

Wetland Mitigation Plan
for the
Blue Heron Plat
Poulsbo, Washington

Prepared for:
Quadrant Homes
14725 SE 36th Street
Bellevue, Washington 98006
(425) 646-4139

Prepared by:
Ecological Land Services, Inc.
1157 3rd Avenue, Suite 220A
Longview, Washington 98632
(360) 578-1371
Project Number 1648.08

June 26, 2017

EXECUTIVE SUMMARY

On behalf of Quadrant Homes, Ecological Land Services, Inc. (ELS) has prepared a mitigation plan report for the unavoidable impacts to a small wetland in the southwestern portion of the Blue Heron Plat. The project site is composed of three properties located within the city limits of Poulsbo. These properties are within Section 24, Township 26 North, Range 1 East of the Willamette Meridian. This mitigation plan was prepared according to the 2007 *Poulsbo Municipal Code Chapter 16.20, Article II Wetlands (PMC)* and The Washington State Department of Ecology guidance *Wetland Mitigation in Washington State* (2006).

Two small wetlands were identified and delineated on the properties by other consultants and a recent wetland verification and re-categorization of these wetlands was conducted by ELS (ELS 2016). Wetland A is a small, 270 square foot, Category IV wetland located along the south edge of the western finger of the property. Wetland B is a 749 square foot Category IV wetland located right at the northwest corner of the Blue Heron Plat. There is wetland offsite to the north that lies on the Mountain Aire development that is locally known as the Wyatt Wetland (Figure 2). Wetland A will be filled because of its small size and mitigation in the form of enhancement will take place in the southeastern portion of the Wyatt Wetland. The onsite 50-foot buffer of the offsite Wyatt Wetland will be maintained and the fence along the north property line will be removed to create a connection between the offsite wetland and the onsite buffer. A fence will be installed along the edge of the buffer where it lies on the Blue Heron Plat. The total area proposed for wetland mitigation is 6,182 square feet to compensate for the 270 square foot impact to Wetland A, which is a ratio of 23:1.

Mitigation Goals and Objectives

Goal 1: Enhance 6,182 square feet of the Wyatt Wetland to compensate for the fill of Wetland A (270 square feet). Enhance a 6,839 square feet of onsite wetland buffer.

Objective 1a. Enhance the southwestern portion of Wyatt Wetland that is currently dominated by invasive species (mainly Himalayan blackberry) by removing the invasives and installing native plants to improve the functions of the wetland. Wetland buffer enhancement is proposed on the Blue Heron Farms project along the proposed trail in the northeast corner.

Goal 2: Create a diverse forested vegetation community with a dense shrub understory of native species.

Objective 2a. Plant a variety of native tree and shrub species in the enhanced wetland and buffer to create a sub canopy of younger trees and tall shrubs.

Goal 3: Protect wetland functions

Objective 3a. Permanently demarcate the wetland buffer boundary.

Objective 3b. Provide long-term legally binding protection.

The mitigation site will be monitored for a 7-year period following project construction. Monitoring will take place in Years 1, 2, 3, 5, and 7. The goal of monitoring is to determine if the mitigation performance standards are being met. The mitigation area will be monitored once

during the growing season, preferably during the same two-week period each year to better compare the data. Monitoring will begin at the end of the first summer following full implementation of the mitigation plan.

RESPONSIBLE PARTIES

The project applicant, The Quadrant Corporation, will be responsible for implementing the mitigation plan and ensuring the completion of the 7 years of monitoring and maintenance as described in this plan, prepared by Ecological Land Services, Inc.

Project Applicant
Quadrant Corporation
Corey Watson
14725 SE 36th Street
Bellevue, WA 98006
(425) 646-4139

Wetland Consultant and Preparer of Mitigation Plan:
Ecological Land Services, Inc.
c/o Joanne Bartlett
1157 3rd Ave. Suite 220A
Longview, WA 98632
(360) 578-1371

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.

A handwritten signature in cursive script that reads "Joanne Bartlett". The signature is written in black ink and is positioned above a horizontal line.

Joanne Bartlett, PWS
Senior Biologist

TABLE OF CONTENTS

EXECUTIVE SUMMARY..... I

RESPONSIBLE PARTIES.....III

SIGNATURE PAGE IV

TABLE OF CONTENTS V

PROJECT DESCRIPTION1

PROJECT LOCATION 1

SITE CONDITIONS..... 1

Development Site..... 1

Mitigation Site..... 1

PROJECT DESCRIPTION AND PROPOSED IMPACTS 2

WETLAND DELINEATION AND CATEGORIZATION 2

WETLAND FUNCTIONS ASSESSMENT3

 IMPACT AREA-WETLAND A..... 3

 MITIGATION SITE- WYATT WETLAND..... 3

MITIGATION APPROACH4

 MITIGATION SEQUENCING 4

 MITIGATION RATIOS 5

 WETLAND MITIGATION GOALS..... 6

 PERFORMANCE STANDARDS 6

WETLAND MITIGATION PLAN.....7

 REMOVAL OF INVASIVES..... 8

 RETAINING WALLS AND FENCING..... 8

 PLANTING PLAN..... 8

SPECIFICATIONS FOR PLANTING 8

Plant Materials..... 8

Planting Specifications..... 10

 MITIGATION PLAN SEQUENCING..... 10

MAINTENANCE11

MONITORING PLAN11

VEGETATION 12

FAUNA..... 12

MONITORING REPORT CONTENTS 12

LONG TERM MANAGEMENT PLAN12

CONTINGENCY PLAN13

REFERENCES.....14

Figures and Photoplates

Figure 1	Vicinity Map
Figure 2	Existing Conditions
Figure 3	Site Plan
Figure 4	Wetland Mitigation Overview
Figure 5	Wetland Mitigation and Buffer Planting Plan
Photoplates	

PROJECT DESCRIPTION

PROJECT LOCATION

The Preliminary Plat of Blue Heron is comprised of 3 properties, parcel numbers 242601-4-034-2009, 242601-4-033-2000, and 242601-4-003-2006, east of Noll Road NE in a portion of the southeast quarter of Section 24, Township 26 North, Range 1 East of the Willamette Meridian in Poulsbo, Washington (Figure 1). All of the properties that comprise the project site are in the Lemolo Creek/Liberty Bay Watershed and Water Resource Inventory Area (WRIA) 15.

SITE CONDITIONS

Development Site

The project site is irregularly shaped because of the configuration of the three separate properties. The main section of the project site is oriented north to south beginning at the intersection of Noll Road and Heron Pond Lane to the south (Photoplate 1) and extending to the Mountain Aire development to the north. A section of property extends west to Noll Road in the northern half of the property. The eastern boundary of the project site is composed of forest that lies along both sides of Lemolo Creek. The property is currently accessed from Noll Road to the south (Photoplate 1) and by a narrow dirt driveway from Noll Road from the west (Photoplates 1 and 2). The southern access extends to the Blue Heron Farm stables and the western access leads to horse pastures and a single-family home (Photoplates 2 and 3). The farm is composed of fenced pastures, stables, barns, and single-family homes with a small area of forest in the western parcel finger (Figure 2) (Photoplates 1 and 2). The terrain slopes gradually down to the south and southwest beginning at the north property line with a gradual slope down across the east side into the Lemolo Creek corridor.

Wetlands A and B are small emergent slope wetlands composed of pasture with saturated only hydroperiods and both are rated as Category IV systems according to the rating system (ELS 2016). They are located in different areas of the property with Wetland A located along the south edge of the western finger and Wetland B at the northwest corner so are not connected to one another (Figures 2 and 3). There is also no connection to other wetlands offsite, including the Wyatt Wetland to the north. Lemolo Creek is a Type 3 stream that flows south to Liberty Bay along the east side of the property. A 150-foot buffer has been established on the project site plans in accordance with the *PMC*.

