTION.
2. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES FOR THE DURATION OF THE PROJECT. THESE MEASURES SHALL REMAIN IN PLACE UNTIL AUTHORIZATION IS GIVEN BY TALASAEA CONSULTANTS FOR REMOVAL OR LOCATION ADJUSTMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ALL EROSION CONTROL MEASURES ADJACENT TO SENSITIVE AREAS WHEN AUTHORIZED BY TALASAEA CONSULTANTS.
3. AS CONSTRUCTION PROGRESSES AND SEASONAL CONDITIONS DICTATE, EROSION CONTROL FACILITIES SHALL BE MAINTAINED AND/OR ALTERED AS REQUIRED BY TALASAEA CONSULTANTS TO ENSURE CONTINUED EROSION/SEDIMENTATION CONTROL.
4. WHERE POSSIBLE, NATURAL GROUND COVER VEGETATION SHALL BE MAINTAINED FOR EROSION CONTROL.

D. INVASIVE/NON-NATIVE VEGETATION REMOVAL FROM MITIGATION AREAS:
1. CONTRACTOR SHALL GRUB OUT ALL NON-NATIVE AND INVASIVE VEGETATION WITHIN BUFFER. MITIGATION AREAS AS SHOWN ON THE MITIGATION PLANS, WITH THE EXCEPTION OF FLAGGED EXISTING VEGETATION TO REMAIN. IN AREAS OF EXISTING VEGETATION, CONTRACTOR SHALL REMOVE INVASIVE SPECIES INCLUDING, BUT ARE NOT LIMITED TO: SCOT'S BROOM, ENGLISH IVY, HIMALAYAN AND EVERGREEN BLACKBERRY, PURPLE LOOSESTRIFE, HEDGE BINDWEED (MORNING GLORY), JAPANESE KNOTWEED, CANADA THISTLE, AND CREEPING NIGHTSHADE. INVASIVE/NON-NATIVE VEGETATION SHALL BE REMOVED BY HAND WITH MINIMAL DISTURBANCE TO THE EXISTING NATIVE VEGETATION TO REMAIN. ALL ROOTS SHALL BE REMOVED TO THE MAXIMUM EXTENT PRACTICABLE.
2. REED CANARYGRASS CONTROL: REED CANARYGRASS SHALL BE MOWED CLOSE AND TREATED WITH AN HERBICIDE APPROVED FOR USE IN AQUATIC AREAS (E.G. RODEO, OR EQUAL). HERBICIDE TREATMENT SHALL BE APPLIED THREE (3) TIMES PRIOR TO PLANTING.
3. ALL GRUBBED VEGETATION SHALL BE EXPORTED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER FOLLOWING ALL APPLICABLE LOCAL/STATE/FEDERAL REGULATIONS.
4. TALASAEA CONSULTANTS SHALL DESIGNATE ANY ADDITIONAL PLANT SPECIES TO BE REMOVED DURING MITIGATION CONSTRUCTION.

E. INSTALL SNAGS:
1. INSTALL SNAGS UPON COMPLETION OF CLEARING/GRUBBING AT LOCATIONS DEPICTED ON MITIGATION PLANS. SNAGS SHALL BE ANCHORED INTO SUBGRADE A MINIMUM OF 25 PERCENT OF THE TOTAL LENGTH, AS DEPICTED IN THE PLAN DETAIL. TALASAEA CONSULTANTS SHALL APPROVE SNAG LOCATIONS PRIOR TO INSTALLATION.

F. TOPSOIL
1. IN ALL CLEARED AND GRUBBED BUFFER MITIGATION AREAS, EXISTING SOIL SHALL BE AMENDED (OR TOPSOIL IMPORTED) TO PROVIDE A 4-INCH MINIMUM DEPTH OF TOPSOIL. NOTE: PRIOR TO PLACING TOPSOIL, SUBGRADE SHALL BE DECOMPACTED OR SCARIFIED TO A MINIMUM DEPTH OF 12" IN AREAS WHERE EXISTING PAVING AND/OR BUILDINGS WERE REMOVED.

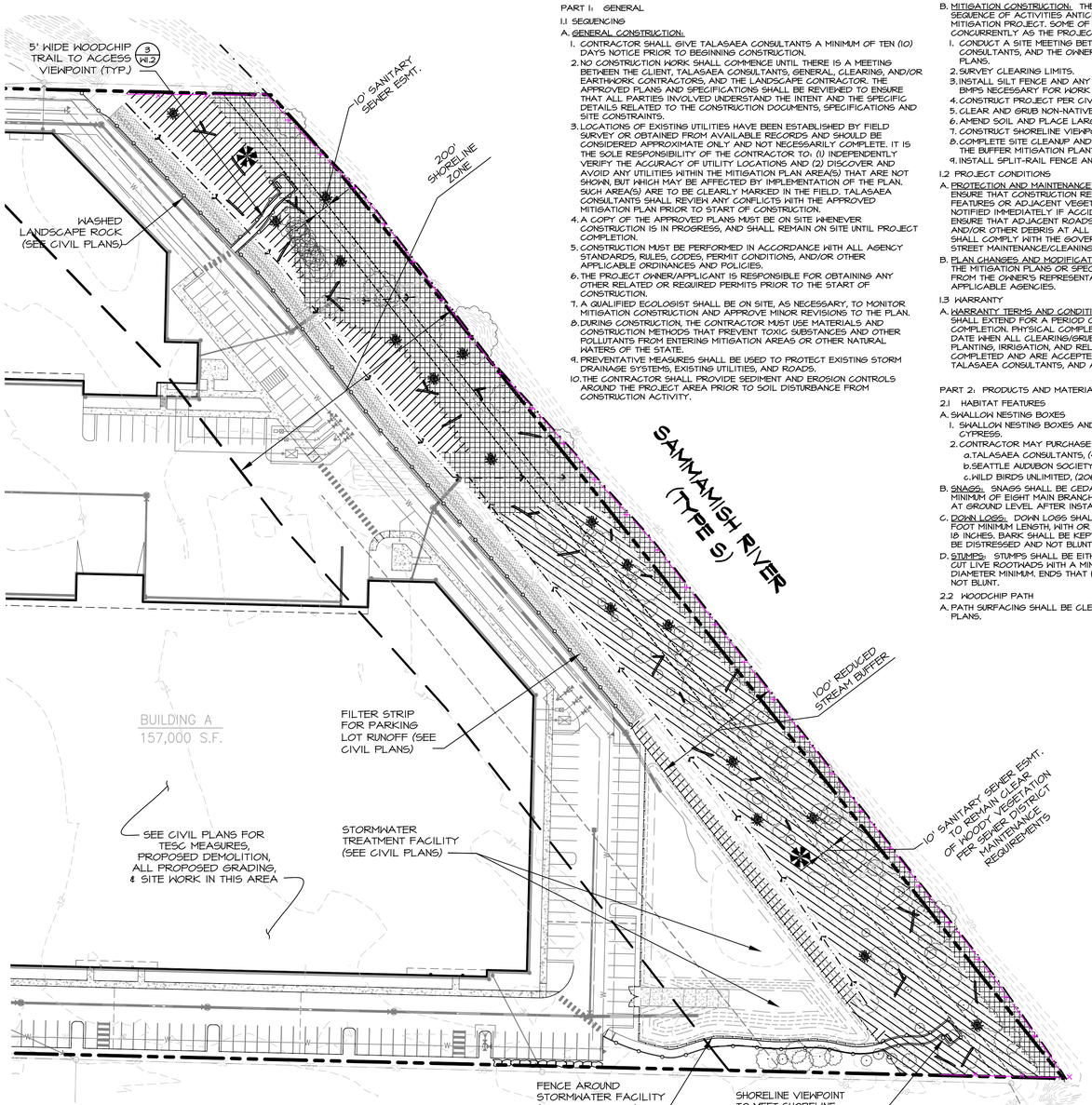
G. HABITAT FEATURES: PLACE HABITAT FEATURES UPON COMPLETION OF TOPSOIL AND/OR SOIL AMENDMENT PLACEMENT, AS DEPICTED ON THE MITIGATION PLANS AND DETAILS. TALASAEA CONSULTANTS SHALL APPROVE LOCATIONS PRIOR TO PLACEMENT.
1. SHALLOW NESTING BOXES: ATTACH ONE NESTING BOX TO EACH INSTALLED SNAG A MINIMUM OF 15 FEET OFF THE GROUND ON THE SOUTHEAST SIDE OF THE SNAG.
2. DOWN LOGS: TO CUT/BREAK DOWN LOGS, FIRST SCORE THE LOG AT THE DESIRED LENGTH BY MECHANICAL MEANS, THEN SNAP THE LOG AT THE SCORED LOCATION TO CREATE A NATURAL LOOK TO THE BREAK. TWIST BROKEN ENDS TO DISGUISE SAW CUTS. HABITAT FEATURES THAT HAVE BEEN CUT SHALL HAVE NO BLUNT ENDS.
3. STUMPS: STUMPS SHALL BE SET UPRIGHT.

H. INSTALL SHORELINE VIEWPOINTS & ACCESS PATHS:
1. CONSTRUCT WOODCHIP SHORELINE VIEWPOINTS AND ASSOCIATED ACCESS PATHS IN STREAM BUFFER WHERE SHOWN ON PLANS PER PLAN DETAIL.

I. MULCH CLEARED/GRUBBED BUFFER AREAS: TALASAEA CONSULTANTS SHALL BE PROVIDED A MULCH SAMPLE PRIOR TO IT BEING DELIVERED TO THE SITE. NO BUFFER AREAS SHALL BE SEEDED.
1. CONTRACTOR SHALL SPREAD MULCH OVER ALL DISTURBED SOIL BUFFER AREAS THAT HAVE BEEN CLEARED/GRUBBED TO ACHIEVE A UNIFORM DEPTH OF 3 INCHES.

