

LEGAL DESCRIPTION

PARCEL A:
 COMMENCING AT THE SOUTHWEST CORNER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 12, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, IN KING COUNTY, WASHINGTON BEING THE TRUE POINT OF BEGINNING;
 THENCE NORTH 01°24'03" EAST 297.930 FEET;
 THENCE SOUTH 88°23'02" EAST 297.802 FEET;
 THENCE ALONG A CURVE TO THE SOUTH AND EAST HAVING A CENTERLINE RADIAL POINT SOUTH 88°23'02" EAST 145.000 FEET AN ARC DISTANCE OF 47.459 FEET;
 THENCE SOUTH 47°22'09" WEST 107.279 FEET;
 THENCE SOUTH 73°55'26" EAST 59.680 FEET;
 THENCE SOUTH 80°07'26" EAST 78.810 FEET;
 THENCE SOUTH 06°36'26" EAST 42.170 FEET;
 THENCE SOUTH 10°09'34" WEST 70.288 FEET;
 THENCE SOUTH 50°24'09" WEST 76.315 FEET;
 THENCE NORTH 88°21'51" WEST 302.405 FEET TO THE TRUE POINT OF BEGINNING;
 EXCEPT THAT PORTION THEREOF LYING WESTERLY AND NORTHWESTERLY OF THE FOLLOWING DESCRIBED LINE: BEGINNING ON THE SOUTH LINE OF GOVERNMENT LOT 3 IN THE SOUTHWEST QUARTER OF SAID SECTION 12 SOUTH 88°21'51" EAST 161 FEET FROM THE SOUTHWEST CORNER THEREOF, SAID POINT BEING HERINAFTER REFERRED TO AS POINT 'A';
 THENCE CONTINUING SOUTH 88°21'51" EAST, ALONG SAID SOUTH LINE, 141.41 FEET;
 THENCE NORTH 50°24'09" EAST 76.32 FEET;
 THENCE NORTH 10°09'34" EAST 70.20 FEET;
 THENCE NORTH 06°36'26" WEST 42.17 FEET;
 THENCE NORTH 80°07'26" WEST 78.81 FEET;
 THENCE NORTH 73°55'26" WEST 59.68 FEET;
 THENCE NORTH 47°22'09" EAST 107.28 FEET TO THE INTERSECTION OF A CURVE TO THE RIGHT, THENCE NORTHWESTERLY ALONG SAID CURVE AN ARC DISTANCE OF 25.37 FEET TO THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE;
 THENCE SOUTH 47°22'09" WEST 48.18 FEET;
 THENCE SOUTH 01°24'03" WEST 108.09 FEET TO THE ABOVE REFERENCED POINT 'A', AND THE TERMINUS OF THE HEREIN DESCRIBED LINE.

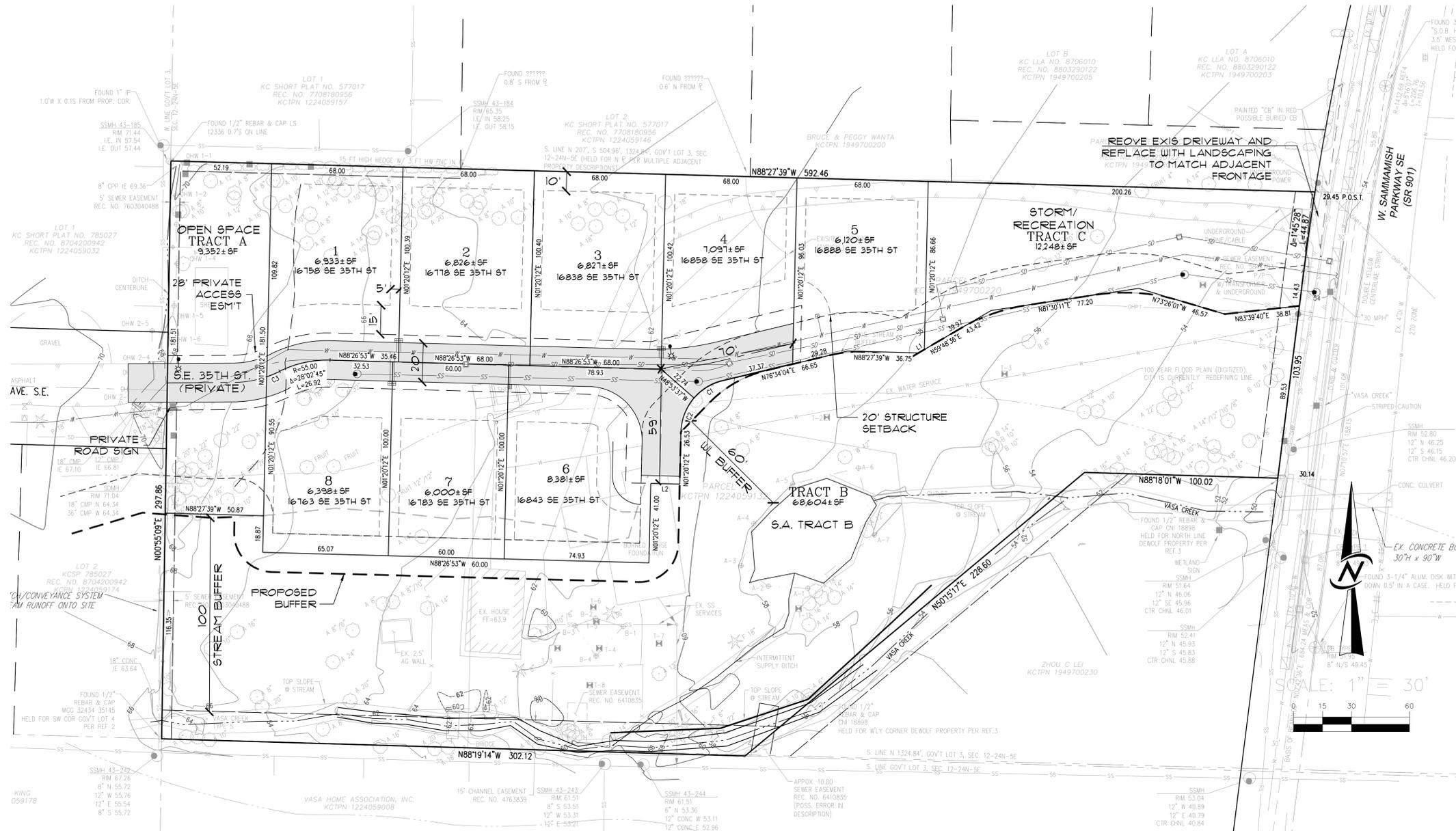
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PARCEL C:
 THAT PORTION OF THE SOUTH 297.96 FEET OF THE NORTH 1324.84 FEET OF GOVERNMENT LOT 3, SECTION 12, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, IN KING COUNTY, WASHINGTON, LYING WESTERLY OF LAKE SAMMAMISH SHORELINE ROAD, DESCRIBED AS FOLLOWS:
 COMMENCING AT THE NORTHWEST CORNER OF SAID SOUTH 297.96 FEET;
 THENCE SOUTH 88°23'02" EAST ALONG THE NORTH LINE THEREOF 297.802 FEET TO THE TRUE POINT OF BEGINNING;
 THENCE ALONG THE ARC OF A CURVE TO THE LEFT, THE CENTER OF WHICH BEARS SOUTH 88°23'02" EAST 45.000 FEET, AN ARC DISTANCE OF 47.459 FEET;
 THENCE SOUTH 47°22'09" WEST 107.279 FEET;
 THENCE SOUTH 73°55'26" EAST 59.680 FEET;
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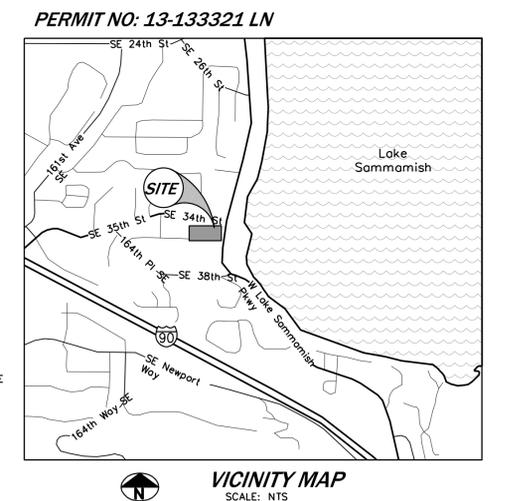
NOTES