Mitigation Site

The Wyatt Wetland lays offsite to the north and is composed of a forested slope system that drains toward Lemolo Creek. The wetland abuts the north line of Blue Heron Farms so the 50-foot buffer extends onto the proposed plat (Figures 2 and 3). The Wyatt Wetland is composed of a forested system that is mostly dominated by native plant species except at the exterior edges where sunlight has allowed the development of sometimes dense Himalayan blackberry thickets. Mitigation is proposed in the southeast corner of the Wyatt Wetland, which is easily accessible and highly visible from the trail as well as from the Blue Heron Farms project site (Photoplates 4, 5, and 6). This area was selected mainly for the ease of access so that there is no tromping into the interior of the wetland where existing native plants and soils could be heavily damaged. In addition, it can support a public benefit because the improvement to the wetland will be easily observed.

The area of mitigation is 6,182 square feet in size and is mostly dominated by blackberry thickets. Native vegetation is also present in this area but is being dominated by the blackberry thickets so the native shrub layer is somewhat diminished. There is a fence along the north property line that separates the Wyatt Wetland from the onsite buffer. The fence will be removed as part of the mitigation and a split-rail or board fence will be installed along the edge of the onsite buffer. Wetland B is located at the west end of the onsite Wyatt Wetland buffer where it will remain undisturbed (Figure 4). A 6,839 square foot area of buffer in the northeastern portion that lies along the proposed trail of Blue Heron Farms will be enhanced as part of the mitigation to improve the buffer conditions for the public good and increase protection of the offsite wetland.

PROJECT DESCRIPTION AND PROPOSED IMPACTS

The project proposes creation of 85 residential building lots on 23.84 acres comprised of three properties that range in size from 5.8 acres to 9.91 acres (Figure 2). Low retaining walls and/or fences are proposed to demarcate the critical area buffers from the development. The retaining walls will be placed where topography dictates and will be composed of rock or concrete at the edge of the stream and wetland buffers. The properties are currently composed of fenced fields utilized by grazing horses and burros with a stable on the south property and a residence on the north property. The west property is currently undeveloped except for the driveway through the middle from Noll Road. Two small wetlands were delineated on the south side of the west property (Wetland A) and at the northwest corner of the project site (Wetland B). Wetland A is a slope pasture wetland that is 270 square feet in size and lies within one of the proposed building lots. Wetland B is also a slope pasture wetland that is 749 square feet in size and lies within the buffer of the offsite Wyatt Wetland. Because Wetland A is in one of the building lots and is very small in size, it will be filled during development of the project. Mitigation for the impact will take place within a 6,182 square foot area of the Wyatt Wetland. Enhancement of this portion of the Wyatt Wetland will involve removal of invasive plant species followed by installation of native trees and shrubs.

The overall goals of the proposed mitigation are:

- 1) Achieve no net loss of wetland function
- 2) Enhance a 6,182 square foot area of the Wyatt Wetland to compensate for the fill of Wetland A, which is 270 square feet in size. Also enhance area of buffer to improve the conditions for the public good and improve buffer functions.
- 3) Increase the function of the sloping Wyatt Wetland by removing invasive plant species from a forested area and replace with native trees and shrubs

WETLAND DELINEATION AND CATEGORIZATION

ELS conducted a verification of the current wetland conditions in 2016 (ELS 2016) as part of the feasibility study conducted by Quadrant Corporation prior to final purchase of the property. The boundaries of Wetlands A and B and the Wyatt Wetland were delineated by others in 2008. ELS biologists conducted a field visit to document if any changes have occurred to the wetlands since they were originally delineated. No changes were observed in the areas around Wetlands A and B so the boundaries were verified as accurate despite the lack of evidence of delineation flags. The

boundary of Wyatt Wetland was also verified as accurate because there had been no changes to the narrow band of upland between the Blue Heron Farms and the wetland boundary.

Wetland A is a small slope wetland dominated by emergent vegetation along the south edge of the western extension of the Blue Heron project site (Photoplate 3). It begins downslope of an old hand dug well and appears to have been created by drainage from the well. The wetland slopes down toward the south property line in a southeasterly direction. Wetland B is a small, sloping, emergent wetland that is located at the northwest corner of the Blue Heron Plat and just south of the Wyatt Wetland. It is not connected to the Wyatt Wetland and appears to be fed by a second hand dug well situated just upslope and west of the wetland.

As part of the wetland verification, the Wetlands A and B as well as the Wyatt Wetland were categorized using the 2014 Wetland Rating System for Western Washington (Ecology 2014) to verify the wetland categories had not changed under the updated rating system. Wetlands A and B meet the criteria for Category IV wetlands because they are on sloping terrain, are dominated by a single vegetation community, and do not have landscape potential to perform water quality and hydrologic functions, although they have opportunity. Wetlands A and B are each less than 1,000 square feet and are regulated by the PMC but because of their small size, they do not require buffers. The Wyatt Wetland also meets the criteria for a Category IV wetland and requires a 50-foot buffer from the delineated, offsite boundary. Wetland B falls within a portion of the buffer from the Wyatt Wetland but does not require additional buffer. The verification conducted by ELS was confirmed by Grette Associates the contract consultants for the City of Poulsbo.

WETLAND FUNCTIONS ASSESSMENT

IMPACT AREA-WETLAND A

Wetland A is a small, emergent slope wetland (270 square feet) that is located at the south edge of the western extension of Blue Heron Farms (Photoplate 3). It is a emergent wetland that is dominated by a mixture of pasture grasses that includes tall fescue (*Schedonorus arundinaceus*, FAC) and orchard grass (*Dactylis glomerata*, FACU), soft rush (*Juncus effusus*, FACW), and creeping buttercup (*Ranunculus repens*, FAC). Wetland A has a saturated only hydroperiod that appears to be seasonal and has a drainage outlet that only appears to occasionally contain flowing water. This wetland appears to be fed by the old hand dug well that lies just upslope.

MITIGATION SITE- WYATT WETLAND

The Wyatt Wetland lies offsite to the north of the Blue Heron Farms project. It is composed of a forested system that slopes down from the west toward Lemolo Creek, which is offsite to the east. The property on which this wetland is situated contains a two-celled detention pond that services the Mountain Aire Development and the sanitary sewer line that was constructed as part of the Mountain Aire project. The sewer line is utilized as the public trail that begins currently on the north end of the Blue Heron Farms property and extends along the east edge of Mountain Aire. Portions of the Wyatt Wetland and its buffer have been improved by mitigation conducted for the Mountain Aire project, which involved removal of invasives and installation of native trees as mitigation for wetland impact. Temporary buffer impacts were also mitigated in the Wyatt

Wetland and buffer for the sewer line installation and the construction of the detention pond within the buffer.

Enhancement of the Wyatt Wetland is proposed for mitigation of the impacts to Wetland A because many areas of the Wyatt Wetland have undergone enhancements as part of other mitigation projects. The mitigation projects focused on the southeastern portion of the wetland, which left areas of the western portion dominated by blackberry thickets in and just outside the forested understory (Photoplates 4, 5, and 6). The total area of mitigation in the Wyatt Wetland totals 6,182 square feet for the 270 square foot Wetland A, which will be filled to accommodate development. This results in a ratio of 23:1 for the impacts to the small onsite wetland. The proposed enhancement will provide functional lift for the proposed wetland fill because it will replace the small wetland that basically functions only as part of the upland pasture with improvement of a forested wetland community that has greater water quality and habitat functions. This wetland is also offsite and contiguous with Lemolo Creek, which is not the case with the small impacted Wetland A. In addition, 6,839 square feet of onsite buffer will also be enhanced to improve the area for the future trail and provide a public benefit.

MITIGATION APPROACH

This mitigation plan is being prepared to compensate for the fill of Wetland A, which is 270 square feet (0.006 acres), is located on sloping terrain, and dominated by plant species that grow in disturbed pasture conditions. The wetland is being filled because of its very small size and location on the Blue Heron Plat. The filling of this wetland will require permittee-responsible mitigation because there are no mitigation banks or in-lieu fee programs available within Poulsbo or the Liberty Bay watershed. Mitigation is proposed in an area of the Wyatt Wetland where it is easily accessible from the existing trail and sewer easement to avoid impact to the interior of the wetland where there is more plant species diversity. The Wyatt Wetland is also in the same watershed as Wetland A and the mitigation will improve conditions within a wetland that has much higher function for the Lemolo Creek watershed.