J. INSPECTIONS: PRIOR TO PLANT INSTALLATION, TALASAEA CONSULTANTS SHALL APPROVE ALL CLEARING/GRUBBING WORK AND HABITAT FEATURE PLACEMENT. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED BY TALASAEA CONSULTANTS AND SUBMITTED TO THE CONTRACTOR FOR COMPLETION. AFTER PUNCH LIST ITEMS HAVE BEEN COMPLETED, TALASAEA CONSULTANTS SHALL REVIEW THE PROJECT FOR FINAL ACCEPTANCE OF PUNCH LIST ITEMS, AND PLANTING MAY THEN PROCEED.

K. SOIL STABILIZATION: IF THERE IS A DELAY IN CONSTRUCTION FOR ANY REASON, CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL MEASURES, DRAINAGE, AND TEMPORARY IRRIGATION DURING CONSTRUCTION DELAY PERIOD, UNLESS OTHERWISE STATED IN WRITING.



CLEARING AND GRUBBING PLAN

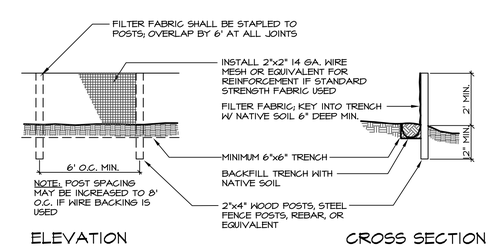
GRAPHIC SCALE (IN FEET): 0, 25, 50, 100
SCALE: 1"=50'
NORTH

PLAN LEGEND

- PROPERTY LINE
- 200' SHORELINE ZONE BOUNDARY
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- FLOOD AE ZONE BOUNDARY
- POST-CONSTRUCTION DITCH CENTERLINE
- PROPOSED SPLIT-RAIL FENCE (2 W1.1)
- 100 EXISTING CONTOUR
- 100 PROPOSED 1' CONTOUR (SEE CIVIL PLANS)
- EXISTING CONIFEROUS/DECIDUOUS TREES TO REMAIN
- APPROXIMATE LOCATION OF EXISTING NATIVE SHRUB VEGETATION TO REMAIN

CLEARING & GRUBBING LEGEND

- SILT FENCE/LIMIT OF BUFFER MITIGATION WORK - SEE DETAIL (1 W1.2)
- SNAG W/ SWALLOW NEST BOX - SEE DETAIL (2 W1.2)
- LARGE WOODY DEBRIS (down logs)
- HABITAT STUMP
- IN AREAS OF EXISTING VEGETATION, GRUB OUT ANY INVASIVE SPECIES, BY HAND, WHERE POSSIBLE.
- EXISTING HIMALAYAN/EVERGREEN BLACKBERRY & REED CANARYGRASS TO BE CLEARED & GRUBBED BY MACHINE, WHERE POSSIBLE.
- DECOMPACT EXISTING SOILS TO A DEPTH OF 12 INCHES IN AREAS WHERE ASPHALT PAVING WAS REMOVED PRIOR TO ADDING TOPSOIL OR SOIL AMENDMENTS.



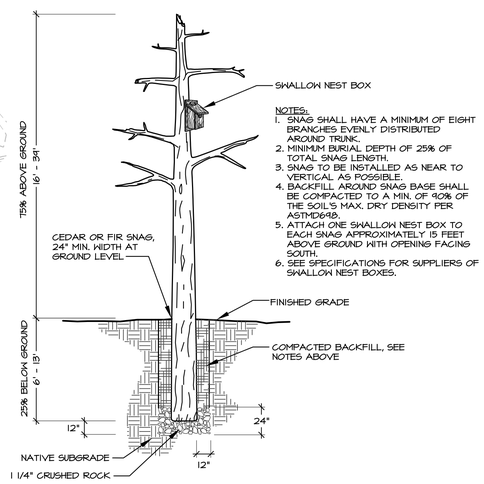
SILT FENCE MAINTENANCE STANDARDS:
1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPSLOPE OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT POND.
3. CONTRACTOR SHALL CHECK THE UPSLOPE SIDE OF THE FENCE FOR SIGNS OF CLOGGING AND SUBSEQUENT CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.
4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS 6" IN DEPTH.

1 SILT FENCE
SCALE: NTS

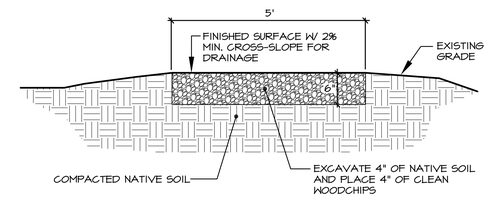
MITIGATION CONSTRUCTION SEQUENCE

THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.

1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, TALASAEA CONSULTANTS, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS.
2. SURVEY CLEARING LIMITS.
3. INSTALL SILT FENCE AND ANY OTHER EROSION AND SEDIMENTATION CONTROL BMPS NECESSARY FOR WORK IN THE MITIGATION AREAS.
4. CONSTRUCT PROJECT PER CIVIL PLANS.
5. CLEAR AND GRUB NON-NATIVE/INVASIVE VEGETATION FROM BUFFER
6. AMEND SOIL AND PLACE LARGE WOODY MATERIAL.
5. CONSTRUCT SHORELINE VIEWPOINTS AND ACCESS PATHS.
6. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE BUFFER MITIGATION PLANTING PLAN.
7. INSTALL SPLIT-RAIL FENCE AND CRITICAL AREA SIGNS.



2 SNAG WITH NEST BOX DETAIL
SCALE: NTS



3 WOODCHIP PATH
N.T.S.

Know what's **below.** **Call** before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC., P.O. BOX 516, MONROE, WA 98272, (360) 794-7811
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast – Woodinville, Washington 98077
Box (425) 861-7550 – Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
CLEARING & GRUBBING PLAN, DETAILS & NOTES
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

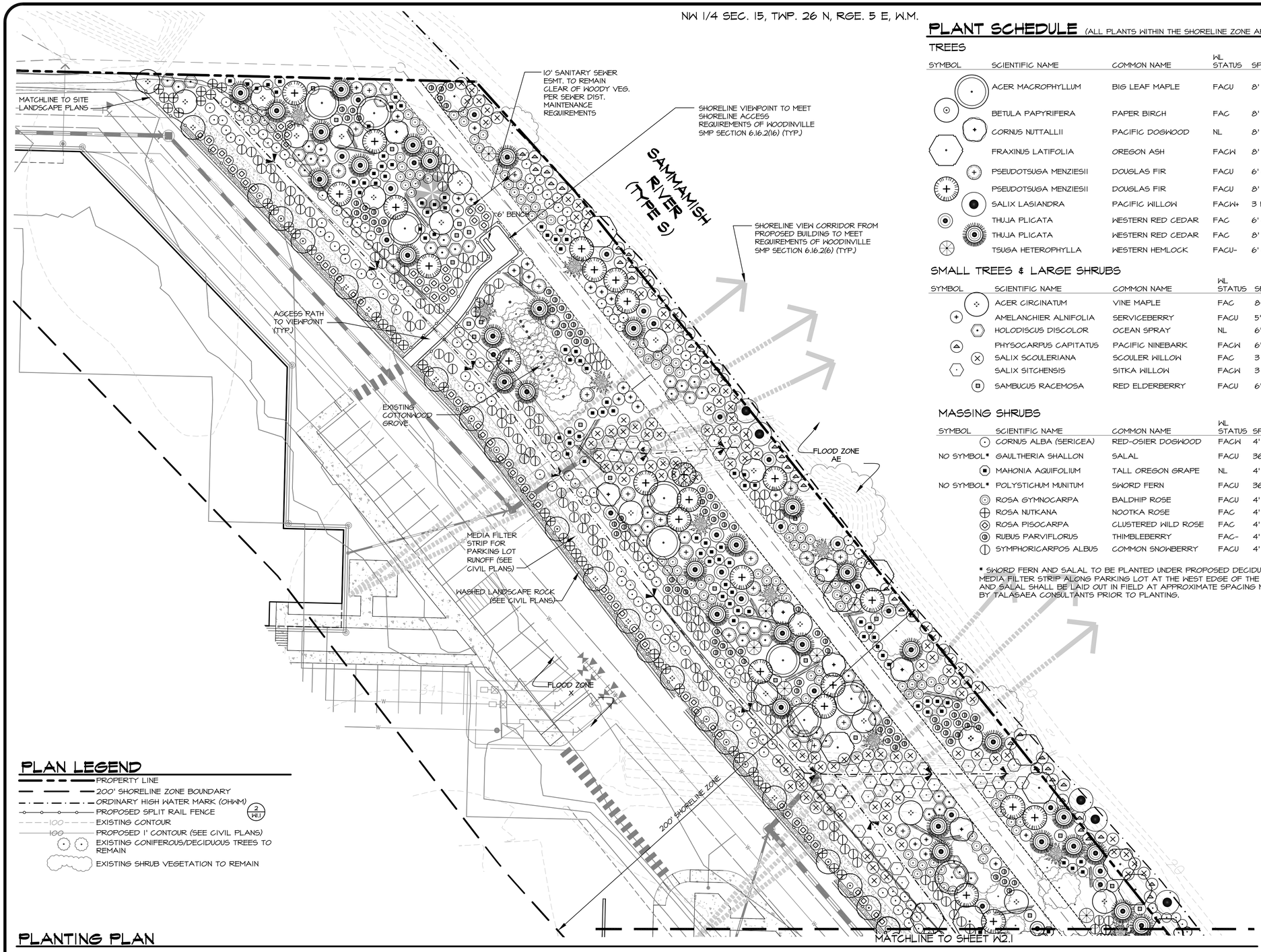
Date	1-15-2016
Scale	AS NOTED
Designed	AO
Drawn	ABS
Checked	AO
Approved	AO

Project # 13449D

Sheet # W1.2

© Copyright – Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TAL13449\Plans\13449D WT_1-15-2016_.dwg
Plotted January 14, 2016

NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.