- ALL TITLE INFORMATION SHOWN ON THIS MAP HAS BEEN EXTRACTED FROM CHICAGO TITLE INSURANCE COMPANY COMMITMENT NO. 1370577, DATED AUGUST 27, 2013. IN PREPARING THIS MAP, CORE DESIGN, INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS CORE DESIGN, INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND DISCLOSED BY THE REFERENCED CHICAGO TITLE INSURANCE COMPANY COMMITMENT. CORE DESIGN, INC. HAS RELIED WHOLLY ON CHICAGO TITLE INSURANCE COMPANY'S REPRESENTATIONS OF THE TITLE'S CONDITION TO PREPARE THIS SURVEY AND THEREFORE CORE DESIGN, INC. QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.
- THIS SURVEY REPRESENTS VISIBLE PHYSICAL IMPROVEMENT CONDITIONS EXISTING ON OCTOBER 11, 2013. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN OCTOBER, 2013.
- PROPERTY AREA = 144,793± SQUARE FEET (3.323± ACRES).
- ALL DISTANCES ARE IN FEET.
- THIS IS A FIELD TRAVERSE SURVEY. A SOKKIA FIVE SECOND COMBINED ELECTRONIC TOTAL STATION WAS USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN WAC 332-130-090. ALL MEASURING INSTRUMENTS AND EQUIPMENT ARE MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE UTILITIES WITH EVIDENCE OF THEIR INSTALLATION VISIBLE AT GROUND SURFACE ARE SHOWN HEREON. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN SURFACE UTILITY LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. SOME UNDERGROUND LOCATIONS SHOWN HEREON MAY HAVE BEEN TAKEN FROM PUBLIC RECORDS. CORE DESIGN ASSUMES NO LIABILITY FOR THE ACCURACY OF PUBLIC RECORDS.

LINE & CURVE TABLE			
TAG #	RADIUS	BEARING/DELTA	LENGTH
C1	28.00	75°13'51"	36.76
C2	28.00	75°13'51"	36.76
C3	55.00	7°36'01"	7.30
L1		N59°48'36"E	3.44
L2		N88°39'48"W	15.00



STATISTICAL INFORMATION SHEET	
1. Land Use Zone	R-5
2. Site Area, in square feet and acres	145,914 (3.33ac.)
3. Site Data Summary	Required/Allowed Proposed
a. Number of dwelling units per acre	5 2.4
b. Total number of dwelling units	9.78 8
c. Area of each proposed structure	35% <=35%
d. Floor Area Ratio (F.A.R.)	na na
e. Area of proposed building by use	na na
4. Percentage of lot coverage	35 <=35
5. Amount of impervious area in square feet	2200
6. Building height: Measured from avg. existing grade in Shoreline & Transition Areas; measured from average finished grade for all other areas.	35' <=35'
7. Parking: Total # of spaces for the project.	18 32
a. # of spaces by each proposed use	18 32
b. The percentage of compact stalls	na na
c. The percentage of handicapped stalls	na na
8. Area of Proposed Landscaping or mitigation	1600sf +77500sf
a. Adjacent to right-of-way	na na
b. Adjacent to interior property lines	na na
c. Within the parking area	324in 1036 in
d. Significant Trees to be retained	



OWNER
 ROBBI MADGE BASKIN
 3427 WEST LAKE SAMMAMISH PKWY SE
 BELLEVUE, WA 98008

APPLICANT
 JOHN F. BUCHAN HOMES
 2821 NORTHPUR WAY, SUITE 100
 BELLEVUE, WA 98004
 (425) 827-2266
 CONTACT: MIKE DELLE

ENGINEER/SURVEYOR/PLANNER
 CORE DESIGN, INC
 14711 NE 29TH PLACE, SUITE 101
 BELLEVUE, WA 98007
 (425) 885-7877
 CONTACT: JAMES A. OLSEN, P.E.
 KEN W. SHIPLEY, P.L.S.
 LAFE HERMANSEN

DENSITY CALCULATIONS
 GROSS SITE AREA: 145,194 S.F. (3.33± AC.)
 CRIT AREA/BUFF. AREA: 93,092 S.F. (2.13± AC.)
 BUILDABLE AREA: 52,102 S.F. (1.20± AC.)
 LOTS ALLOWED: 10 DU
 LOTS PROPOSED: 8 DU

SETBACKS

CODE	PROPOSED	MODIFIED
FRONT	20'	15'
SIDE COMBINED	15'	10' (5' PER LOT)
REAR	20'	10'

SITE STATISTICS
 LAND USE CODE R-5.0
 SITE AREA 145,194 S.F.
 CODE REQ'D 4,960 S.F.
 PROPOSED 6,000± S.F.
 TOTAL NUMBER OF DWELLING UNITS 35
 MAXIMUM BUILDING HEIGHT 35'
 MAXIMUM BUILDING COVERAGE 50%
 MAXIMUM IMPERVIOUS SURFACE 50%
 MINIMUM LANDSCAPE PERCENTAGE OF FRONT YARD SETBACK 50%

(DU/ACRE)/(BUILDABLE AREA IN ACRES) + (DU/ACRE)/(TOTAL CRITICAL AREA AND CRITICAL AREA BUFFER IN ACRES)(DEVELOPMENT FACTOR) = MAXIMUM DWELLING UNIT POTENTIAL
 (5)(12) + (5)(2)(.36) = 9.78

TREE TABLE

Significant Trees (8" or >)	Number	Diameter (in.)
Significant Trees (<8")	8	
Total Trees	160	2162
DIA Required saved (15%)		324
DIA proposed saved		1036