MITIGATION SEQUENCING

The wetland mitigation requirements of the local, state, and federal agencies specifies that all regulated development activities proposing permanent impact wetlands or buffers shall examine whether the impacts can be avoided and/or minimized prior to proposing compensation for the impacts.

Avoiding Wetland Impacts. Wetland A is a small wetland (270 square feet) composed of pasture that is regularly grazed by horses. It has limited functions because of its small size and keeping the wetland as it exists and developing around it would further impact its functions particularly for habitat. The project construction activities would likely have an impact on the wetland and its buffer if it were to remain, so overall, the project would not be able to avoid direct impacts on Wetland A. In addition, there is no current public benefit provided by Wetland A because of its small size and vegetation community.

Minimizing Wetland Impacts. The small size of the wetland makes it impossible to impact only a portion in order to minimize the impacts and maintain a portion of the current wetland functions. Therefore, the project cannot minimize the impacts to this wetland.

Mitigation Options in Order of Preference:

Rectifying the Impact by reestablishing, rehabilitating, or restoring the affected environment. The wetland will be permanently filled to create a series of building lots so mitigation will not involve reestablishing, rehabilitating, or restoring the affected environment.

Compensating for the Wetland Impact by Replacing or Providing Substitute Resources or Environments-The project proposes to fill Wetland A and enhance a 6,182 square foot area of the Wyatt Wetland. The wetland enhancement provides for a ratio of 23:1, which is nearly 4 times greater than the required enhancement ratio of 6:1 for Category IV wetlands. Enhancement will involve removal of the dense blackberry thickets in the southeastern portion of the Wyatt Wetland and replacement with two species of native conifer trees and four species of native deciduous shrubs. The mitigation is intended to improve conditions in one area of the wetland and provide a functional lift to compensate for the fill of the low functioning small-sized pasture wetland. In addition, the mitigation will improve the public good function of the wetland by creating by enhancing a currently degraded wetland area adjacent to the development and existing trail system.

Monitoring the Impact and Compensation and Taking Appropriate Corrective Measures

Monitoring of the wetland mitigation area for the Blue Heron Plat is proposed for a period of 7 years to document the improvement of wetland conditions within the mitigation area.

MITIGATION RATIOS

The *Wetland Mitigation in Washington State, Volume 1, Agency Policy and Guidelines* (2006), compiled by the WDOE, the USACE, the US Environmental Protection Agency and the PMC, specifies several ratios for mitigation of impacts to Category IV wetlands. The Category IV wetland mitigation ratios include:

Table 1: Required Mitigation Ratios

Wetland Category	R/C	RH	R/C & EN	EN only
IV	1.5:1	3:1	1:1 & 2:1	6:1

C=Creation; RE=Re-establishment; RH=Rehabilitation; EN=Enhancement

The proposed mitigation will involve enhancement at a minimum ratio of 6:1 as required for impacts to Category IV wetlands. The enhancement is proposed in 6,182 square feet of the Wyatt Wetland to compensate for the fill of the 270 square foot Wetland A, which results in a total ratio of 23:1 (Table 2).

Table 2: Mitigation Ratios and Areas

Wetland	Area (sq. ft.)	Cowardin Classification	Ecology Rating	Impacts (sq. ft.)	Compensation	
					Enhancement of Wyatt Wetland	
					Area (sq. ft.)	Ratio
A	270	PEM	IV	270 sq. ft.	6,182	23:1

WETLAND MITIGATION GOALS

The main goal of the mitigation plan is to compensate for the fill of 270 square feet of Category IV slope pasture wetland to facilitate development of building lots for the Blue Heron Plat. The general goals of this mitigation include:

- **Goal #1** Enhance 6,182 square feet of the Wyatt Wetland and enhance 6,839 square feet of onsite buffer to improve buffer functions along the proposed trail.
- **Goal #2** Increase the diversity and function of the Wyatt Wetland by removing invasive plant species and installing native trees and shrubs to compensate for the fill of Wetland A, which has low functions due to its small size and location with a grazed pasture.
- **Goal #3:** Remove the pasture fence along the north property line and install a split rail fence along the onsite buffer edge. Install critical area protection area signs on the fence. If required, place the wetland and buffer mitigation in a separate tract.

PERFORMANCE STANDARDS

The performance standards have been developed to monitor the success with respect to the goals and objectives of this mitigation plan, which relate directly to improving wetland functions and development of the desired vegetation community. The following objectives and performance standards have been developed for this wetland mitigation project:

Objective #1 Enhance the Wyatt Wetland and improve wetland functions by replacing the existing disturbed pasture conditions of Wetland A. Enhance area of buffer along the trail in the northeast corner for the public good and improve the function of the onsite buffer.

Performance Standard #1a

Plant Survival

Year 1-2

100 percent survival of all plants including tree and shrub, species.

Years 3-5

80 percent survival of all plants including tree and shrub species.

Performance Standard #1b Vegetation Cover

Yearly percent coverage standards are proposed for the tree and shrub species to be installed within the enhanced wetland and buffer areas. The following yearly standards are proposed for the tree and shrub layers.

Year 1: 15 to 20 percent cover by installed/volunteer native woody plants.

Year 2: 20 to 30 percent cover by installed/volunteer native woody plants.

Year 3: 30 to 40 percent cover by installed/volunteer native woody plants.

Year 5: 45 to 60 percent cover by installed/volunteer native woody plants.

Year 7: 65 to 75 percent cover by installed/volunteer native woody plants.

Performance Standard #1c Plant Species Height and Diversity

Year 5 Enhanced Wetland and Buffer: Minimum of 15 percent cover by at least 2 of the shrub species installed within the wetland that are at least 4 feet tall.

Objective #2 Maintain Low Cover by Non-Native Invasives

Mitigation projects are often subject to inputs of non-native plant species via seeds deposited by birds or swept in by wind. Low coverage by invasive plants is proposed to allow native plants to become prevalent within the wetland.

Performance Standard #2a Non-Native Invasives Plant Coverage-Years 1 to 5: Less than 10 percent cover by non-native exotics including but not limited to reed canarygrass, Himalayan blackberry, and Scot's broom.

WETLAND MITIGATION PLAN

The wetland mitigation plan proposes to enhance 6,182 square feet of the Wyatt Wetland to compensate for the fill of Wetland A and enhancement of onsite wetland buffer of 6,839 square feet. Enhancement will involve removal of blackberry thickets within the southeastern portion of the Wyatt Wetland and the buffer in the northeast corner of the proposed development to improve vegetation conditions and functions (Photoplates 4, 5, and 6). Enhancement components will include hand removal of blackberry thickets and root masses to the extent possible followed by installation of native trees and shrubs. Pre-construction meetings will be held with the project biologist and landscape contractor selected to complete the work and ensure project meets the stated goals and objectives. The project biologist will be onsite during blackberry removal and planting phases of this project to also ensure goals and objectives of the mitigation are met.

The Wyatt Wetland has areas of dense blackberry throughout but the focus of the mitigation is in the southeastern portion because of its proximity to the existing public trail. This area is on the edge of the wetland just north of the Blue Heron Farms project where it is subject to sunlight for most of the day, which has allowed the development of a dense blackberry thicket. Because it is on the edge, it can be easily accessed from the public trail and will avoid and minimize impacts to the remainder of the wetland. The impacts would include trampling of existing native vegetation within the interior as well as mucking of the soil as workers walk back and forth during blackberry removal and plant installation. By conducting the mitigation in the southeastern area, these impacts can be minimized and contained to one general area.

REMOVAL OF INVASIVES

Removal of the blackberry thickets will be conducted by hand and will include all above ground canes and most of the root masses. The root masses will be pulled from the ground to the extent possible to minimize recovery from this source. The removed blackberry will be taken to an approved disposal site and will not under any circumstances, be placed in other areas of the wetland or buffer. Blackberry removal may also occur in areas adjacent to the mitigation area to reduce the chance of recovery from nearby thickets.