PLANT SCHEDULE (ALL PLANTS WITHIN THE SHORELINE ZONE ARE NATIVE)

TREES

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	ACER MACROPHYLLUM	BIG LEAF MAPLE	FACU	8' O.C.	10	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	BETULA PAPYRIFERA	PAPER BIRCH	FAC	8' O.C.	16	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	CORNUS NUTTALLII	PACIFIC DOGWOOD	NL	8' O.C.	14	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	FRAXINUS LATIFOLIA	OREGON ASH	FACW	8' O.C.	49	5-6' HT.	SINGLE TRUNK, WELL BRANCHED
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	6' O.C.	34	2-3' HT.	2 GAL., FULL & BUSHY
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	8' O.C.	40	4-5' HT.	B&B, FULL & BUSHY
	SALIX LASIANDRA	PACIFIC WILLOW	FACW+	3 PER SYMBOL	60	4' CUTTING	1/2" DIA. MIN., BARK INTACT
	THUJA PLICATA	WESTERN RED CEDAR	FAC	6' O.C.	56	2-3' HT.	2 GAL., FULL & BUSHY
	THUJA PLICATA	WESTERN RED CEDAR	FAC	8' O.C.	70	4-5' HT.	B&B, FULL & BUSHY
	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	FACU-	6' O.C.	16	2-3' HT.	2 GAL., FULL & BUSHY

SMALL TREES & LARGE SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	ACER CIRCINATUM	VINE MAPLE	FAC	8' O.C.	53	4' HT.	MULTI-STEM (3 MIN.)
	AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	5' O.C.	46	24" HT.	MULTI-CANE (3 MIN.)
	HOLODISCUS DISCOLOR	OCEAN SPRAY	NL	6' O.C.	94	24" HT.	MULTI-CANE (3 MIN.)
	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	FACW	6' O.C.	123	24" HT.	MULTI-CANE (3 MIN.)
	SALIX SCOULERIANA	SCOULER WILLOW	FAC	3 PER SYMBOL	429	4' CUTTING	1/2" DIA. MIN., BARK INTACT
	SALIX SITCHENSIS	SITKA WILLOW	FACW	3 PER SYMBOL	135	4' CUTTING	1/2" DIA. MIN., BARK INTACT
	SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU	6' O.C.	63	24" HT.	MULTI-CANE (3 MIN.)

MASSING SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	CORNUS ALBA (SERICEA)	RED-OSIER DOGWOOD	FACW	4' O.C.	268	18" HT.	MULTI-CANE (3 MIN.)
NO SYMBOL*	GAULTHERIA SHALLON	SALAL	FACU	36" O.C.	700	1 GAL	FULL & BUSHY
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	NL	4' O.C.	174	18" HT.	FULL & BUSHY
NO SYMBOL*	POLYSTICHUM MUNITUM	SWORD FERN	FACU	36" O.C.	700	1 GAL	FULL & BUSHY
	ROSA GYMNOCARPA	BALDHIP ROSE	FACU	4' O.C.	142	18" HT.	MULTI-CANE (3 MIN.)
	ROSA NUTKANA	NOOTKA ROSE	FAC	4' O.C.	123	18" HT.	MULTI-CANE (3 MIN.)
	ROSA PISOCARPA	CLUSTERED WILD ROSE	FAC	4' O.C.	118	18" HT.	MULTI-CANE (3 MIN.)
	RUBUS PARVIFLORUS	THIMBLEBERRY	FAC-	4' O.C.	121	18" HT.	MULTI-CANE (3 MIN.)
	SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU	4' O.C.	301	18" HT.	MULTI-CANE (3 MIN.)

* SWORD FERN AND SALAL TO BE PLANTED UNDER PROPOSED DECIDUOUS TREES (EXCEPT WILLOWS AND TREES AT EDGE OF MEDIA FILTER STRIP ALONG PARKING LOT AT THE WEST EDGE OF THE BUFFER). SYMBOLS NOT SHOWN ON PLANS. SWORD FERN AND SALAL SHALL BE LAID OUT IN FIELD AT APPROXIMATE SPACING NOTED ABOVE AND FINAL LOCATIONS SHALL BE APPROVED BY TALASAEA CONSULTANTS PRIOR TO PLANTING.

PLAN LEGEND

- PROPERTY LINE
- 200' SHORELINE ZONE BOUNDARY
- ORDINARY HIGH WATER MARK (OHWM)
- PROPOSED SPLIT RAIL FENCE (2 RAIL)
- 100 EXISTING CONTOUR
- 100 PROPOSED 1' CONTOUR (SEE CIVIL PLANS)
- EXISTING CONIFEROUS/DECIDUOUS TREES TO REMAIN
- EXISTING SHRUB VEGETATION TO REMAIN

PLANTING PLAN

GRAPHIC SCALE (IN FEET)
0 10 20 40
SCALE: 1"=20'
NORTH

GENERAL PLANT INSTALLATION NOTES

1. PLANT TREES AND/OR SHRUBS 1" HIGHER THAN DEPTH GROWN AT NURSERY.
2. FOR CONTAINER TREES AND/OR SHRUBS, SCORE FOUR SIDES OF ROOTBALL PRIOR TO PLANTING. BUTTERFLY ROOTBALL IF ROOT CIRCLING IS EVIDENT.
3. STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET AND OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR ROOTBALL, IN LINE WITH THE PREVAILING WIND. STAKES SHALL BE LOOSELY ATTACHED USING CHAIN-LOCK TREE TIES TO ALLOW FOR SOME TRUNK MOVEMENT. STAKES TO BE VERTICAL, PARALLEL, EVEN-TOPPED, UNSCARRED AND DRIVEN INTO UNDISTURBED SUBGRADE. REMOVE AFTER ONE YEAR.
4. WATER PLANTS IMMEDIATELY UPON PLANTING, THEN PROVIDE MANUAL WATERING OR A TEMPORARY IRRIGATION SYSTEM TO PREVENT PLANT MORTALITY AND ENSURE PROPER PLANT ESTABLISHMENT. PLANTS SHALL RECEIVE A MINIMUM OF APPROXIMATELY ONE INCH OF WATER EVERY WEEK DURING THE DRY SEASON (GENERALLY JUNE 15TH - OCTOBER 15TH, OR EARLIER OR LATER IF CONDITIONS WARRANT) FOR THE FIRST SEASON AFTER PLANTING. IRRIGATION AMOUNTS MAY NEED TO BE INCREASED DURING PROLONGED PERIODS OF HOT, DRY WEATHER.
5. FERTILIZE ALL TREES AND SHRUBS WITH A SLOW-RELEASE GENERAL PURPOSE GRANULAR FERTILIZER OR SLOW-RELEASE TABLETS AT MANUFACTURER'S SPECIFIED RATE.
6. ALL PLANTING AREAS SHALL HAVE A MINIMUM 9-INCH DEPTH OF TOPSOIL. IF TOPSOIL IS INSUFFICIENT IN EITHER QUANTITY OR QUALITY WITHIN PLANTING AREAS, AS DETERMINED BY TALASAEA CONSULTANTS, TOPSOIL SHALL BE RESTORED BY EITHER RE-INSTALLING PREVIOUSLY STOCKPILED TOPSOIL, IMPORTING NEW TOPSOIL, OR AMENDING EXISTING SOILS IN PLACE WITH ORGANIC MATTER TO ACHIEVE A 9" MINIMUM DEPTH. ALL TOPSOIL SHALL HAVE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.
7. PROVIDE 3" MINIMUM DEPTH OF MEDIUM BARK MULCH IN ALL PLANTING AREAS. MULCH SHALL BE DERIVED FROM FIR, PINE, OR HEMLOCK SPECIES AND SHALL NOT CONTAIN TRASH, ROCKS, OR OTHER DEBRIS OR MATERIALS DETRIMENTAL TO PLANT GROWTH. MULCH SHALL BE GROUND SO THAT A MINIMUM OF 95% OF THE MATERIAL WILL PASS THROUGH A 1.5-INCH SIEVE AND NOT MORE THAN 55%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.