TREE LEGEND

Species	DIA. (in.)	Saved (in.)
ALDER	1764	716
BIRCH	146	106
CEDAR	18	
FIR	162	172
FRUIT	72	
WILLOW	42	42
Total DIA. Saved		1036

LEGEND

(Symbol)	FIRE HYDRANT	(Symbol)	OVERHEAD POWER
(Symbol)	STREET LIGHT	(Symbol)	SANITARY SEWER MAINLINE
(Symbol)	WATER VALVE	(Symbol)	STORM DRAIN MAINLINE
(Symbol)	MAIL BOX	(Symbol)	WATER MAINLINE
(Symbol)	GUY ANCHOR	(Symbol)	EXISTING TREE
(Symbol)	SANITARY SEWER MANHOLE		
(Symbol)	SIGN		
(Symbol)	POWER VAULT		
(Symbol)	HORIZONTAL BOARD FENCE		
(Symbol)	ROCKERY		
(Symbol)	SPLASH BLOCKS		

GRID NO.: M-12
 UTILITY NO.: M-12
 SITE ADDRESS: 3427 W LAKE SAMMAMISH PKWY.

DATE: OCTOBER 2013
 DESIGNED: [Signature]
 DRAWN: [Signature]
 APPROVED: [Signature]
 PROJECT NUMBER: 13075

CORE DESIGN
 ENGINEERING • PLANNING • SURVEYING

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VASA HOME ASSOCIATION, INC.
 KCTPN 1224059008

PERMIT NO: 13-133321 LN

Site Plan B
VASA SHORT PLAT
JOHN F. BUCHAN HOMES
 2821 NORTHPUR WAY, SUITE 100
 BELLEVUE, WA 98004

LAFE B. HERMANSEN
 PROJECT MANAGER

SHEET 1 OF 4

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AOA

Environmental
Planning &
Landscape
Architecture



HABITAT ASSESSMENT

VASA CREEK SHORT PLAT BELLEVUE, WASHINGTON (File 13-133321-LN)

Prepared For:

John F. Buchan Homes
2821 Northup Way, Suite 100
Bellevue, WA 98004

February 28, 2014

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**HABITAT ASSESSMENT
For Proposed
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON**

February 28, 2014

1.0 INTRODUCTION

This report is the result of wildlife habitat assessment on an approximately 3.33-acre site located adjacent Vasa Creek in the City of Bellevue, Washington. The site is the location of a proposed 8-lot single-family residential Short Plat (**Figures 1 through 4**).

The primary purpose of this report is to: 1) describe the wildlife habitat on the property and 2) identify any potential impacts to the 23 species of local importance as designated in LUC 20.25H.150.

2.0 GENERAL PROPERTY DESCRIPTION AND LAND USE

The project site consists of three tax parcels (Parcels 122405-9037, 122405-9132, and 199470-0220) located at 3423, 3425, 3427 W. Lake Sammamish Pkwy SE. The property is situated in Section 12, of Township 24 North, Range 05 East, W.M.

The site is currently developed with a single-family residence and several associated outbuildings in the south-central portion of the property. A large dilapidated shed is located in the northwestern portion of the site. Existing access to the residence is via a gravel drive off West Lake Sammamish Parkway SE, which borders the site's eastern boundary. Vasa Creek flows from west to east along the southern boundary of the property. A historically excavated pond (Wetland A) is located to the east of the existing residence. The remainder of the site consists of a mix of trees and brush, with dense Himalayan blackberry (*Rubus armeniacus*) dominating the understory in places.

Surrounding land use includes single-family residential to the north, west, and east. Vasa Park is located immediately to the south.

3.0 METHODOLOGY

A habitat assessment was conducted by John Altmann on February 20, 2014 and included the general methodology outlined in *Using the Bellevue Urban Wildlife Habitat Functional Assessment Model* (revised February 2010). During this site visit an on-site analysis of vegetation structure and composition was conducted. Observations were also made of the presence of habitat features and the extent of human disturbance. Additional field investigations were conducted on December 12, 2012, August 28, 2013, and October 11, 2013 as part of the critical areas study for the project.

Prior to conducting the habitat assessment, the Washington Department of Fish and Wildlife Priority Habitats and Species database (PHS) was reviewed. Additional background review included available King County sensitive area information (iMAP) and City of Bellevue mapping.

4.0 WILDLIFE HABITAT ASSESSMENT

Based on the habitat classifications outlined in *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil, 2001) the study area would be classified as Urban and Mixed Environs – Medium Density Zone. However, to further classify vegetation on the site plant communities were divided into the following six general habitat types. Representative photographs are included in **Appendix A**.

- 1) Nearly Monotypic Himalayan Blackberry. This habitat type occurs throughout the northeastern portion of the site and consists of dense monotypic Himalayan blackberry (*Rubus armeniacus*) and widely scattered young red alder (*Alnus rubra*) trees. Structural and plant species diversity is low and no significant habitat features were observed.
- 2) Deciduous Lowland Forest – Invasive Dominated Understory. This habitat type is found throughout the western and southeastern portions of the site. Canopy vegetation (open in places) consists almost entirely of black cottonwood (*Populus trichocarpa*) and red alder. Understory vegetation is dominated by dense Himalayan blackberry, but also includes scattered English holly (*Ilex aquifolium*) and Indian plum (*Oemleria cerasiformis*). English ivy (*Hedera helix*) is common within the tree canopy and on the ground. Habitat features such as snags are sparse and are generally limited to small down logs. Also included within this habitat type on the site are very small patches of old pasture in the southeastern portion of the property and a small tributary stream along the western boundary of the site.
- 3) Deciduous Lowland Forest – Native Dominated Understory. This habitat type consists of a small area adjacent Vasa Creek in the southwest corner of the property. Canopy vegetation includes red alder, black cottonwood, and bitter cherry (*Prunus emarginata*). Although English ivy and English holly are present, the understory is dominated by native species including salmonberry (*Rubus spectabilis*), hazelnut (*Corylus cornuta*), red elderberry (*Sambucus racemosa*), and sword fern (*Polystichum munitum*). A few moderately sized snags and down logs were also observed.
- 4) Pond. This habitat type is located within the deciduous forest in the southeast portion of the site and consists of a historically excavated pond. Most of the area consists of seasonal open water with a perimeter of willow (*Salix* sp.), black cottonwood, red alder, and Himalayan blackberry.

- 5) Residential/Developed. This habitat type is located in the central portion of the site and includes the existing residence and associated structures as well as maintained lawn and yard areas.
- 6) Vasa Creek. Vasa creek flows from west to east along the site's southern boundary. On the site the stream flows through deciduous forest with both native understory (Area #3) and non-native understory (Area #2), as well adjacent the existing residence and outbuildings (Area #5).

4.1 Draft Functional Assessment Tool

The project site has a numerical score of 39 based on the City of Bellevue's *Draft Functional Assessment Tool for Upland Habitat (Appendix B)*. In general, sites with scores of 26 to 40 "provide both actual habitat and likely the opportunity for wildlife to use the habitat on the site". The property received high scores for the existing low impervious surfaces and its proximity to Lake Sammamish and Vasa Creek. Limiting factors included a disconnect from other significant habitat areas and a dominance of invasive plant species.