RETAINING WALLS AND FENCING

Retaining walls will be constructed to the edge of the Wyatt Wetland buffer where sloping topography necessitates the use of the walls. The existing fence along the north property line will be removed during implementation of the mitigation plan so that there is no physical barrier between the Wyatt Wetland and the onsite buffer. Fences will be installed along the buffer edge as well as atop the retaining walls to physically demarcate the edge of the critical area and buffer. Fence material will include a combination of vertical board fences and split-rail cedar fences such as those constructed on the adjacent Mountain Aire development.

PLANTING PLAN

The mitigation planting plan proposes to encourage development of a conifer forested community in the mitigation area (Figure 5). The native volunteers that currently inhabit the wetland and buffer, which include woody and herbaceous plants, will be allowed to grow naturally so no herbaceous or emergent plants are proposed. The plants that will be installed within the wetland mitigation and buffer enhancement areas are listed in Tables 3 and 4. The species proposed include those that can grow and thrive in saturated soil conditions and open dry buffer conditions. Western red cedar and Sitka spruce will be installed in the wetland mitigation area to encourage the development of a coniferous forest community. Four deciduous shrub species are proposed for installation within the wetland to create a diverse shrub layer. Additional native species will likely be revealed as the blackberry thickets are removed and are expected to also inhabit the forest stratum of the wetland. The buffer area will be planted with species similar to those proposed within the voluntary Lemolo Creek buffer planting along the east side of the Blue Heron Farms project.

SPECIFICATIONS FOR PLANTING

The plants specified for the enhanced wetland and buffer areas will diversify the existing plant community and improve diversity and wildlife habitat in both the short- and long-term.

Plant Materials

Bare-root Stock:

1. Bare-root or potted species will be purchased from a native plant nursery.
2. Bare-root or potted stock will be a minimum size of 18- to 36-inches tall.
3. Bare-root or potted stock will be kept cool and moist prior to being planted.
4. The bare-root stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
5. No damaged or desiccated roots or diseased plants will be accepted.

6. Unplanted bare-root or potted stock will be properly stored at the end of each planting day to prevent desiccation.
7. The environmental consultant will be responsible for inspecting bare-root or potted stock prior to and during planting and culling unacceptable plant materials.

Plants will be installed in the late fall to early spring when the site conditions are wettest and the plants are dormant. Plants will be installed in mono-specific groups to mimic natural colonization and enhance individual plant survival. Plantings will be spaced to allow for removal of invasive species during maintenance activities. The following table summarizes the plant species, spacing, size, and quantities for the onsite mitigation area (Table 3):

Table 3: Planting Specifications for Wetland and Buffer Enhancement

Species	Spacing (feet)	Quantity	Size
TREE STRATUM*			
Western red cedar (<i>Thuja plicata</i> , FAC)	10	21	Bareroot
Sitka spruce (<i>Picea sitchensis</i> , FAC)	10	21	Bareroot
TOTAL		42	
SHRUB STRATUM*			
Pacific ninebark (<i>Physocarpus capitatus</i> , FACW)	5	46	Bareroot
Red osier dogwood (<i>Cornus sericea</i> , FACW)	5	46	Bareroot
Black twinberry (<i>Lonicera involucrata</i> , FAC)	5	46	Bareroot
Pacific willow (<i>Salix lucida ssp. lasiandra</i> , FACW)	5	46	Bareroot
TOTAL		184	
PLANT TOTAL		226	

* Plant species locations have been chosen with consideration of proposed hydrologic regime and plant indicator status to increase survival.

Table 4: Planting Specifications for Wetland Buffer Enhancement

Species	Spacing (feet)	Quantity	Size
TREE STRATUM*			
Western red cedar (<i>Thuja plicata</i> , FAC)	10	17	Bareroot
Douglas fir (<i>Pseudotsuga menziesii</i>)	10	17	Bareroot
Western hemlock (<i>Tsuga heterophylla</i>)	10	17	Bareroot
Bigleaf maple (<i>Acer macrophyllum</i>)	10	17	Bareroot
TOTAL		68	

<i>SPECIES</i>	Spacing (feet)	Quantity	Size
<i>SHRUB STRATUM*</i>			
Indian plum (<i>Oemleria cerasiformis</i>)	5	42	Bareroot
Hazelnut (<i>Corylus cornuta</i>)	5	42	Bareroot
Ocean spray (<i>Holodiscus discolor</i>)	5	42	Bareroot
Nootka rose (<i>Rosa nutkana</i>)	5	42	Bareroot
Oregon grape (<i>Mahonia nervosa</i>)	5	42	bareroot
TOTAL		210	
PLANT TOTAL		278	

** The total number of shrubs was determined based on the square footage divided by 25 square feet for the proposed 5-foot spacing. The number of trees represents 2/3's of the required number based also on the square footage divided by 100 square feet for the proposed 10-foot spacing. The tree total was reduced because there are existing trees. The shrub total was not reduced in order to combat the recovery of blackberry in the mitigation area. Some of the shrubs and trees will be planted in the area between the mitigation area and trail if there appears to be overcrowding in the planting area.

Planting Specifications

1. Plant the specified trees and shrubs in the fall (October-November) or early spring (March-April) at the spacing listed. The plants will be installed somewhat irregularly and in groups of like species to create heterogeneity in the density and appearance of the mitigation areas, but with enough space between each group to allow for maintenance of invasive species. Install plants with a tree shovel or comparable tool.
2. Place the bare-root species in the planting holes so that their roots are able to extend down entirely and do not bend upward or circle inside the hole.
3. Position the root crowns so that they are at or slightly above the level of the surrounding soil.
4. Firmly compact the soil around the planted species to eliminate air spaces.
5. Install anti-herbivory devices, such as seedling protection tubes or mesh protection netting, around the stems of planted species as appropriate. Secure with stakes.
6. Irrigate all newly installed plants as site and weather conditions warrant.

MITIGATION PLAN SEQUENCING

The mitigation plan can be implemented at any time because mitigation is proposed offsite and will not be negatively impacted by onsite development activities. However, the buffer planting plan should be conducted following construction of the proposed trail and in conjunction with the planting proposed within the Lemolo Creek buffer. The following sequence is proposed for implementation of the mitigation plan should the project begin construction activities this year.

- **Mowing and Invasive Removal Activities-July to October 2017**
 - Mark the limits of the proposed mitigation area prior to removal of blackberry thickets. Clearly mark the onsite buffer edge with orange construction fencing or similar fencing to demarcate the areas to remain undisturbed during construction activities.
 - Identify the appropriate invasive plan removal techniques based on conditions at the time of implementation.

- Remove fence along north property line during invasive removal activities.
- **Planting Activities-October 2017 to March 2018**
 - Plant installation will take place during the first winter after blackberry has been removed so that they are in the ground prior to the start of the growing season.
 - Install fence along edge of the buffer following plant installation.
 - Prepare as-built report following full implementation of the mitigation plan to document any changes to the clearing, grading, and/or planting activities.

MAINTENANCE

Maintenance of the mitigation area is a 5-year process and will involve removal of persisting invasive plant species in addition to watering, fertilizing, and re-installing failed native species as necessary. Maintenance will include the following activities when necessary:

1. Remove and control non-native vegetation around all newly installed plants a minimum of three times during the growing season in each of the monitoring years following implementation in order to meet performance standards.
2. Fertilize planted species as necessary.
3. Replace dead or failed plants as described for the original installation to meet the minimum annual performance standards.

If the mitigation area is failing or the performance criteria are not met during monitoring years, steps will be taken to rectify the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

1. Identify the cause(s) of the failure or potential failure.
2. Identify the extent of the failure or potential failure.
3. Implement corrective actions such as irrigating, fertilizing, and/or replanting.
4. Document the activities and include this data in the annual monitoring and maintenance reports.
5. In the event that a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
6. Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

MONITORING PLAN

The wetland mitigation will be monitored annually for a 7-year period following project construction. Monitoring will take place in Years 1, 2, 3, 5, and 7. Monitoring reports will be submitted to the City of Poulsbo Planning Department by December 31 of each monitored year. The goal of monitoring is to determine if the previously stated performance standards are being met. The mitigation area will be monitored once late in the growing season, preferably during the same two-week period each year to better compare the data.