811 Know what's below. Call before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC.; P.O. BOX 516, MONROE, WA 98272; (360) 794-7811
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast - Woodinville, Washington 98077
Phone (425) 861-7500 - Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
PLANTING PLAN, PLANT SCHEDULE, & NOTES
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

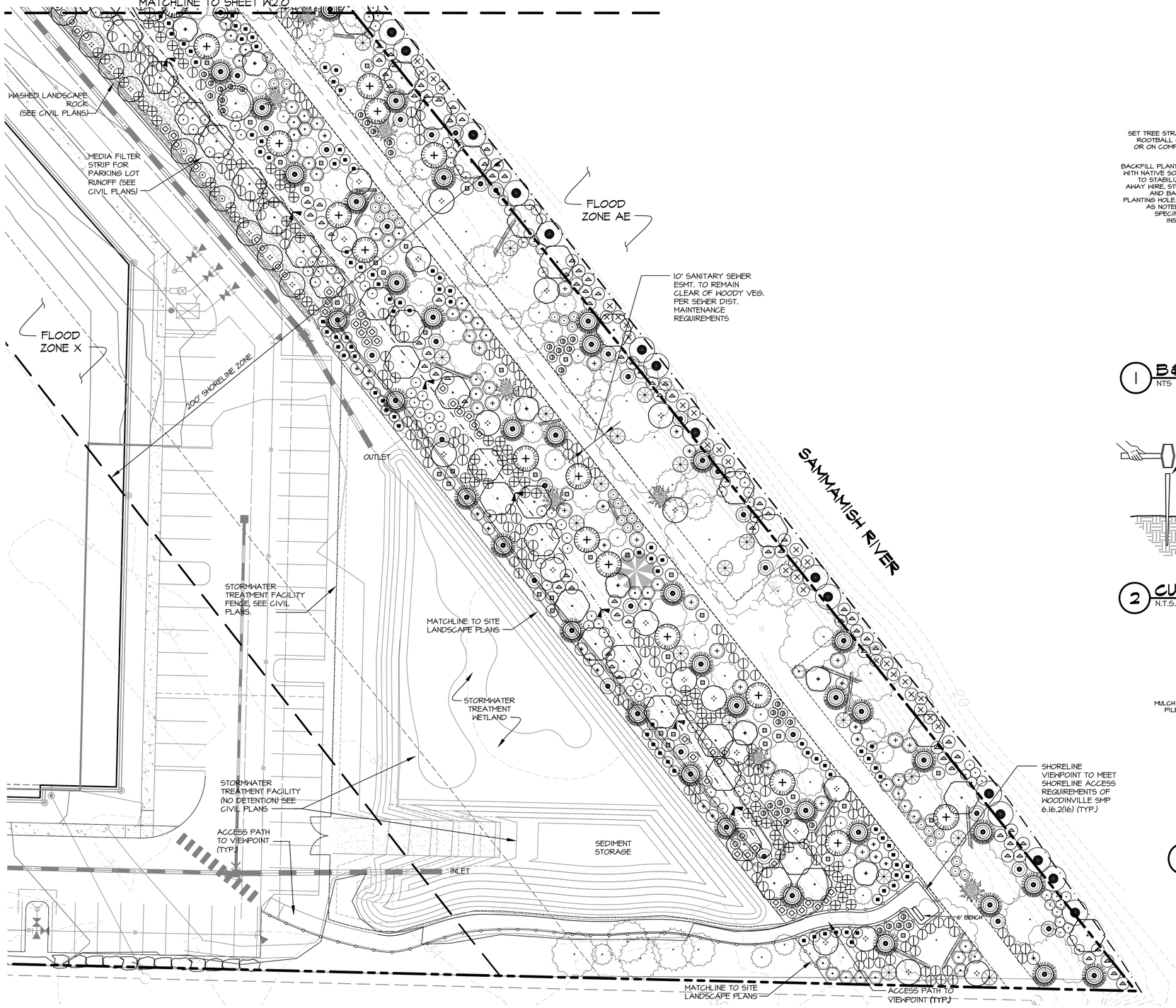
Date 1-15-2016
Scale AS NOTED
Designed AO
Drawn ABS
Checked AO
Approved AO

Project #13449D

Sheet # W2.0

© Copyright - Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TAL1349D\Plans\13449D WP_1-15-2016.dwg
Plotted January 14, 2016

NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.



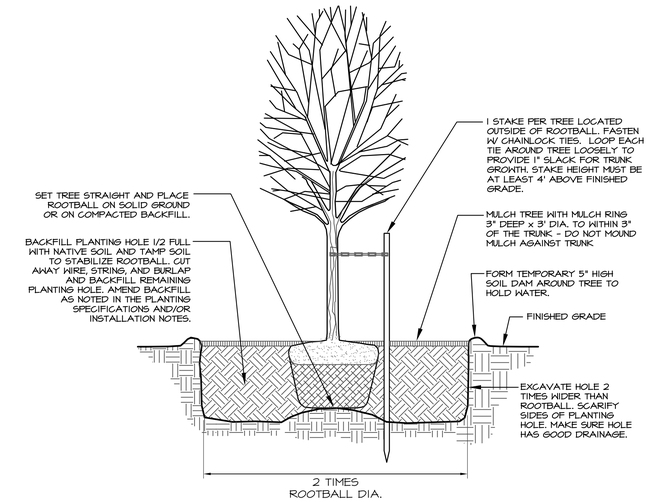
PLANTING PLAN

GRAPHIC SCALE (IN FEET)
0 10 20 40
SCALE: 1"=20'

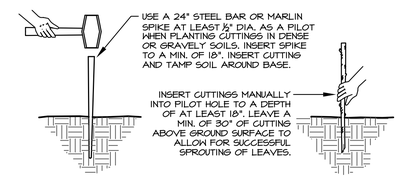
NORTH

PLAN LEGEND

- PROPERTY LINE
- 200' SHORELINE ZONE BOUNDARY
- ORDINARY HIGH WATER MARK (OHWM)
- PROPOSED SPLIT RAIL FENCE (2 WJ)
- 100 EXISTING CONTOUR
- 100 PROPOSED 1' CONTOUR (SEE CIVIL PLANS)
- EXISTING CONIFEROUS/DECIDUOUS TREES TO REMAIN
- EXISTING SHRUB VEGETATION TO REMAIN

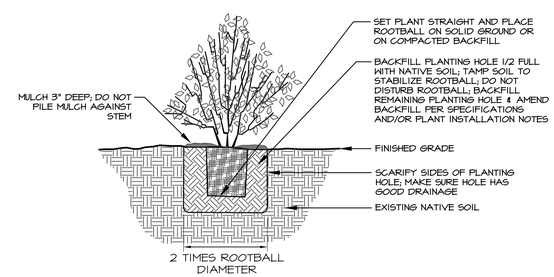


1 B&B TREE PLANTING DETAIL.
NTS



NOTES:
1. CUTTINGS SHALL BE SPECIES AS NOTED IN THE PLANT SCHEDULE.
2. CUTTINGS SHALL BE AT LEAST 1/2" IN DIA. AND 4' IN LENGTH.
3. CUTTINGS MUST BE MADE FROM LIVE AND VIGOROUS WOODY MATERIAL WITH SIDE BRANCHES REMOVED AND BARK INTACT.
4. THE BUTT ENDS SHALL BE CLEANLY CUT AT AN ANGLE FOR EASY INSERTION INTO THE SOIL.
5. THE TOP SHALL BE CUT SQUARE OR BLUNT.
6. CUTTINGS SHALL BE PLANTED WITHIN 24 HOURS OF CUTTING AND MUST BE KEPT MOIST AT ALL TIMES PRIOR TO PLANTING.
7. BOTTOM OF CUTTINGS SHALL BE TREATED WITH ROOTING HORMONE PRIOR TO PLANTING.

2 CUTTING INSTALLATION DETAIL
N.T.S.



3 CONTAINER STOCK PLANTING DETAIL
N.T.S.

Know what's **below.**
Call before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC.; P.O. BOX 516, MONROE, WA 98272; (360) 794-7811
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast - Woodinville, Washington 98077
Bus (425) 861-7500 - Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
PLANTING PLAN & DETAILS
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

Date 1-15-2016
Scale AS NOTED
Designed AO
Drawn ABS
Checked AO
Approved AO

Project #13440

Sheet # W2.1

© Copyright - Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TAL13440\Plans\13440 WP_1-15-2016.dwg
Plotted January 14, 2016

NW 1/4 SEC. 15, TWP. 26 N, RGE. 5 E, W.M.

PLANTING SPECIFICATIONS

PART 1: GENERAL

1.1 SEQUENCING

A. GENERAL CONSTRUCTION

1. CONTRACTOR SHALL GIVE TALASAEA CONSULTANTS A MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO COMMENCING CONSTRUCTION.
2. NO CONSTRUCTION WORK SHALL COMMENCE UNTIL THERE IS A MEETING BETWEEN THE CLIENT, TALASAEA CONSULTANTS, THE GENERAL, CLEARING, AND/OR EARTHWORK CONTRACTORS, AND THE LANDSCAPE CONTRACTOR. THE APPROVED PLANS AND SPECIFICATIONS SHALL BE REVIEWED TO ENSURE THAT ALL PARTIES INVOLVED UNDERSTAND THE INTENT AND THE SPECIFIC DETAILS RELATED TO THE CONSTRUCTION DOCUMENTS, SPECIFICATIONS, AND SITE CONSTRAINTS.
3. LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO: (1) INDEPENDENTLY VERIFY THE ACCURACY OF UTILITY LOCATIONS, AND (2) DISCOVER AND AVOID ANY UTILITIES WITHIN THE MITIGATION AREA(S) THAT ARE NOT SHOWN, BUT WHICH MAY BE AFFECTED BY IMPLEMENTATION OF THE PLAN. SUCH AREA(S) ARE TO BE CLEARLY MARKED IN THE FIELD. TALASAEA CONSULTANTS SHALL RESOLVE ANY CONFLICTS WITH THE APPROVED GRADING PLAN PRIOR TO START OF CONSTRUCTION.
4. A COPY OF THE APPROVED PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS, AND SHALL REMAIN ON SITE UNTIL PROJECT COMPLETION.
5. CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ALL AGENCY STANDARDS, RULES, CODES, PERMIT CONDITIONS, AND/OR OTHER APPLICABLE ORDINANCES AND POLICIES.
6. THE PROJECT OWNER/APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO THE START OF CONSTRUCTION.
7. A QUALIFIED WETLAND CONSULTANT SHALL BE ON SITE, AS NECESSARY, TO MONITOR CONSTRUCTION AND APPROVE MINOR REVISIONS TO THE PLAN.
8. DURING CONSTRUCTION, THE CONTRACTOR MUST USE MATERIALS AND CONSTRUCTION METHODS THAT PREVENT TOXIC SUBSTANCES AND OTHER POLLUTANTS FROM ENTERING MITIGATION AREAS OR OTHER NATURAL WATERS OF THE STATE.
9. PREVENTATIVE MEASURES SHALL BE USED TO PROTECT EXISTING STORM DRAINAGE SYSTEMS, EXISTING UTILITIES, AND ROADS.
10. PROVIDE SEDIMENT AND EROSION CONTROLS AROUND THE PROJECT AREA PRIOR TO SOIL DISTURBANCE FROM CONSTRUCTION ACTIVITY.