Although Vasa Creek provides a corridor for fish and aquatic wildlife, the project site is otherwise effectively isolated from large habitat patches by the surrounding residential development and roadway network.

4.2 Wildlife Species of Local Importance

Twenty three (23) species have been designated by the City of Bellevue as species of local importance (LUC 20.25H.150). The potential of site utilization by each species is briefly described below:

- Bald eagle (*Haliaeetus leucocephalus*): site not located within Bald Eagle Buffer Management Zone per PHS data and no nest sites observed. Some potential occasional perching opportunity within larger on-site trees possible, but separated from Lake Sammamish by development. Primary Association: no.
- Peregrine falcon (*Falco peregrinus*): generally associated with coastal cliffs and shorelines, but also use large buildings in city center. Use of project site unlikely. Primary Association: no.
- Common Loon (*Gavia immer*): no presence - highly aquatic species associated with large water bodies. Primary Association: no.
- Pileated woodpecker (*Dryocopus pileatus*): Pileated woodpeckers generally inhabit mature and old-growth forests, and second-growth forests with large snags and fallen trees. The range of the species encompasses all of the forested areas of the state. Although typically found in larger forested tracts, they are known to occur in suburban habitats as well. Their key breeding habitat need is the presence of large snags or decaying live trees for nesting,

as this species generally excavates a new nest cavity each year. The breeding and nesting periods of the pileated woodpecker extends from late March to early July. No pileated woodpecker nests or evidence of foraging was observed on the site during the field investigation. The lack of a significant concentration of conifers, large snags or fallen trees limits the potential of this species to utilize the site. Primary Association: no.

- Vaux's swift (*Chaetura vauxi*): Vaux's swifts are strongly associated with old growth and mature forests throughout the state and are highly dependent on large hollow trees and snags for breeding and roosting. Although some limited potential for foraging, unlikely nesting or primary association on the site due to lack of large conifers or snag concentrations. Primary Association: no.
- Merlin (*Falco columbarius*): unlikely presence – generally require coastal or high elevation forests. Primary Association: no.
- Purple martin (*Progne subis*): unlikely presence – generally require cavities near or over permanent water for nesting. Primary Association: no.
- Western grebe (*Aechmophorus occidentalis*): no presence – highly aquatic species associated with large water bodies. Primary Association: no.
- Great blue heron (*Ardea herodias*): potential presence - some limited potential foraging possible within riparian corridor and pond, but no roosts observed on or adjacent site. Primary Association: no.
- Osprey (*Pandion haliaetus*): unlikely presence - perch availability not immediately adjacent large water body. Primary Association: no.
- Green heron (*Butorides striatus*): potential presence – some limited potential foraging possible within riparian corridor and pond. Primary Association: no.
- Red-tailed hawk (*Buteo jamaicensis*): potential utilization of site for occasional perching, although no nests observed and not near significant open expanse. Primary Association: no.
- Western big-eared bat (*Plecotus townsendii*): potential presence, but no known nearby hibernacula, caves, or significant concentration of cavities so not considered a habitat of primary association. Primary Association: no.
- Keen's myotis (*Myotis keenii*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.
- Long-legged myotis (*Myotis volans*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.

- Long-eared myotis (*Myotis evotis*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.
- Oregon spotted frog (*Rana pretiosa*): no presence - believed to be extirpated from nearly all of western Washington and no permanent ponding on the site. Primary Association: no.
- Western toad (*Bufo boreas*): presence possible but no permanent ponding for breeding so not considered habitat of primary association. Primary Association: no.
- Western pond turtle (*Clemmys marmorata*): unlikely presence - no permanent ponding on site and no known nearby populations. Primary Association: no.
- Chinook (*Oncorhynchus tshawytscha*): unlikely presence – not known or likely to occur within Vasa Creek. Primary Association: no.
- Bull trout (*Salvelinus confluentus*): unlikely presence – not known or likely to occur within Vasa Creek. Primary Association: no.
- Coho salmon (*Oncorhynchus kisutch*): presence – known to occur within Vasa Creek. Primary Association: yes.
- River lamprey (*Lampetra ayresii*): unlikely presence – not known or likely to occur within Vasa Creek. Primary Association: no.

Of the 23 species of local importance only the Coho salmon is known to occur within Vasa Creek and has a primary association with habitat on the project site. Although not listed as species of local importance by the City of Bellevue, other priority fish species within Vasa Creek listed by the WDFW include coastal resident cutthroat (*Oncorhynchus darki*) and kokanee (*Oncorhynchus nerka*). No other species of local importance are anticipated to utilize the site on a regular basis.

4.3 Other Wildlife

The project site likely provides habitat for a wide variety of birds and small mammals. Larger mammals are unlikely to utilize the site due to its isolation and disconnect from other significant habitat areas by a network of surrounding residential areas and roadways. A variety of reptiles and amphibians may also utilize the site, especially within the Vasa Creek riparian corridor and in the pond.

5.0 PROPOSED PROJECT

The proposed project consists of the development of an 8-lot residential short plat. Although the majority of the development would occur within the existing developed portion of the site and the adjacent monotypic blackberry area, some development

would also occur with the deciduous forest in the western portion of the property. Recreational and stormwater facilities for the project would be constructed within the monotypic blackberry area in the northeastern portion of the site. No work (except for implementation of the critical area enhancement plan) would occur within the native understory dominated forest, the pond, or the Vasa Creek.

Access to the development would be from SE 35th Street at the west end of the property. Although the project has been designed to avoid impacts to critical areas on the property, the extension of the access road into the site will require a crossing of the Type N stream within the SE 35th Street right-of-way. It is our understanding that a 6-foot span bottomless box culvert as designed by Core Design (see civil drawings) would be installed for the crossing.

Also as part of the proposed project, the 100-foot standard buffer for Vasa Creek would be reduced to a minimum of 78 feet within the existing degraded buffer area in the southwest portion of the site. In addition, a small portion of the 60-foot buffer for Wetland A (i.e., pond) would be reduced to a minimum of 45 feet. These reduced buffer areas currently consist primarily of the existing residence, associated outbuildings, and yard that do not currently provide any significant functions to Vasa Creek or Wetland A.

See the critical area report for a description of all proposed critical area impacts and mitigation associated with the project.

5.1 Wildlife Impacts in General

The proposed development will result in a loss of wildlife habitat area and will likely result in a reduction of some local populations of wildlife (such as shrews and voles) that have small home ranges. Population reductions would occur both as mortality due to a direct result of construction related activities, and as displacement into surrounding habitats. Displaced animals moving into surrounding areas would probably be subjected to high rates of mortality due to predation, accidents, competition, etc.

In addition, although the wildlife species currently utilizing the site are typical of similar habitats within suburban areas of western Washington, the area surrounding the built environment may undergo a shift toward a more urban species composition.