During preparation of the as-built report, monitoring units will be selected in the mitigation area and permanently marked with metal posts. Two to three monitoring units will be established in the enhanced wetland and buffer areas. Monitoring unit locations will be indicated on the as-built drawing and included in the annual monitoring reports. Baseline data and photos will be taken of each monitoring unit to document as-built conditions for use in the follow-up monitoring reports.

VEGETATION

Vegetative monitoring will document the development of the forested and shrub layers in the enhanced wetland and buffer areas. The following information will be included at each monitoring unit:

- Percent cover and frequency of herbaceous species (3.28 feet quadrat)
- Percent cover and frequency of shrub species (30-foot radius)
- Percent cover and frequency of any tree species (30-foot radius)
- Species composition of herbs, shrubs, and trees, including non-native, invasive species
- Percent cover of over-story
- Photo documentation of vegetative changes over time

FAUNA

General observations will be recorded and photographs will be taken of wildlife during site visits to the mitigation areas. Observations of insects and other invertebrates, amphibians, reptiles, birds, and mammals will be recorded and documented in the annual monitoring reports. Use of the onsite mitigation area by any priority species will also be noted.

MONITORING REPORT CONTENTS

The annual monitoring reports will contain at least the following:

- Location map and as-built drawing.
- Historic description of project, including dates of plant installation, current year of monitoring, and restatement of mitigation goals, objectives, and performance standards.
- Description of monitoring methods.
- Documentation of plant cover and overall development of the plant communities.
- Assessment of non-native, invasive plant species and recommendations for management.
- Assessment of buffer conditions, e.g. surrounding land use, use by humans, and use by wild and domestic animals.
- Observations of wildlife, including, amphibians, invertebrates, reptiles, birds, and mammals.
- Photographs from permanent photo points and monitoring units.
- Summary of maintenance and contingency measures proposed for the next season and completed for the past season.

LONG TERM MANAGEMENT PLAN

The wetland and buffer mitigation area will be maintained over the five-year monitoring period to keep the invasive cover low in order to establish the forested conditions in the mitigation area. A fence will be installed at the edge of the entire buffer and signs will be posted to identify the critical area that requires protection. The wetland, trail, and detention facility on the Mountain Aire project site are under city ownership so will remain as they existing in perpetuity.

CONTINGENCY PLAN

If the performance standards for the wetland mitigation plan are not met by the 5th year of monitoring, a contingency plan will be developed and implemented. All contingency actions will be undertaken only after consulting and gaining approval from the regulatory permitting agencies that approved this plan. The contingency plan will describe (1) the causes of failure, (2) proposed contingency actions (listed below), (3) time-frame for completing contingency actions, and (4) whether additional maintenance and monitoring is necessary. The proposed contingency actions are as follows:

- Plant cover. If plant cover is determined to be below the proposed standard of that year, plantings may be added to bring the cover up to the proposed standard.
- Non-native invasive weeds. Infestations of non-native invasive weeds will be removed prior to planting through hand removal where needed. Re-emergence of the infestations will be dealt with during routine maintenance. If invasive cover is above 10 percent, maintenance will occur more often until the invasive cover is below 10percent.

The above actions assume that the reasons for failure to achieve the stated performance standards for cover are within the control of the land owner or assignee. If natural disasters such as ice storms or fire impact the mitigation area, appropriate consideration will be taken to determine the limit of responsibility.

REFERENCES

- Cowardin, L.M., C. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-78/31. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington D.C.
- Ecological Land Services, Inc. 2016. *Wetland boundary verification and categorization for the Blue Heron Preliminary Plat, parcel numbers 242601-4-003-2006, 242601-4-033-2000, and 242601-4-034-2009, located on Heron Pond Lane in Poulsbo, Washington*.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1. U.S. Army Corps of Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Hruby, T. August 2014. *Washington State Wetland Rating System for Western Washington, 2014 Update*. Washington State Department of Ecology Publication #14-06-029. Olympia, Washington. Effective January 1, 2015.
- Poulsbo Municipal Code. 2007. *Chapter 16.20 Critical Areas, Article II Wetlands*.
- U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. *Wetland Mitigation Guidance in Washington State- Part 1: Agency Policy and Guidelines (Version 1) and Part 2: Developing Mitigation Plans (Version 1)*. Washington State Department of Ecology Publication # 06-06-011a. Olympia, Washington.

FIGURES AND PHOTOPLATES

6/22/2017 3:11 PM \\ecoser2\company\EL\SI\WA\Kitsap\1648-08-figures\1648.08-figures\1648.08_MT.dwg Jack

WASHINGTON



47.7284° Latitude
-122.6135° Longitude

LOCATION MAP

NOTE:
USGS topographic quadrangle map reproduced using
MAPTECH Inc., Terrain Navigator Pro software.

PROJECT VICINITY MAP

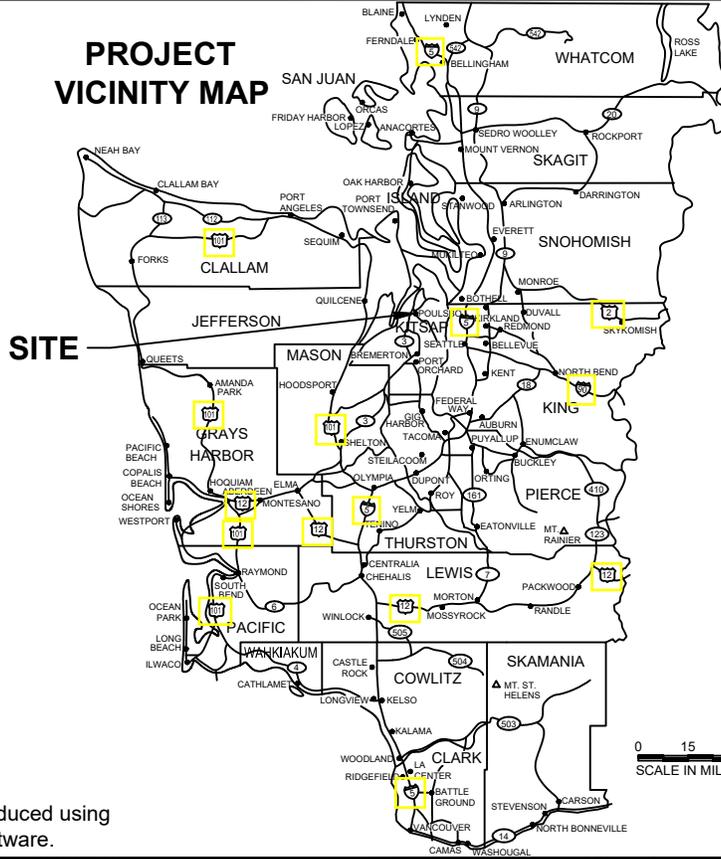
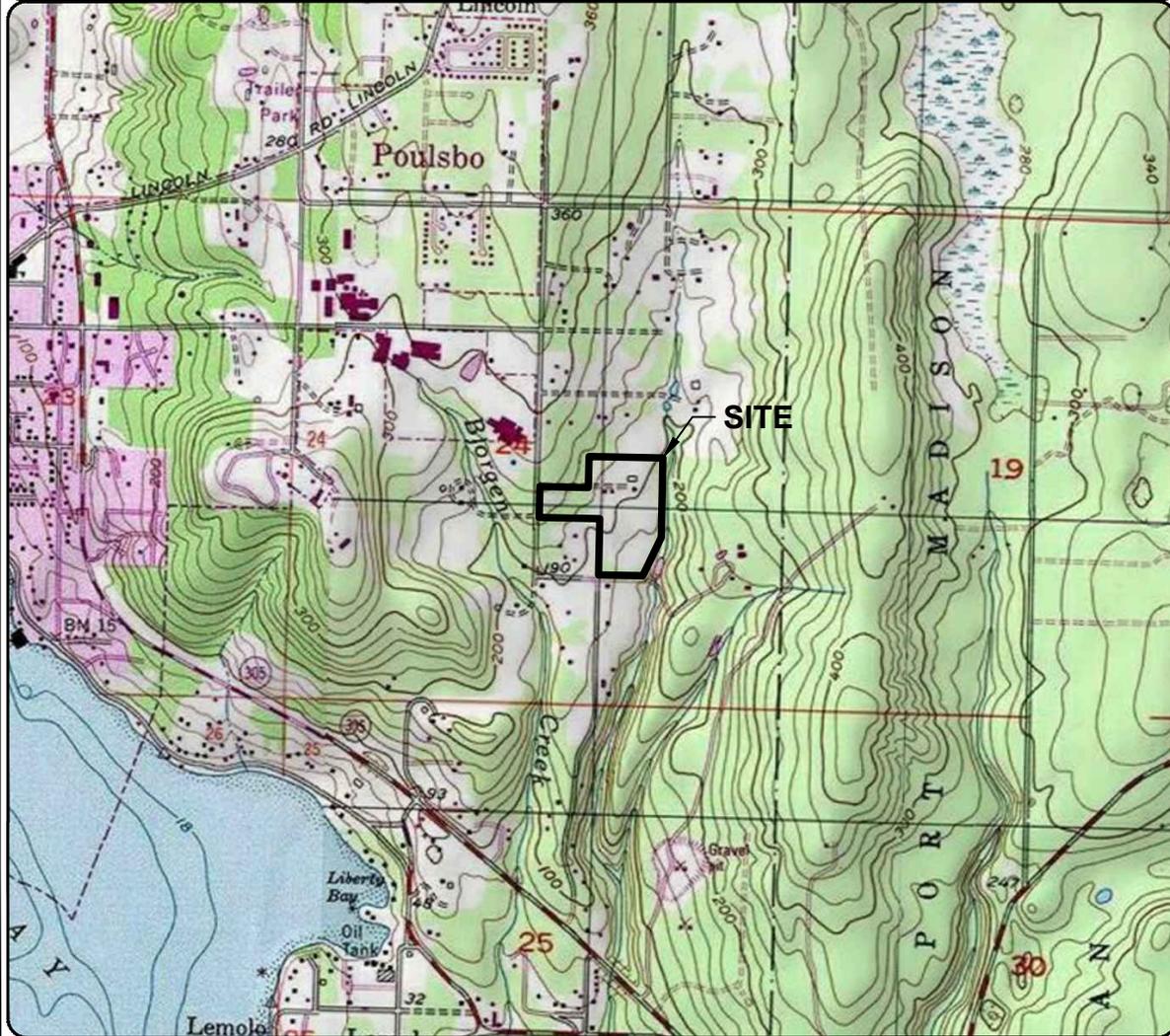
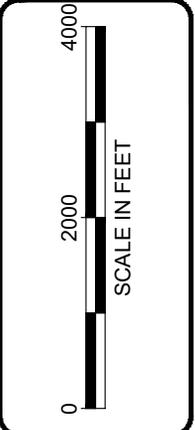