B. MITIGATION CONSTRUCTION: THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THE PLANTING PORTION OF THE MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.

1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, TALASAEA CONSULTANTS, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS, STAGING/STOCKPILE AREAS, AND MATERIAL DISPOSAL AREAS.
2. PLANT TREES AND SHRUBS AS INDICATED ON MITIGATION PLANS.
3. PLANT WETLAND EMERGENTS AND STAKES (CUTTINGS).
4. MULCH PLANTS INSTALLED IN NON-GRADED BUFFER AREAS.
5. INSTALL TEMPORARY IRRIGATION SYSTEM AND PROGRAM FOR 0.5 INCHES OF WATER EVERY 3 DAYS.
6. INSTALL FENCING AND CRITICAL AREA PROTECTION SIGNS (IF REQUIRED).

1.2 SUBMITTALS

A. PRODUCT DATA: FURNISH THE FOLLOWING WITH EACH PLANT MATERIAL DELIVERY:

1. INVOICES INDICATING SIZES AND VARIETY OF PLANT MATERIAL.
2. CERTIFICATES OF INSPECTION REQUIRED BY STATE AND FEDERAL AGENCIES.

B. QUALITY CONTROL SUBMITTALS:

1. PRIOR TO DELIVERY OF MATERIALS, CERTIFICATES OF COMPLIANCE ATTESTING THAT MATERIALS MEET THE SPECIFIED REQUIREMENTS SHALL BE FURNISHED FOR THE FOLLOWING: PLANTS, TOPSOIL, FERTILIZER, AND ORGANIC MULCH. CERTIFIED COPIES OF THE MATERIAL CERTIFICATES SHALL INCLUDE THE FOLLOWING:
   a. PLANT MATERIALS: BOTANICAL NAME, COMMON NAME, SIZE, QUANTITY BY SPECIES, AND LOCATION WHERE GROWN.
   b. IMPORTED TOPSOIL: PARTICLE SIZE, PH, ORGANIC MATTER CONTENT, TEXTURAL CLASS, SOLUBLE SALTS, CHEMICAL AND MECHANICAL ANALYSES.
   c. FERTILIZER: CHEMICAL ANALYSIS AND PERCENT COMPOSITION.
   d. IMPORTED MULCH: COMPOSITION AND SOURCE.

1.3 REFERENCES

A. SIZE AND GRADING STANDARDS: SHALL CONFORM TO THE CURRENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.

1.4 QUALITY ASSURANCE

A. WORKER'S QUALIFICATIONS: THE PERSONS PERFORMING THE PLANTING AND THEIR SUPERVISOR(S) SHALL BE PERSONALLY EXPERIENCED WITH PLANTING AND CARING FOR PLANT MATERIAL, AND SHALL HAVE BEEN REGULARLY EMPLOYED BY A COMPANY ENGAGED IN PLANTING AND CARING FOR PLANT MATERIAL FOR A MINIMUM OF 2 YEARS.

B. PLANT MATERIAL: ALL PLANT MATERIALS SHALL BE LOCALLY GROWN OR REGIONALLY ACCLIMATIZED TO THE PACIFIC NORTHWEST.

1.5 DELIVERY, INSPECTION, STORAGE AND HANDLING

A. DELIVERY: A DELIVERY SCHEDULE SHALL BE PROVIDED AT LEAST 10 CALENDAR DAYS PRIOR TO THE FIRST DAY OF DELIVERY. PLANT MATERIALS SHALL BE DELIVERED TO THE JOB SITE NOT MORE THAN 7 WORKING DAYS PRIOR TO THEIR RESPECTIVE PLANTING DATES.

B. PROTECTION DURING DELIVERY: PLANT MATERIAL SHALL BE PROTECTED DURING DELIVERY TO PREVENT DESICCATION AND DAMAGE TO THE BRANCHES, TRUNK, ROOT SYSTEM, OR EARTH BALL. BRANCHES SHALL BE PROTECTED BY TYING-IN. EXPOSED BRANCHES SHALL BE COVERED DURING TRANSPORT.

C. FERTILIZER: FERTILIZER SHALL BE DELIVERED IN MANUFACTURER'S STANDARD SIZED BAGS SHOWING WEIGHT, ANALYSIS, AND MANUFACTURER'S NAME. STORE UNDER A WATERPROOF COVER OR IN A DRY PLACE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE.

D. INSPECTION: ALL PLANT MATERIALS SHALL BE INSPECTED UPON ARRIVAL AT THE JOB SITE BY THE OWNER'S REPRESENTATIVE FOR CONFORMITY TO TYPE AND QUANTITY WITH REGARD TO THEIR RESPECTIVE SPECIFICATIONS.

E. MULCH: A MULCH SAMPLE SHALL BE INSPECTED BY TALASAEA CONSULTANTS PRIOR TO THE MULCH BEING DELIVERED TO THE SITE.

F. STORAGE:

1. PLANT MATERIAL NOT INSTALLED ON THE DAY OF ARRIVAL AT THE SITE SHALL BE STORED AND PROTECTED IN DESIGNATED AREAS. PLANTS STORED ON THE PROJECT SITE SHALL BE PROTECTED FROM EXTREME WEATHER CONDITIONS BY INSULATING THE ROOTS, ROOT BALLS OR CONTAINERS WITH SAWDUST, SOIL, COMPOST, BARK OR WOODCHIPS. PLANT MATERIAL SHALL BE PROTECTED FROM DIRECT EXPOSURE TO WIND AND SUN. BARE-ROOT PLANT MATERIAL SHALL BE HEELED-IN. CUTTINGS AND EMERGENT PLANTS MUST BE PROTECTED FROM DRYING AT ALL TIMES AND SHALL BE HEELED-IN WITH MOIST SOIL OR OTHER INSULATING MATERIAL. ALL PLANT MATERIAL STORED ON-SITE SHALL BE WATERED DAILY UNTIL INSTALLED.
2. STORAGE OF OTHER MATERIALS SHALL BE IN DESIGNATED AREAS.

1.6 SCHEDULING

A. PLANTING SEASON: INSTALL WOODY PLANTS BETWEEN OCTOBER 1 AND FEBRUARY 15 WHENEVER THE TEMPERATURE IS ABOVE 32 DEGREES F AND THE SOIL IS IN A WORKABLE CONDITION, UNLESS OTHERWISE APPROVED IN WRITING. CUTTINGS SHALL ONLY BE USED IF PLANTING OCCURS BETWEEN DECEMBER 1ST AND APRIL 1ST.

B. PLANT INSTALLATION: EXCEPT FOR CONTAINER-GROWN PLANT MATERIAL, THE MAXIMUM TIME BETWEEN THE DIGGING AND INSTALLATION OF PLANT MATERIAL SHALL BE 21 DAYS. THE MAXIMUM TIME BETWEEN PLANT INSTALLATION AND MULCH PLACEMENT SHALL BE 72 HOURS.

1.7 WARRANTY

A. WARRANTY PERIOD: THE CONTRACTOR-PROVIDED WARRANTY SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF PHYSICAL COMPLETION. PHYSICAL COMPLETION FOR THE WORK OF THIS SECTION IS THE DATE WHEN ALL GRADING, PLANTING, IRRIGATION, AND RELATED WORK HAS BEEN COMPLETED AND IS ACCEPTED BY THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES.

B. WARRANTY TERMS: CONTRACTOR'S WARRANTY SHALL INCLUDE REPLACEMENT OF PLANTS DUE TO MORTALITY (SAME SIZE AND SPECIES SHOWN ON THE DRAWINGS). PLANTS REPLACED UNDER THIS WARRANTY SHALL BE WARRANTED FOR AN ADDITIONAL YEAR AFTER REPLACEMENT.

C. EXCEPTIONS: LOSS DUE TO EXCESSIVELY SEVERE CLIMATOLOGICAL CONDITIONS (SUBSTANTIATED BY 10-YEAR RECORDED WEATHER CHARTS), OR CASES OF NEGLECT BY OWNER, OR CASES OF ABUSE/DAMAGE BY OTHERS.

PART 2: PRODUCTS AND MATERIALS

2.1 PLANTS

A. GENERAL: ALL PLANT MATERIAL WILL CONFORM TO THE VARIETIES SPECIFIED OR SHOWN IN THE PLANT LIST(S) INDICATED ON THE MITIGATION PLANS AND BE TRUE TO BOTANICAL NAME AS LISTED IN: HITCHCOCK, C.L., AND A. CRONQUIST. 1973. FLORA OF THE PACIFIC NORTHWEST. UNIVERSITY OF WASHINGTON PRESS.