5.2 Impacts to Wildlife Species of Local Importance from Proposed Project

Since no impacts to Vasa Creek or the primary habitat of Coho salmon, kokanee, or coastal resident cutthroat trout would occur as part of the project, there are no anticipated negative impacts to these species from the proposed development.

Implementation of the proposed buffer enhancement plan (see Vegetation Management Plan section below) should provide a net benefit to Coho salmon and the other salmonid species located within Vasa Creek. Native plantings will provide increased shade and long-term large woody debris recruitment. The plantings would

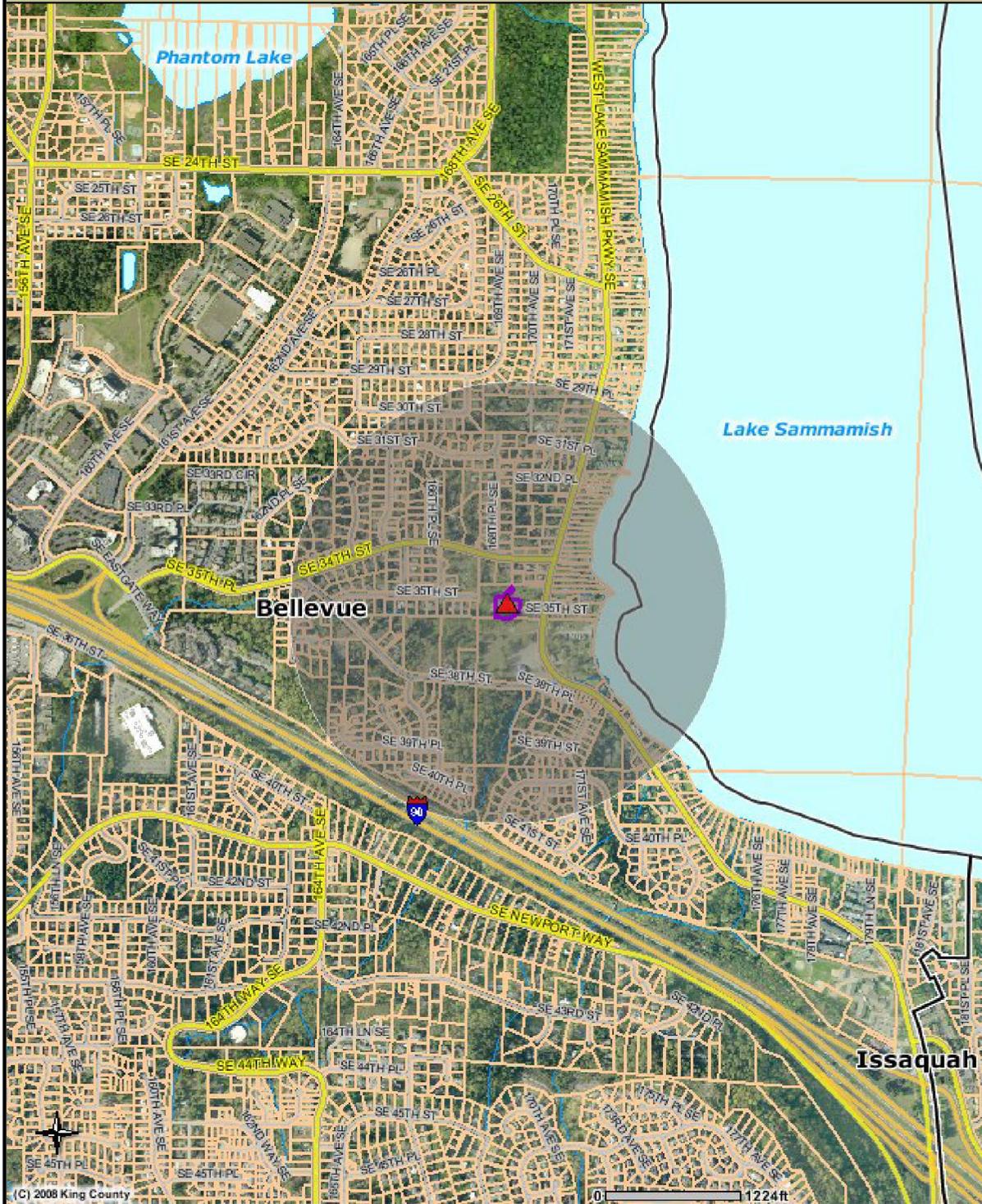
also create habitat for benthic invertebrates, while contributing detritus and other desirable allochthonous inputs into the aquatic environment.

5.3 Vegetation Management Plan

As part of the proposed project, all of the critical area buffers on the site would be enhanced to provide a significant improvement in habitat quality. All existing structures and invasive species would be removed within the buffer and the area planted with a wide variety of native tree and shrub species (see detailed planting plan in critical areas report).

The native plantings would increase the plant species and structural diversity of the buffer while providing a visual and physical screen to Vasa Creek and the other critical areas from the proposed project. Implementation of the buffer replacement and enhancement plan would significantly increase the habitat and protective functions of the buffer over current conditions. To further protect the critical areas, a rail-fence would be installed along the edge of the entire buffer area.

Vasa Creek Short Plat Zone D Habitat Types



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Date: 2/27/2014 Source: King County iMAP - Sensitive Areas (<http://www.metrokc.gov/GIS/iMAP>)