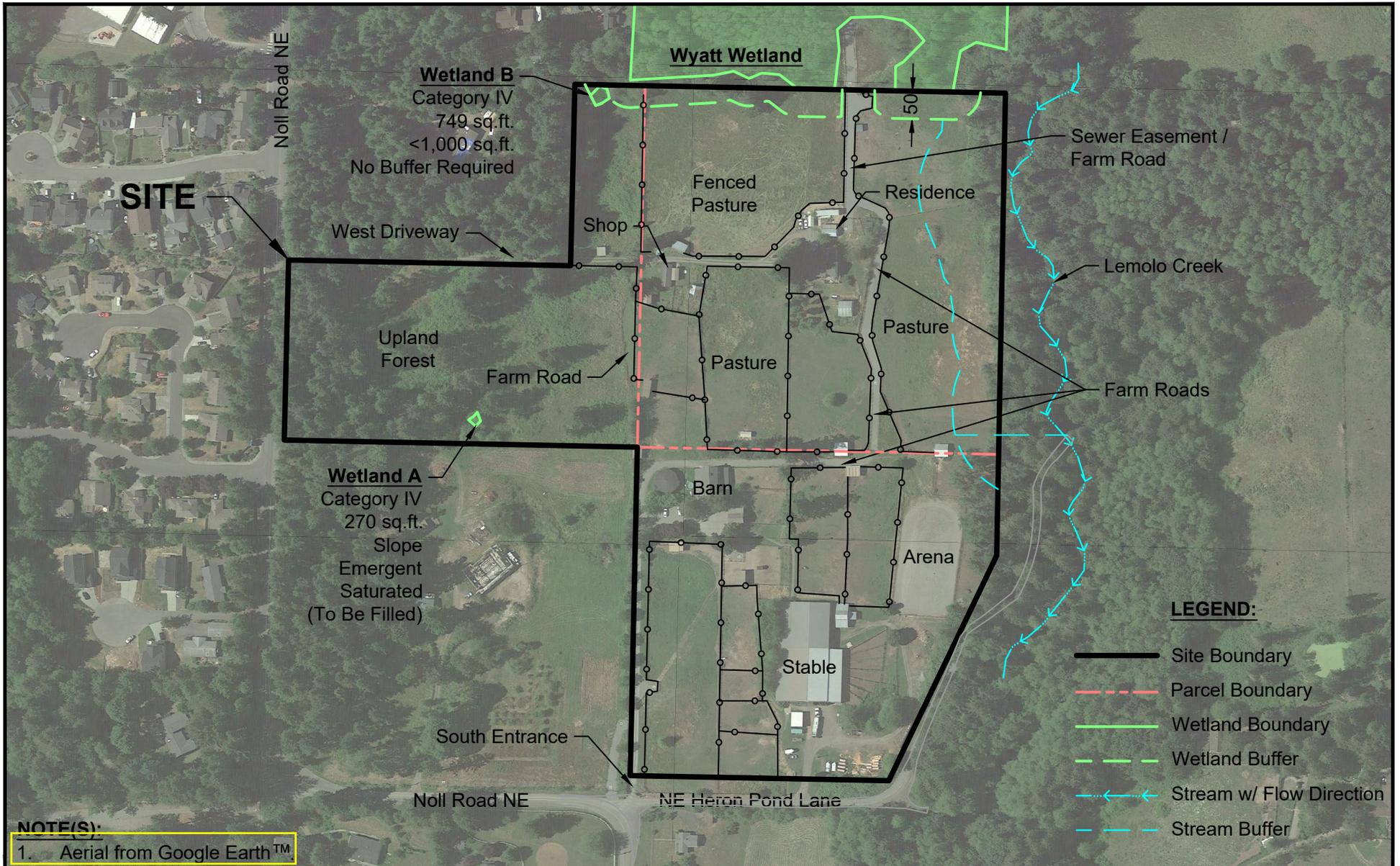
Figure 1

VICINITY MAP
Blue Heron Mitigation
Quadrant Homes
Poulsbo, Kitsap County, WA
Section 24, Township 26N, Range 1E, W.M.