B. SHRUBS AND TREES:

1. TALASAEA SHALL EXAMINE PLANT MATERIAL PRIOR TO PLANTING. ANY MATERIAL NOT MEETING THE REQUIRED SPECIFICATIONS SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND REPLACED WITH LIKE MATERIAL THAT MEETS THE REQUIRED STANDARDS. PLANT MATERIAL SHALL MEET THE REQUIREMENTS OF STATE AND FEDERAL LAWS WITH RESPECT TO PLANT DISEASE AND INFESTATIONS. INSPECTION CERTIFICATES, REQUIRED BY LAW, SHALL ACCOMPANY EACH AND EVERY SHIPMENT AND SHALL BE SUBMITTED TO TALASAEA UPON CONTRACTOR'S RECEIPT OF PLANT MATERIAL.
2. PLANT MATERIALS SHALL BE LOCALLY GROWN (WESTERN WASHINGTON, WESTERN OREGON, OR WESTERN BC), HEALTHY, BUSHY, IN VIGOROUS GROWING CONDITION, AND GUARANTEED TO BE TRUE TO SIZE, NAME, AND VARIETY. IF REPLACEMENT OF PLANT MATERIAL IS NECESSARY DUE TO CONSTRUCTION DAMAGE OR PLANT FAILURE WITHIN ONE YEAR OF INSTALLATION, THE SIZES, SPECIES, AND QUANTITIES SHALL BE EQUAL TO SPECIFIED PLANTS, AS INDICATED ON THE PLANS.
3. PLANTS SHALL BE NURSERY GROWN, WELL-ROOTED, OF NORMAL GROWTH AND CHARACTER, AND FREE FROM DISEASE OR INFESTATION. TALASAEA CONSULTANTS RESERVES THE RIGHT TO REQUIRE REPLACEMENT OR SUBSTITUTION OF ANY PLANTS DEEMED UNSUITABLE.
4. TREES SHALL HAVE UNIFORM BRANCHING, SINGLE STRAIGHT TRUNKS (UNLESS SPECIFIED AS MULTI-STEM, MULTI-CANE, OR MULTI-TRUNK), AND AN INTACT AND UNDAMAGED CENTRAL LEADER. CONTAINER STOCK SHALL HAVE BEEN GROWN IN A CONTAINER FOR AT LEAST ONE FULL GROWING SEASON AND SHALL HAVE A WELL DEVELOPED ROOT SYSTEM. PLANT MATERIAL THAT IS ROOT-BOUND OR HAS DAMAGED ROOT ZONES OR BROKEN ROOT BALLS WILL NOT BE ACCEPTED.
5. CONIFEROUS TREES SHALL BE NURSERY GROWN, FULL AND BUSHY, WITH UNIFORM BRANCHING AND A NATURAL, NON-SHEARED FORM. ORIGINAL CENTRAL LEADER MUST BE HEALTHY AND UNDAMAGED. MAXIMUM GAP BETWEEN BRANCHING SHALL NOT EXCEED 9 INCHES, AND LENGTH OF TOP LEADER SHALL NOT EXCEED 12 INCHES.
6. SHRUBS SHALL HAVE A MINIMUM OF THREE STEMS AND SHALL BE A MINIMUM HEIGHT OF 18 INCHES.
7. TREES AND SHRUBS SHALL HAVE DEVELOPED ROOT AND BRANCH SYSTEMS. DO NOT PRUNE BRANCHES BEFORE DELIVERY.
8. NATIVE PLANT CUTTINGS SHALL BE GROWN AND COLLECTED IN THE MARITIME PACIFIC NORTHWEST. CUTTINGS SHALL BE OF ONE TO TWO-YEAR-OLD WOOD, ½ INCH DIAMETER MINIMUM. CUTTINGS SHALL BE A MINIMUM OF 4 FEET IN LENGTH WITH 4 LATERAL BUDS EXPOSED ABOVE GROUND AFTER PLANTING. THE TOP OF EACH CUTTING SHALL BE A MINIMUM OF 1 INCH ABOVE A LEAF BUD, THE BOTTOM CUT 2 INCHES BELOW A BUD. THE BASAL ENDS OF THE CUTTINGS SHALL BE CUT AT A 45 DEGREE ANGLE AND MARKED CLEARLY SO THAT THE ROOTING END IS PLANTED IN THE SOIL. CUTTINGS MUST BE KEPT COVERED AND MOIST DURING STORAGE AND TRANSPORT, AND NO CUTTINGS SHALL BE STORED MORE THAN THREE DAYS FROM DATE OF CUTTING. CUTTINGS SHALL ONLY BE USED IF PLANTING OCCURS BETWEEN DECEMBER 1ST AND APRIL 1ST. FOR PLANTING BETWEEN APRIL 1ST AND DECEMBER 1ST, CONTAINER PLANTS SHALL BE USED.
9. PLANTS SHALL BE FREE OF SPLITS AND CHECKS, BARK ABRASIONS, AND DISFIGURING KNOTS.
10. FOR DECIDUOUS PLANTS, BUDS SHALL BE INTACT AND REASONABLY CLOSED AT TIME OF PLANTING, IF DORMANT.
11. BALLED AND BURLAPPED PLANTS SHALL HOLD A NATURAL BALL. MANUFACTURED ROOT BALLS ARE UNACCEPTABLE.
12. PLANTS SHALL CONFORM TO SIZES INDICATED ON THE PLANT SCHEDULE. PLANTS MAY BE LARGER THAN THE MINIMUM SIZES SPECIFIED.

C. NOXIOUS SPECIES: ALL PLANT STOCK AND OTHER RE-VEGETATION MATERIALS SHALL BE FREE FROM THE SEED OR OTHER PLANT COMPONENTS OF ANY NOXIOUS OR INVASIVE SPECIES, AS IDENTIFIED BY THE KING COUNTY NOXIOUS WEED CONTROL BOARD.

D. SUBSTITUTIONS: SUBSTITUTIONS WILL NOT BE PERMITTED WITHOUT A WRITTEN REQUEST AND APPROVAL FROM THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES.

2.2 PLANTING SOIL

A. TOPSOIL: IF SUITABLE STOCKPILED NATIVE TOPSOIL IS NOT AVAILABLE FOR MITIGATION PLANTINGS, TOPSOIL SHALL BE OBTAINED FROM OUTSIDE SOURCES. STOCKPILED OR IMPORTED TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.

B. ORGANIC CONTENT: IMPORTED TOPSOIL SHALL CONSIST OF ORGANIC MATERIALS AMENDED AS NECESSARY TO PRODUCE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.

C. COMPOST: COMPOST SHALL MEET THE DEFINITION FOR COMPOSTED MATERIALS AS DEFINED BY THE WASHINGTON STATE DEPARTMENT OF ECOLOGY.

D. SOIL AMENDMENTS: WOODY PLANTINGS SHALL BE FERTILIZED WITH A SLOW-RELEASE GENERAL GRANULAR FERTILIZER (16-16-16), OR SLOW-RELEASE FERTILIZER TABLETS, WITH APPLICATION RATES AS SPECIFIED BY MANUFACTURER. FERTILIZER SHALL BE APPLIED AFTER PLANTING PIT IS BACKFILLED (OR DURING BACKFILL IN THE CASE OF TABLETS), AND PRIOR TO APPLICATION OF MULCH. FERTILIZER SHALL NOT BE APPLIED BETWEEN NOVEMBER AND MARCH.

2.3 MULCH

A. BARK OR WOODCHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE, OR HEMLOCK SPECIES. THE MULCH SHALL NOT CONTAIN RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO ANIMAL, PLANT LIFE, OR WATER QUALITY. SAWDUST SHALL NOT BE USED AS MULCH.

B. MULCH SHALL BE MEDIUM-COARSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.

2.4 MISCELLANEOUS MATERIALS

A. STAKES, DEADMEN AND GUY STAKES: SOUND, DURABLE, WESTERN RED CEDAR, OR OTHER APPROVED WOOD, FREE OF INSECT OR FUNGUS INFESTATION.

B. CHAIN-LOCK TREE TIES: ½-INCH WIDE, PLASTIC.

PART 3: EXECUTION

3.1 SOIL PREPARATION

A. PLANTING AREA CONDITIONS: CONTRACTOR SHALL VERIFY THAT PLANT INSTALLATION CONDITIONS ARE SUITABLE WITHIN THE PROJECT AREA(S). ANY UNSATISFACTORY CONDITIONS SHALL BE CORRECTED PRIOR TO START OF WORK. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, POOR DRAINAGE, COMPACTED SOILS, SIGNIFICANT EXISTING OR INVASIVE VEGETATION, OR OTHER OBSTRUCTIONS, CONTRACTOR SHALL NOTIFY TALASAEA CONSULTANTS PRIOR TO PLANTING. THE BEGINNING OF WORK BY THE CONTRACTOR CONSTITUTES ACCEPTANCE OF CONDITIONS AS SATISFACTORY.

B. PLANTING IN UNDISTURBED, NON-GRADED AREAS: PLANTS INSTALLED IN UNDISTURBED AREAS SHALL BE INTEGRATED WITH EXISTING NATIVE VEGETATION AND PLANTED IN A RANDOM, NATURALISTIC PATTERN. PRIOR TO INSTALLATION OF PLANTINGS, ALL CONSTRUCTION DEBRIS, TRASH, AND NON-NATIVE INVASIVE PLANT MATERIAL SHALL BE REMOVED FROM THE PROJECT AREA. IN NON-GRADED AREAS, TREES AND SHRUBS SHALL BE PIT PLANTED AS SHOWN IN TYPICAL PLANTING DETAILS. PLANTING PITS SHALL BE BACKFILLED WITH A 50/50 MIXTURE OF IMPORTED, WEED-FREE TOPSOIL AND THE SOIL FROM THE PLANTING PIT.