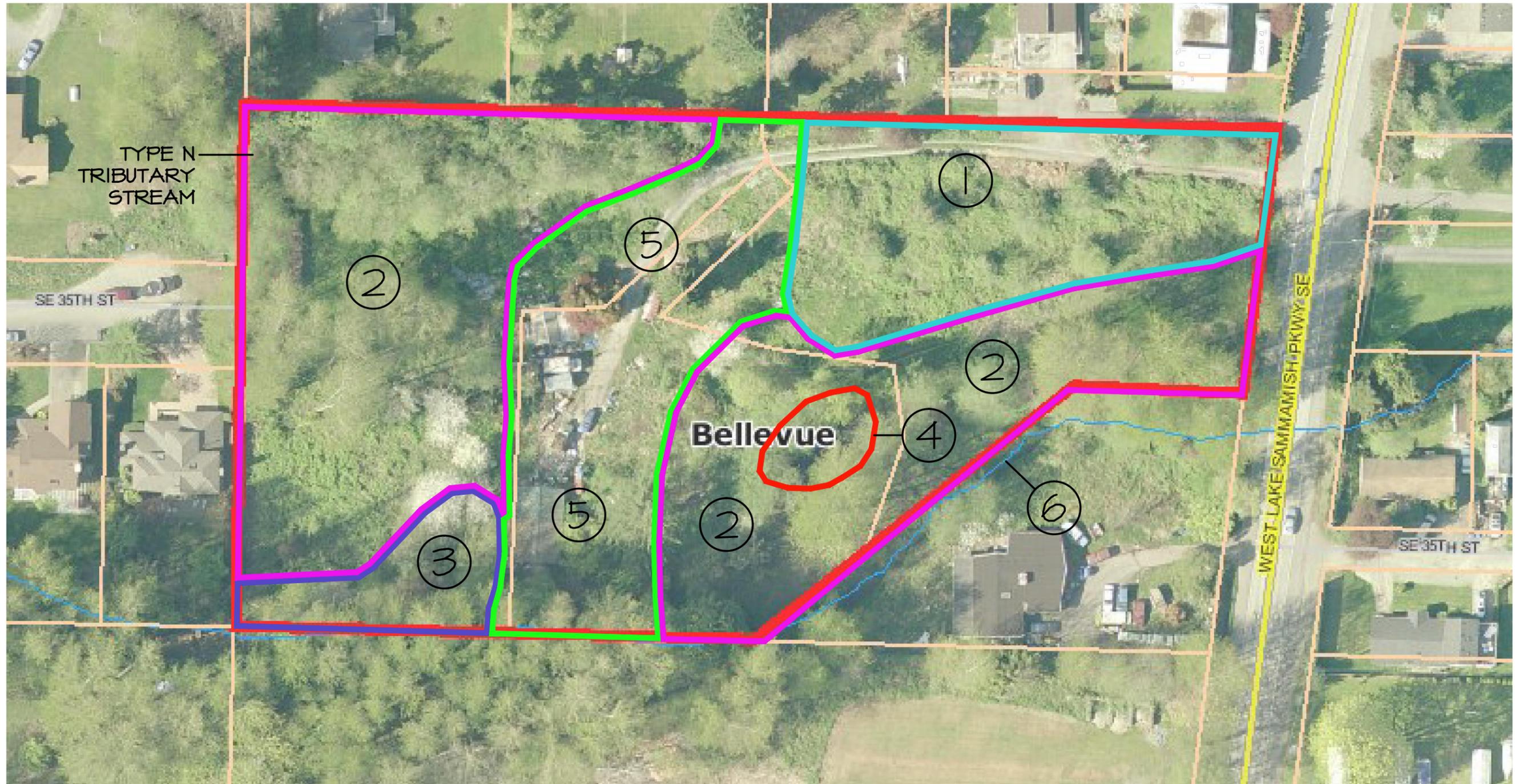
Altmann Oliver Associates, LLC

PO Box 578 Caman, WA 98014 Office (425) 333-4535 Fax (425) 333-4509



FIGURE 1: ZONE D HABITAT TYPES
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON

DRAWN 50	PROJECT 4287
SCALE NTS	1/4
DATE 2-28-14	
REVISED	



TYPE N
TRIBUTARY
STREAM

SE 35TH ST

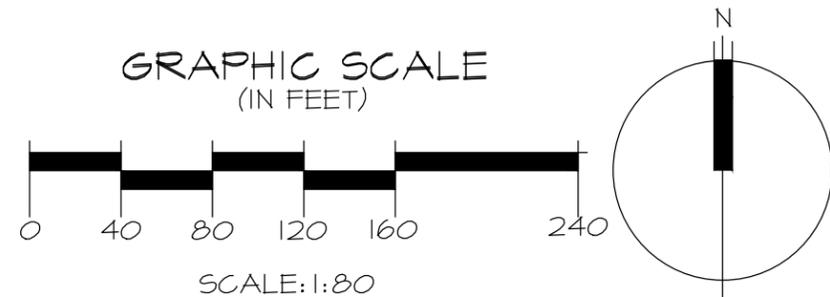
Bellevue

WEST LAKE SAMMAMISH PKWY SE

SE 35TH ST

HABITAT TYPES - EXISTING

1	NEARLY MONOTYPIC HIMALAYAN BLACKBERRY	0.62 ACRES
2	DECIDUOUS LOWLAND FOREST - INVASIVE DOMINATED UNDERSTORY	1.78 ACRES
3	DECIDUOUS LOWLAND FOREST - NATIVE DOMINATED UNDERSTORY	0.16 ACRES
4	POND	0.06 ACRES
5	RESIDENTIAL / DEVELOPED	0.71 ACRES
6	VASA CREEK	

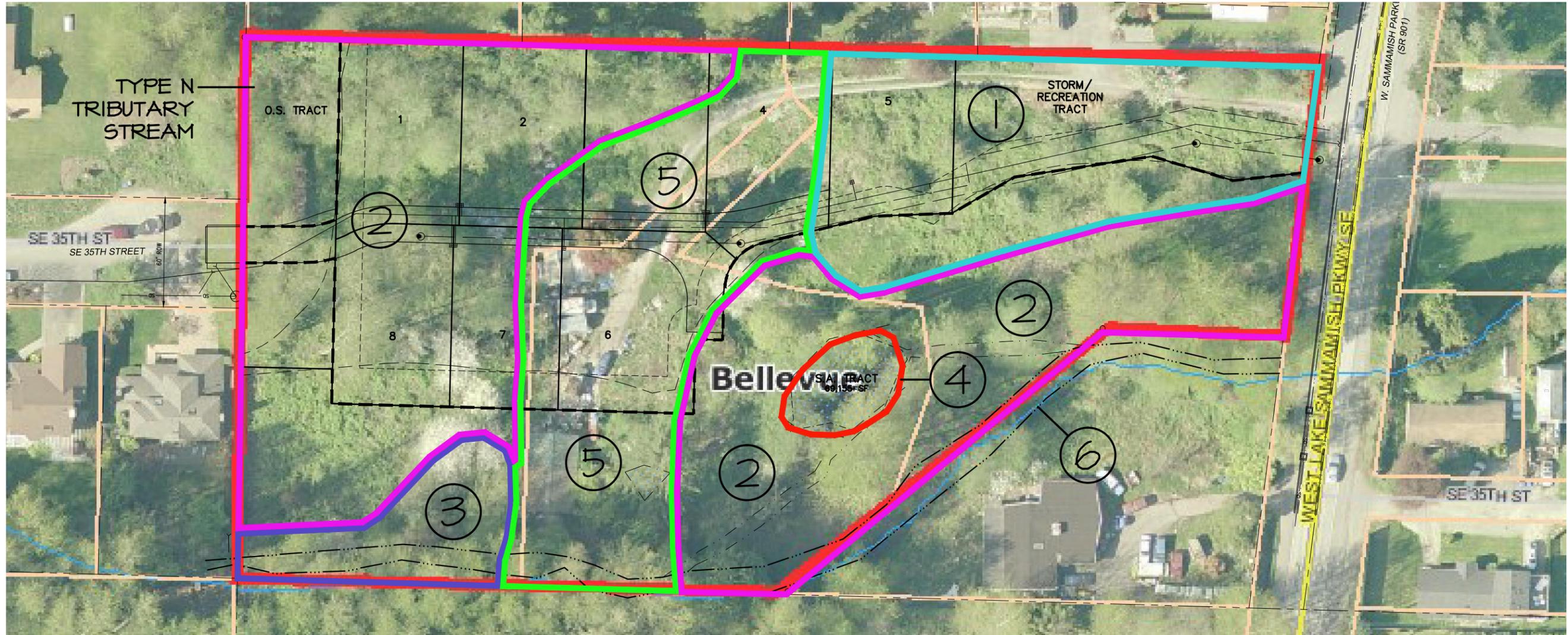


PROJECT	4287
DRAWN	SO
SCALE	AS NOTED
DATE	2-28-14
REVISED	2/4

FIGURE 2: AERIAL PHOTO - EXISTING CONDITIONS
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON



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 Landscape
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PROJECT	4287
DRAWN	SO
SCALE	AS NOTED
DATE	2-28-14
REVISED	3/4