DATE: 6/22/17
DWN: JLL
REQ. BY: LW
PRJ. MGR: JB
CHK:
PROJECT NO:
1648.08

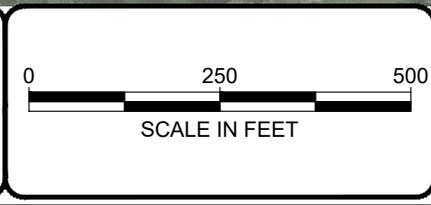
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com





NOTE(S):

1. Aerial from Google Earth™

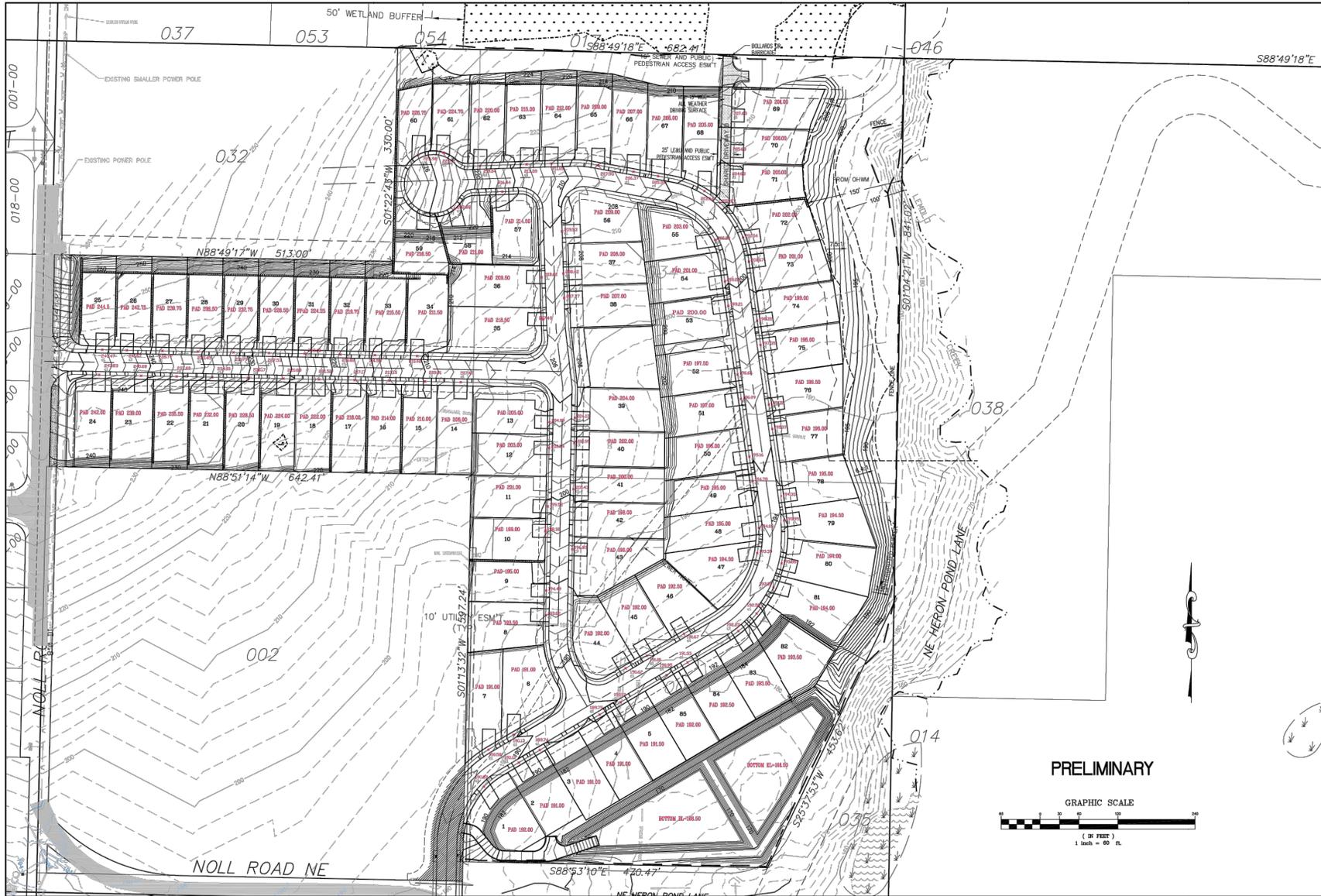


Ecological Land Services

1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371
 Fax: (360) 414-9305
 www.eco-land.com

DATE: 6/22/17
 DWN: JLL
 REQ. BY:
 PRJ. MGR: JB
 CHK:
 PROJECT NO:
 1648.08

Figure 1
 EXISTING CONDITIONS
 Preliminary Plat of Blue Heron Mitigation
 Quadrant Homes
 Poulsbo, Kitsap County, WA
 Section 24, Township 26N, Range 1E, W.M.



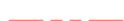
NOT TO SCALE

1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371
 Fax: (360) 414-9305
 www.eco-land.com

DATE: 6/22/17
 DWN: JLL
 REQ. BY: LW
 PRJ. MGR: JB
 CHK:
 PROJECT NO:
 1648.08

Figure 3
 SITE PLAN
 Blue Heron Mitigation
 Quadrant Homes
 Poulsbo, Kitsap County, WA
 Section 24, Township 26N, Range 1E, W.M.

LEGEND:

-  Site Boundary
-  Property Boundary
-  Wetland Boundary
-  Wetland Buffer
-  Stream with Flow Direction
-  Stream Buffer
-  Existing Fences

Wetland B
 Category IV
 749 sq.ft.
 <1,000 sq.ft.
 No Buffer Required

Wetland A
 Category IV
 270 sq.ft.
 Slope
 Emergent
 Saturated
 (To Be Filled)

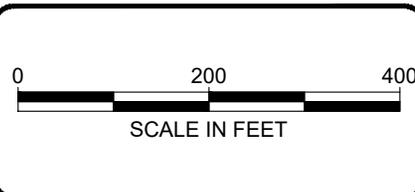
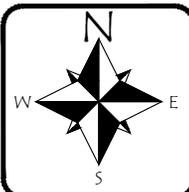
Wyatt Wetland

Wetland Mitigation Area (Enhancement: 6,182 sq.ft.)
 Remove Dense Blackberry &
 Install 226 Native Trees & Shrubs
 (See Figure 5)

Buffer Mitigation Area
 (6,839 sq.ft.)
 Remove Invasives & Install
 278 Native Trees & Shrubs
 (See Figure 5)

Lemolo Creek

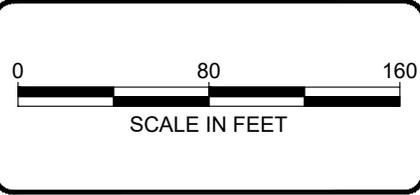
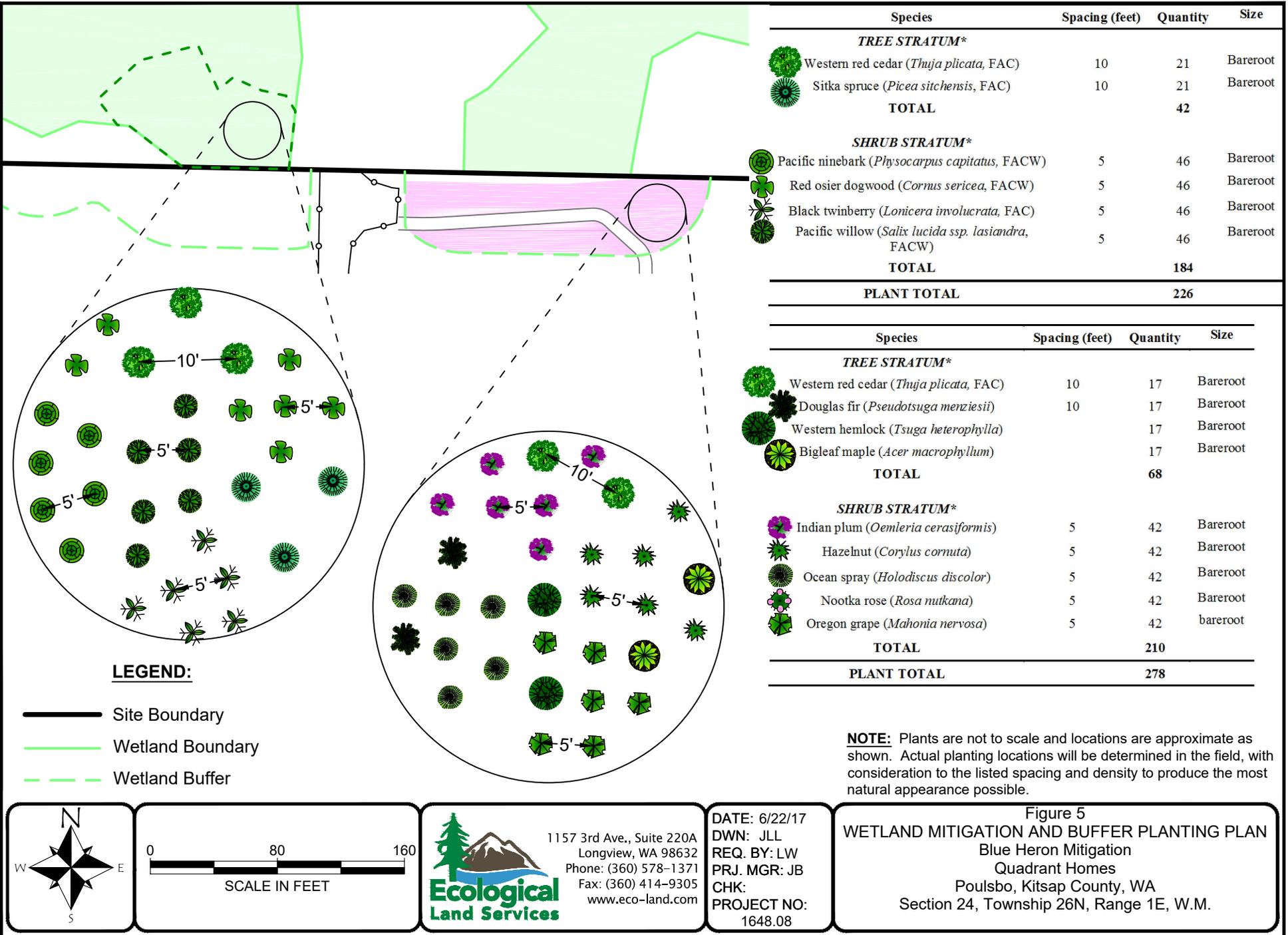
Category IV - 270 sq.ft. Impact			
Ratio	Required	Proposed	Resulting Ratio
6:1 Enhancement	1,620 sq.ft.	6,182 sq.ft.	23:1