C. PLANTING IN GRADED AREAS: IN GRADED PLANTING AREAS PLANTS SHALL BE INSTALLED IN NEWLY PLACED TOPSOIL.

D. SOIL DECOMPACTION/SCARIFICATION: SOILS IN GRADED/DISTURBED AREAS THAT ARE COMPACTED AND UNSUITABLE FOR PROPER PLANT GROWTH SHALL BE DECOMPACTED AND/OR SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES PRIOR TO TOPSOIL INSTALLATION.

3.2 PLANTING

A. PLANT LAYOUT: PROPOSED LOCATIONS OF TREES AND SHRUBS SHALL BE STAKED AND IDENTIFIED WITH AN APPROVED CODING SYSTEM OR BY PLACEMENT OF THE ACTUAL PLANT MATERIAL. FOR LARGE GROUPINGS OF A SINGLE SPECIES OF SHRUB, LANDSCAPE CONTRACTOR MAY STAKE THE PLANTING BOUNDARIES.

B. OBTAIN LAYOUT APPROVAL FROM TALASAEA CONSULTANTS PRIOR TO EXCAVATION OF PLANTING PITS.

C. PLANTING PIT DIMENSIONS:

3. PIT DEPTH: NOT TO EXCEED THE ROOT BALL OR CONTAINER DEPTH.
4. PIT WIDTH: MEASURED AT THE GROUND SURFACE, 2 TIMES THE WIDTH OF THE ROOT BALL OR CONTAINER, AS INDICATED IN TYPICAL PLANTING DETAILS.
   a. BARE-ROOT PLANTS: DIAMETER EQUAL TO THE WIDTH OF THE ROOT SPREAD.

D. SETTING PLANTS:

1. BALLED PLANTS: SET PLANTS IN POSITION AND BACKFILL 1/2 DEPTH OF BALL. COMPLETELY REMOVE CAGE AND TWINE FROM PLANT AND PULL BURLAP DOWN AS FAR AS POSSIBLE. COMPLETE BACKFILL AND SETTLE WITH WATER. ROOT COLLAR SHALL REMAIN 1 INCH ABOVE ADJACENT GRADE.
2. BARE-ROOT PLANTS: PRUNE BRUISED OR BROKEN ROOTS. SET PLANT IN POSITION AND PLACE WETLAND PLANTING SOIL AROUND ROOTS. USE CARE TO AVOID BRUISING OR BREAKING ROOTS WHEN FIRMING SOIL. SETTLE WITH WATER.
3. SHRUB/TREE PLANTING: SHRUB AND TREE STOCK SHALL BE PLANTED IN HAND-DUG HOLES ACCORDING TO PLANTING DETAILS SHOWN ON THE MITIGATION PLANS. SHRUB AND TREE ROOT BALLS SHALL BE SET SO THAT ROOT COLLARS ARE 1 INCH ABOVE ADJACENT GRADE. ALL BACKFILL SHALL BE GENTLY TAMPED IN PLACE.
4. SURFACE FINISH: FORM A SAUCER AS INDICATED ON TYPICAL PLANTING DETAILS, OR AS DIRECTED. GRADE SOIL TO FORM A BASIN ON THE LOWER SIDE OF SLOPE PLANTINGS TO CATCH AND RETAIN WATER.
5. IN FORESTED AREAS, CONTRACTOR SHALL LOOSELY TIE A 2 FOOT PIECE OF BIODEGRADABLE FLAGGING TO THE TOP PORTION (NOT THE CENTRAL LEADER) OF ALL PLANTED VEGETATION TO FACILITATE POST-CONSTRUCTION PERFORMANCE AND MAINTENANCE REVIEW BY TALASAEA CONSULTANTS AND REGULATORY AGENCIES.
6. ACTUAL PLANT SYMBOL QUANTITIES SHOWN ON THE PLANS SHALL PREVAIL OVER QUANTITIES SHOWN ON THE PLANT SCHEDULE IN THE EVENT OF A DISCREPANCY.

E. MULCHING:

1. GRADED BUFFER AREAS: ARE MULCHED PRIOR TO PLANT INSTALLATION AS DIRECTED IN THE GRADING SPECIFICATIONS.
2. NON-GRADED BUFFER AREAS: PROVIDE A 36-INCH DIAMETER, 3-INCH DEEP MULCH RING AROUND THE BASE OF EACH TREE, AND A 24-INCH DIAMETER, 3-INCH DEEP MULCH RING AROUND THE BASE OF EACH SHRUB.
3. WATER PLANTS THOROUGHLY AFTER MULCHING.

F. PRUNING: PRUNE IMMEDIATELY AFTER PLANTING ONLY AS DIRECTED BY TALASAEA CONSULTANTS.

G. TREE STAKES AND TIES: STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET OR OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR BALL, IN LINE WITH THE PREVAILING WIND, AND AT A 10 DEGREE ANGLE FROM THE TREE TRUNK. LOOSELY ATTACH STAKE TO TREE USING CHAIN-LOCK TIES; TREE SHOULD BE ABLE TO SWAY.

H. INSTALLING TEMPORARY IRRIGATION

1. GENERAL REQUIREMENTS: CONTRACTOR SHALL PROVIDE AN ABOVE-GROUND TEMPORARY IRRIGATION SYSTEM CAPABLE OF FULL HEAD-TO-HEAD COVERAGE OF ALL PLANTED PROJECT AREAS (ENHANCEMENT PLANTINGS WITHIN EXISTING VEGETATED WETLAND AREAS MAY NOT NEED COVERAGE BY TEMPORARY IRRIGATION SYSTEM, TALASAEA CONSULTANTS SHALL CONFIRM AREAS OF COVERAGE FOR TEMPORARY IRRIGATION SYSTEM). THE TEMPORARY IRRIGATION SYSTEM SHALL EITHER UTILIZE CONTROLLER AND POINT OF CONNECTION (POC) FROM THE SITE IRRIGATION SYSTEM OR SHALL INCLUDE A SEPARATE POC AND CONTROLLER WITH A BACKFLOW PREVENTION DEVICE PER WATER JURISDICTION INSPECTION AND APPROVAL. THE SYSTEM SHALL BE ZONED TO PROVIDE OPTIMAL PRESSURE AND UNIFORMITY OF COVERAGE, AS WELL AS SEPARATION BETWEEN AREAS OF FULL SUN AND SHADE AND FOR SLOPES IN EXCESS OF 5 PERCENT. THE SYSTEM SHALL BE OPERATIONAL FOR A MINIMUM OF THE FIRST TWO GROWING SEASONS AFTER PLANTING (THE FIRST TWO YEARS OF THE PERFORMANCE MONITORING PERIOD), OR LONGER IF REQUIRED TO ENSURE PROPER PLANT ESTABLISHMENT. THE SYSTEM SHALL BE REMOVED UPON FINAL APPROVAL OF THE MITIGATION PROJECT AT THE END OF THE PERFORMANCE MONITORING PERIOD.
2. SYSTEM DESIGN AND MATERIALS: ELECTRONIC VALVES SHALL BE THE SAME MANUFACTURER AS THOSE USED FOR THE SITE IRRIGATION SYSTEM, OR SHALL BE RAIN BIRD PEB SERIES OR EQUAL IF SYSTEM IS NOT CONTIGUOUS WITH THE SITE SYSTEM. VALVES SHALL BE SIZED TO ACCOMMODATE PRESSURE AND ZONE CONSUMPTION REQUIREMENTS OF THE SYSTEM AND SHALL BE INSTALLED BELOW GRADE IN CARSON (OR EQUAL) VALVE BOXES. WIRING SHALL BE INSULATED MULTI-STRAND, TAPED TO THE MAIN AT 6-INCH INTERVALS WITH DUCT TAPE WRAPS. ON-GRADE MAIN AND LATERAL LINES SHALL BE CLASS 200 PVC BELL PIPE WITH SOLVENT WELDED FITTINGS, SECURED IN-PLACE WITH WIRE STAPLES WHERE NECESSARY ON SLOPED AREAS. LINES SHALL BE PLACED 12 INCHES BELOW GRADE IN 4 INCH PCV SLEEVES WHERE VEHICULAR OR MAINTENANCE ACCESS IS NEEDED ACROSS LINES TO THE PROJECT AREA(S). MAXIMUM MAIN LINE SIZE SHALL BE 1½ INCHES AND MAY BE LOOPED BACK TO THE POC TO REDUCE PRESSURE LOSS. LATERAL LINES SHALL BE SIZED IN DECREASING DOWNSTREAM ORDER PER RAIN BIRD DESIGN STANDARDS; THE MINIMUM LATERAL SIZE SHALL BE ¾ INCH. HEADS SHALL BE ROTOR OR IMPACT TYPE INSTALLED 4 FEET ABOVE FINISHED GRADE ON 2-INCH DIAMETER WOOD TREE STAKES. STAKES SHALL BE SECURE IN THE GROUND, EMBEDDED TO A MINIMUM DEPTH OF 24 INCHES. HEADS AND ¾ INCH PVC RISERS SHALL BE SECURED TO STAKES WITH CONSTRICTING HOSE CLAMPS; NO FUNNY PIPE SHALL BE USED. HEADS AND NOZZLES SHALL PROVIDE MATCHED PRECIPITATION RATES FOR EACH ZONE.
3. PROGRAMMING: IRRIGATION SYSTEM SHALL BE PROGRAMMED TO PROVIDE APPROXIMATELY 1/2 INCH OF WATER EVERY THREE DAYS DURING THE DRY SEASON (APPROXIMATELY JUNE 15TH TO OCTOBER 15TH). IRRIGATION AMOUNTS IN ZONES LOCATED IN THE SHADE OR ON STEEP SLOPES MAY BE REDUCED IF APPROVED BY TALASAEA CONSULTANTS OR THE PROJECT ECOLOGIST/BIOLOGIST.
4. WATER AND POWER SUPPLY FOR SYSTEM: THE OWNER SHALL PROVIDE WATER AND ELECTRICITY FOR THE SYSTEM.
5. AS-BUILT DRAWING: A CHART DESCRIBING THE LOCATION OF ALL INSTALLED OR OPEN ZONES AND CORRESPONDING CONTROLLER NUMBERS SHALL BE PROVIDED BY THE CONTRACTOR AND PLACED INSIDE THE CONTROLLER AND GIVEN TO THE OWNER'S REPRESENTATIVE.
6. WARRANTY: THE IRRIGATION SYSTEM SHALL INCLUDE A ONE-YEAR WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FROM THE DATE OF FINAL PROJECT ACCEPTANCE. THE WARRANTY SHALL INCLUDE SYSTEM ACTIVATION AND WINTERIZATION FOR THE FIRST YEAR AND IMMEDIATE REPAIR OF THE SYSTEM IF IT IS OBSERVED TO BE MALFUNCTIONING.