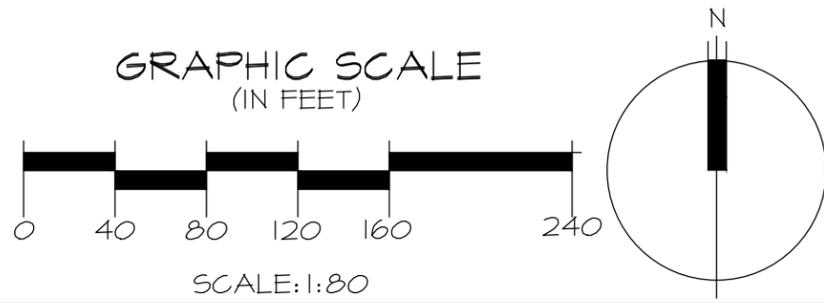
FIGURE 3: AERIAL PHOTO - SITE PLAN
 VASA CREEK SHORT PLAT
 BELLEVUE, WASHINGTON

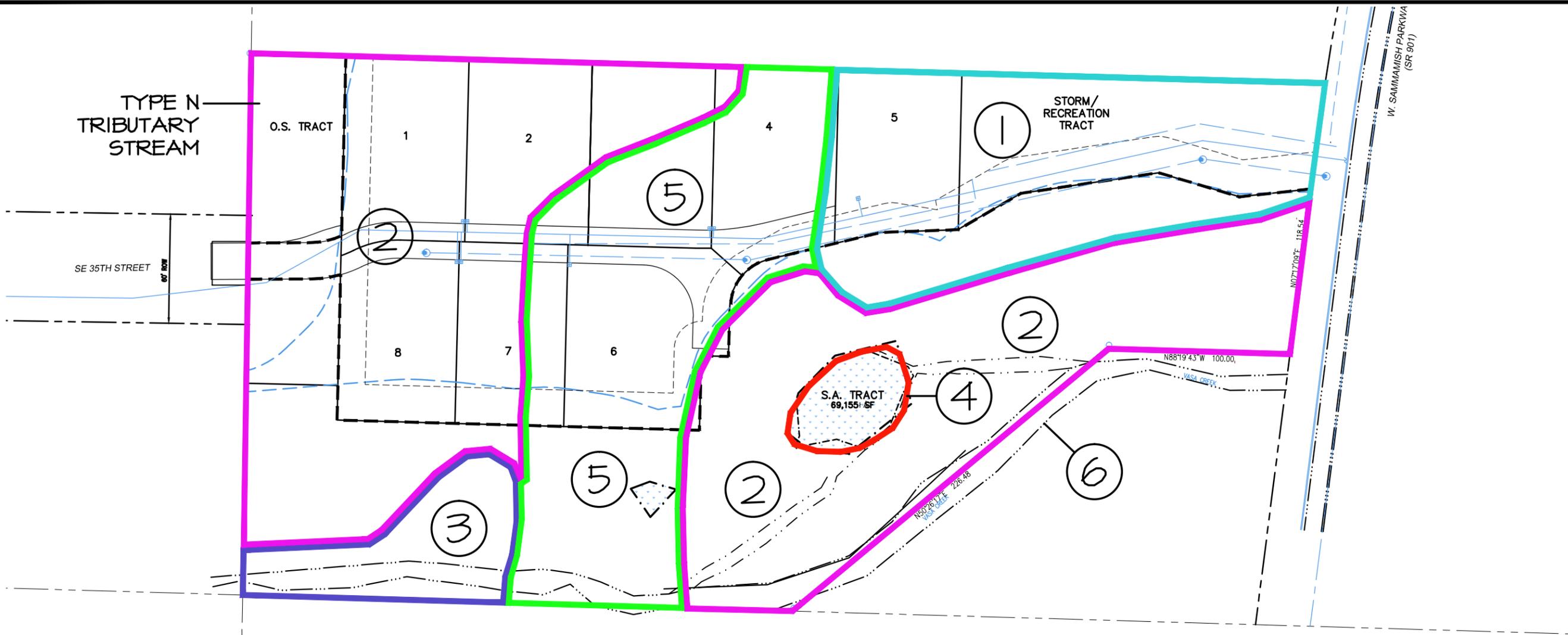
HABITAT TYPES - EXISTING

1	NEARLY MONOTYPIC HIMALAYAN BLACKBERRY	0.62 ACRES
2	DECIDUOUS LOWLAND FOREST - INVASIVE DOMINATED UNDERSTORY	1.78 ACRES
3	DECIDUOUS LOWLAND FOREST - NATIVE DOMINATED UNDERSTORY	0.16 ACRES
4	POND	0.06 ACRES
5	RESIDENTIAL / DEVELOPED	0.71 ACRES
6	VASA CREEK	

HABITAT TYPES - POST DEVELOPMENT

1	NEARLY MONOTYPIC HIMALAYAN BLACKBERRY	0.18 ACRES
2	DECIDUOUS LOWLAND FOREST - INVASIVE DOMINATED UNDERSTORY	1.15 ACRES
3	DECIDUOUS LOWLAND FOREST - NATIVE DOMINATED UNDERSTORY	0.16 ACRES
4	POND	0.06 ACRES
5	RESIDENTIAL / DEVELOPED	1.78 ACRES
6	VASA CREEK	





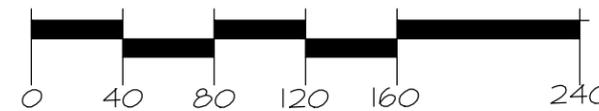
HABITAT TYPES - EXISTING

1	NEARLY MONOTYPIC HIMALAYAN BLACKBERRY	0.62 ACRES
2	DECIDUOUS LOWLAND FOREST - INVASIVE DOMINATED UNDERSTORY	1.78 ACRES
3	DECIDUOUS LOWLAND FOREST - NATIVE DOMINATED UNDERSTORY	0.16 ACRES
4	POND	0.06 ACRES
5	RESIDENTIAL / DEVELOPED	0.71 ACRES
6	VASA CREEK	

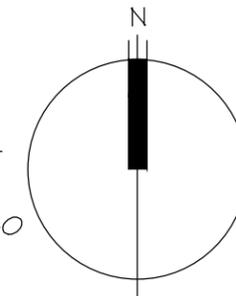
HABITAT TYPES - POST DEVELOPMENT

1	NEARLY MONOTYPIC HIMALAYAN BLACKBERRY	0.18 ACRES
2	DECIDUOUS LOWLAND FOREST - INVASIVE DOMINATED UNDERSTORY	1.15 ACRES
3	DECIDUOUS LOWLAND FOREST - NATIVE DOMINATED UNDERSTORY	0.16 ACRES
4	POND	0.06 ACRES
5	RESIDENTIAL / DEVELOPED	1.78 ACRES
6	VASA CREEK	

GRAPHIC SCALE
(IN FEET)



SCALE: 1:80



PROJECT	4287
DRAWN	SO
SCALE	AS NOTED
DATE	2-28-14
REVISED	4/4

FIGURE 4: SITE PLAN
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON



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APPENDIX A
REPRESENTATIVE PHOTOS



Photo 1: Vasa Creek and adjacent native dominated understory looking east from southwest property corner.