1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371
 Fax: (360) 414-9305
 www.eco-land.com

DATE: 6/22/17
 DWN: JLL
 REQ. BY: LW
 PRJ. MGR: JB
 CHK:
 PROJECT NO:
 1648.08

Figure 4
WETLAND MITIGATION OVERVIEW
 Blue Heron Mitigation
 Quadrant Homes
 Poulsbo, Kitsap County, WA
 Section 24, Township 26N, Range 1E, W.M.



1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371
 Fax: (360) 414-9305
 www.eco-land.com

DATE: 6/22/17
 DWN: JLL
 REQ. BY: LW
 PRJ. MGR: JB
 CHK:
 PROJECT NO:
 1648.08

Figure 5
WETLAND MITIGATION AND BUFFER PLANTING PLAN
 Blue Heron Mitigation
 Quadrant Homes
 Poulsbo, Kitsap County, WA
 Section 24, Township 26N, Range 1E, W.M.



Photo 1 was taken from south entrance to the Blue Heron Plat at Noll Road. This driveway leads to the stables and barns of the Blue Heron Farms.



Photo 2 was taken from the same location as Photo 1 and looks northeasterly across the south end of the Blue Heron Farms property. An additional stable and the southern pastures are visible in this photo (beyond the fence).



Photo 3 was taken from the western entrance to the Blue Heron Plat. This driveway runs along the north edge of the western extension of the property and leads to an existing residence. The area along the driveway is dominated by upland forest that slopes gradually down to the center of the properties.



1157 3rd Ave., Suite 220A
Longview, WA 98632
(360) 578-1371
Fax: (360) 414-9305

DATE: 5/23/17
DWN: JB
PRJ. MGR JB
PROJ.#: 1648.08

Photoplate 1
Project Name: Blue Heron
Mitigation Plan
Client: The Quadrant
Corporation
Kitsap County, Washington



Photo 4 was taken from along the driveway that leads to the single family residence on the north half of the Blue Heron Plat properties. It is the same driveway pictured in Photo 3.



Photo 5 was taken from the same location as Photo 4 and looks southeasterly across the western extent of the pastures that are currently grazed by horses. This area of the pasture contains dense blackberry thickets indicating less grazing is occurring.



Photo 6 was taken from the driveway pictured in Photos 3, 4, and 5 as viewed from inside the automatic gate. This photo looks westerly back along the driveway.



1157 3rd Ave., Suite 220A
 Longview, WA 98632
 (360) 578-1371
 Fax: (360) 414-9305

DATE: 5/23/17
 DWN: JB
 PRJ. MGR JB
 PROJ.#: 1648.08

Photoplate 2
 Project Name: Blue Heron
 Mitigation Plan
 Client: The Quadrant
 Corporation
 Kitsap County, Washington



Photo 7 was taken from the start of the northern pastures and paddocks of Blue Heron Farms, which is basically at the end of the entrance driveway pictured in Photo 1.



Photo 8 was taken from the same location as Photo 7 and looks easterly toward the barn, which is also situated at the end of the southern entrance (Photo 1). The driveway also leads to a series of road that access different portions of the farm.



Photo 9 was taken from the south end of the western extension of the farm properties. It looks north from the fence toward the western pasture area with Wetland A in the foreground. This wetland will be filled to accommodate development of these properties. As this photo indicates, the wetland is almost indistinguishable from the upland pasture area so it functions as part of the pasture.



1157 3rd Ave., Suite 220A
Longview, WA 98632
(360) 578-1371
Fax: (360) 414-9305

DATE: 5/23/17
DWN: JB
PRJ. MGR JB
PROJ.#: 1648.08

Photoplate 3
Project Name: Blue Heron
Mitigation Plan
Client: The Quadrant
Corporation
Kitsap County, Washington



Photo 10 was taken from the same location as Photo 9 (Photoplate 3) and it looks easterly along the southern fence of the western portion of the farm. The barn is visible in the background. Wetland A, which will be filled, is to the left of the photo.



Photo 11 was taken from within the Wyatt Wetland looking southeasterly toward the proposed mitigation area. The blackberry thickets visible in this photo will be removed and replaced with native deciduous shrubs and coniferous trees.



Photo 12 was taken from the same location as Photo 11 and looks southerly across the western portion of the mitigation area.



1157 3rd Ave., Suite 220A
Longview, WA 98632
(360) 578-1371
Fax: (360) 414-9305

DATE: 5/23/17
DWN: JB
PRJ. MGR JB
PROJ.#: 1648.08

Photoplate 4
Project Name: Blue Heron
Mitigation Plan
Client: The Quadrant
Corporation
Kitsap County, Washington



Photo 13 was taken from the north end of the proposed mitigation area in the Wyatt Wetland. The flag near the middle marks the north end of the proposed mitigation area. No additional enhancement is proposed within the interior of the wetland to avoid impacts of trampling of vegetation and mucking up of the soil.



Photo 14 was taken from the public trail just north of the proposed mitigation area. It is intended to show the transition from the forested area (right half) to the dense blackberry thickets that have formed in the southeastern portion of the wetland (left half).



Photo 15 was taken from the public trail near the middle of the proposed mitigation area. It provides a close-up view of the area on the right half of Photo 14.



1157 3rd Ave., Suite 220A
Longview, WA 98632
(360) 578-1371
Fax: (360) 414-9305

DATE: 5/23/17
DWN: JB
PRJ. MGR JB
PROJ.#: 1648.08

Photoplate 5
Project Name: Blue Heron
Mitigation Plan
Client: The Quadrant
Corporation
Kitsap County, Washington



Photo 16 was taken from the north line of the Blue Heron Plat. It looks westerly along the existing fence with the pasture conditions of Blue Heron Farms visible on the left.



Photo 17 was taken from the same location as Photo 16. It looks westerly into the proposed mitigation area and shows one of the denser areas of blackberry that will be removed.



Photo 18 was taken from the same location as Photos 16 and 17. It looks northerly along the public trail (to the right) toward the north end of the proposed mitigation area.



1157 3rd Ave., Suite 220A
 Longview, WA 98632
 (360) 578-1371
 Fax: (360) 414-9305

DATE: 5/23/17
 DWN: JB
 PRJ. MGR JB
 PROJ.#: 1648.08

Photoplate 6
 Project Name: Blue Heron
 Mitigation Plan
 Client: The Quadrant
 Corporation
 Kitsap County, Washington