I. CRITICAL AREAS FENCE AND SIGNS: INSTALL CRITICAL AREAS FENCE AND CRITICAL AREAS SIGNS WHERE SHOWN ON PLANS PER INSTALLATION DETAILS PROVIDED ON PLANS.

J. RESTORE EXISTING NATURAL OR LANDSCAPED AREAS:

1. EXISTING NATURAL OR LANDSCAPED AREAS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, UNLESS IMPROVEMENTS OR MODIFICATIONS ARE SPECIFIED FOR THOSE AREAS.
2. CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY TO THE TRUNK, ROOTS, OR BRANCHES OF ANY TREES OR SHRUBS THAT ARE TO REMAIN. ANY LIVING, WOODY PLANT THAT IS DAMAGED DURING CONSTRUCTION SHALL BE TREATED WITHIN 24 HOURS OF OCCURRENCE, AND TALASAEA CONSULTANTS SHALL BE NOTIFIED IMMEDIATELY OF THE INCIDENT. DAMAGE TREATMENT SHALL INCLUDE EVENLY CUTTING BROKEN BRANCHES, BROKEN ROOTS, AND DAMAGED TREE BARK. INJURED PLANTS SHALL BE THOROUGHLY WATERED AND ADDITIONAL MEASURES SHALL BE TAKEN, AS APPROPRIATE, TO AID IN PLANT SURVIVAL.

K. FINAL INSPECTION AND APPROVAL: THE CONTRACTOR SHALL NOTIFY TALASAEA CONSULTANTS IN WRITING AT LEAST TEN DAYS PRIOR TO THE REQUESTED DATE OF A PROJECT COMPLETION INSPECTION. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED BY TALASAEA CONSULTANTS AND SUBMITTED TO THE CONTRACTOR FOR COMPLETION. AFTER PUNCH LIST ITEMS HAVE BEEN COMPLETED, TALASAEA CONSULTANTS SHALL REVIEW THE PROJECT AGAIN FOR FINAL ACCEPTANCE OF PLAN IMPLEMENTATION. IF PUNCH LIST ITEMS REQUIRE PLANT REPLACEMENT, AND THE INSPECTION OCCURS OUTSIDE OF A SUITABLE PLANTING SEASON, PLANTS SHALL BE REPLACED DURING THE NEXT PLANTING SEASON.

L. AS-BUILT PLAN: CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT LOCATIONS AND QUANTITIES ON THE PLANT SCHEDULE WITH THOSE REPRESENTED AS SYMBOLS ON THE MITIGATION PLANS. CONTRACTOR SHALL KEEP A COMPLETE SET OF PRINTS AT THE JOB SITE DURING CONSTRUCTION FOR THE PURPOSE OF RECORDING IN-THE-FIELD CHANGES OR MODIFICATIONS TO THE APPROVED PLANS. THIS INFORMATION SHALL BE UPDATED ON A DAILY BASIS AS NECESSARY.

PART 4: ONE YEAR CONTRACTOR WARRANTY

NOTE: THESE MAINTENANCE SPECIFICATIONS APPLY TO THE ONE-YEAR CONTRACTOR WARRANTY PERIOD ONLY. IF THIS MITIGATION PROJECT REQUIRES LONG-TERM PERFORMANCE MONITORING, AS DETERMINED BY THE GOVERNING JURISDICTION, THE MAINTENANCE SPECIFICATIONS AND GUIDELINES ASSOCIATED WITH THE PERFORMANCE MONITORING STANDARDS ARE INCLUDED IN THE MITIGATION REPORT ASSOCIATED WITH THIS PLAN SET, AND MAY ALSO BE INCLUDED ON A SEPARATE PLAN SHEET IF REQUIRED.

A. REVIEW OF MAINTENANCE REQUIREMENTS: CONTRACTOR SHALL REVIEW LANDSCAPE MAINTENANCE RECOMMENDATIONS WITH A QUALIFIED WETLAND BIOLOGIST FROM TALASAEA CONSULTANTS WHO IS FAMILIAR WITH THE STATED GOALS AND OBJECTIVES OF THE PROJECT PLAN.

B. MAINTENANCE ACTIVITIES: CONTRACTOR SHALL MAINTAIN TREES AND SHRUBS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE IN ORDER TO MAINTAIN HEALTHY GROWTH AND HABITAT DIVERSITY. MAINTENANCE ACTIVITIES SHALL INCLUDE, BUT ARE NOT LIMITED TO: (A) REPLACING PLANTS DUE TO MORTALITY, (B) TIGHTENING AND REPAIRING TREE STAKES, (C) RESETTING PLANTS TO PROPER GRADES AND UPRIGHT POSITIONS, AND (D) CORRECTING DRAINAGE PROBLEMS AS REQUIRED.

C. IRRIGATION:

1. SYSTEM MAINTENANCE AND REPAIR: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACTIVATING, WINTERIZING, MAINTAINING, AND CONTINUALLY VERIFYING THE ADEQUATE OPERATION OF THE TEMPORARY IRRIGATION SYSTEM FOR THE FIRST GROWING SEASON FOLLOWING INSTALLATION. SYSTEM FUNCTION (INCLUDING ELECTRONIC VALVE AND CONTROLLER FUNCTION) SHALL BE INSPECTED FOR OPERATION AND FULL COVERAGE OF ALL PLANTED AREAS DURING EACH MAINTENANCE VISIT. THE SYSTEM SHALL BE REPAIRED IMMEDIATELY IF FOUND TO BE DAMAGED OR MALFUNCTIONING. SYSTEM SHALL BE PROGRAMMED AND MAINTAINED TO PROVIDE APPROXIMATELY ½ INCH OF WATER EVERY THREE DAYS.

D. STAKE AND TIE REMOVAL: CONTRACTOR SHALL REMOVE TREE STAKES AND TIES ONE YEAR AFTER INSTALLATION, UNLESS RECEIVING WRITTEN PERMISSION FROM TALASAEA CONSULTANTS TO DELAY REMOVAL OF STAKES AND TIES

E. EROSION AND DRAINAGE: CONTRACTOR SHALL CORRECT EROSION AND DRAINAGE PROBLEMS AS REQUIRED.

F. IRRIGATION SYSTEM REMOVAL: CONTRACTOR SHALL REMOVE IRRIGATION SYSTEM APPROXIMATELY 2 YEARS AFTER PLANTING, OR AS APPROVED BY TALASAEA CONSULTANTS.

G. FINAL MAINTENANCE INSPECTION AND APPROVAL: UPON COMPLETION OF THE ONE-YEAR MAINTENANCE PERIOD, AN INSPECTION BY TALASAEA CONSULTANTS SHALL BE CONDUCTED TO CONFIRM THAT THE PROJECT AREA WAS PROPERLY MAINTAINED. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED AND SUBMITTED TO THE CONTRACTOR FOR CORRECTION. UPON CORRECTION OF THE PUNCH LIST ITEMS, THE PROJECT SHALL BE REVIEWED BY TALASAEA CONSULTANTS FOR FINAL CLOSEOUT OF PLAN IMPLEMENTATION.

Know what's below. Call before you dig.

NOTES

1. SURVEY PROVIDED BY HARMSEN & ASSOCIATES, INC.; P.O. BOX 516, MONROE, WA 98272; (360) 794-7811
2. SITE PLAN PROVIDED BY BARGHAUSEN CONSULTING ENGINEERS, INC., 18215 72ND AVE S, KENT, WA 98032; (425) 251-6222
3. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.
4. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS SPECIAL STUDY REPORT PREPARED BY TALASAEA CONSULTANTS, DATED 15 JANUARY 2016.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast – Woodinville, Washington 98077
Bus (425) 861-7550 – Fax (425) 861-7549

STREAM BUFFER MITIGATION PLAN
PLANTING SPECIFICATIONS
THE RESERVE AT WOODINVILLE
WOODINVILLE, WASHINGTON

Revisions	Date	By

Date	1-15-2016
Scale	AS NOTED
Designed	AO
Drawn	ABS
Checked	AO
Approved	AO
Project #	1349D
Sheet #	W2.2

© Copyright – Talasaea Consultants, INC.
Z:\DRAWING\1300-1399\TAL1349D\Plans\1349D WP_1-15-2016_.dwg
Plotted January 14, 2016