Photo 2: Looking west into nearly monotypic Himalayan blackberry and existing access drive.



Photo 3: Typical view of deciduous forest with invasive dominated understory in southeast portion of site.



Photo 4: Typical view of existing development.



Photo 5: View of dilapidated shed covered in blackberry in northwest portion of site.



Photo 6: Typical view of deciduous forest with invasive understory in western portion of site.

APPENDIX B

**DRAFT FUNCTIONAL
ASSESSMENT TOOL FOR
UPLAND HABITAT**

City of Bellevue
DRAFT FUNCTIONAL ASSESSMENT TOOL
 for upland habitat

2.0	LANDSCAPE PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
2.6	*Interspersion of habitat patches (excluding patches <1 ac in area)	No or isolated patch* (no others within 0.5-ac circle)	Low	Moderate	High	+1 point if wildlife network or listed park is included	2
3.0	LOCAL PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
3.1	Size of native trees on site	No significant trees on site	6-12" dbh tree(s) present	12-20" dbh tree(s) present	>20" dbh tree(s) present	+1 point if tree(s) >30" dbh are present	4
3.2	Coniferous component	No conifers on site	Conifers very sparse or present in understory only	Conifers co- or sub-dominant in overstory	Conifers dominant	+1 point if conifers >30" dbh are present	1
3.3	Percent cover (sample vegetated areas only)						
	Ground layer (0-2.3 ft) (5-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%; -1 point if mowed grass is >50%	1
	Shrub layer (2.3-25 ft) (10-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	3
	Canopy (>25 ft) (30-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	2
3.4	Vegetative vertical structural diversity (foliage height diversity)	FHD = 0	FHD < 0.70	FHD = 0.70-0.90	FHD > 0.90		2
3.5	Vegetative species richness	0-1 species	2-5 species	6-19 species	20+ species		2
3.6	Invasive species component	>75% cover	25-75% cover	10-25% cover	<10% cover		0

City of Bellevue
DRAFT FUNCTIONAL ASSESSMENT TOOL
 for Upland Habitat

3.0	LOCAL PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
3.7	Proximity to year-round water	>1.0 mi or artificial feature with maintained /invasive buffer present within 0.3-1 mi	0.3-1.0 mi or artificial feature with maintained/ invasive buffer present within <0.3 mi	<0.3 mi or artificial feature with maintained/ invasive buffer present within patch	Natural water feature present within patch with native buffer		3
3.8	Snags (≥4 in dbh)	No snags on site	1/ac or fewer	2-6/ac	>7/ac	Add 0.5 point for each >20 in dbh and 1 point for each >30 in dbh	2
3.9	Other habitat features	None	1	2-4	5 or more		2
Landscape parameters points							
Local parameters points							
TOTAL POINTS							
							17
							22
							39

* Use circle of the appropriate size for the property's zone:

Zone A – 0.5 ac

Zone B – 5.0 ac

Zone C – 100 ac

Zone D – 250 ac

** PHS data required for sites in Zone D

***Parks: Mercer Slough, Phantom Lake wetland complex, Larson Lake wetland complex, Cougar Mountain Regional Wildland Park, Weowna Park; King County wildlife network

APPENDIX C

QUALIFICATIONS



JOHN J. ALTMANN, PRINCIPAL

Ecologist, Project Manager

Wetland Delineations, Stream Studies, Functional Analysis, Mitigation, Environmental Impact Assessments, Planning, Regulatory Analysis & Permitting, Wildlife Studies

EXPERIENCE

Mr. Altmann has 26 years of experience working in resource and environmental planning, project management, and field analysis. His main area of concentration has been wetlands and his experience includes: wetland delineations; environmental assessments; impact statements; mitigation plans and other wetland studies; natural resource inventories and sensitivity analyses; site planning; and wildlife habitat management studies in Washington, Oregon, Idaho, Alaska, California, Wyoming, New Jersey, New York, and Pennsylvania.

REPRESENTATIVE PROJECTS

Responsible for over fifteen hundred wetland and wildlife studies conducted in past 26 years, with most of these projects occurring in King, Snohomish, Skagit, Whatcom, Pierce, Thurston, Clark, Lewis, Kitsap, and Mason counties in Washington State. Most of these projects involved analysis of wetland conditions in relation to some proposed construction activity that could potentially affect their functions and values. Many of the studies involved wetland delineation only, whereas others required determination of wetland functions and values and wetland impact mitigation planning and other sensitive areas analyses. Project sizes ranged from under 1 acre to over 600 acres, with the wetlands on these properties being nearly as variable as their size. Wildlife studies include flora and fauna inventories, habitat impact assessments, and threatened and endangered species studies. Some of the projects representative of this experience are listed below.

Shoreline Delineation & Habitat Assessment for private land owners on Lake Sammamish, Bellevue, WA

Wetland Mitigation and Long-Term Monitoring for Weyerhaeuser Real Estate Development Company's Mint Farm Phase II project in the City of Longview, WA

Stream Delineation Study, Mitigation Plan for the Greystone PRD, Redmond, WA

Wetland Delineation and Study for the Group Health Support Facility in the City of Tukwila, WA

Critical Areas Delineation, Study, and Mitigation Plan for the Cadman High Rock Quarry in Snohomish County, WA

Critical Areas Delineations, Studies, and Mitigation Plans for the Microsoft Corporate Campus in the City of Redmond, WA

Critical Areas Study, Mitigation Plan, Biological Assessment, and Long-Term Monitoring on 90-acre Northpointe Corporate Campus for OPUS NW in Snohomish County, WA
Wetland Delineation, Study, and Mitigation Plan for the Puyallup Downs Residential Development in the City of Puyallup, WA
Wildlife Study on 40-acre Site in North Bend Area of King County, WA for Private Developer
Critical Areas Delineation and Study for Data I/O Corporation in Redmond, WA for the Quadrant Corporation
Sensitive Areas Assessment for 74-acre Church site in Redmond, King County, WA
Wetland Delineation on 47-acre Marine Industrial Site Location in Snohomish River Estuary, Everett, Snohomish County, WA for Private Developer
Wetland Study and Mitigation Plan for 37-acre Office Park Site in Redmond, King County, WA for Private Developer
Wetland Maintenance and Monitoring Plan for Property on Raging River in King County, WA for Private Developer

OTHER PROJECT EXPERIENCE

- Wetland Biologist for the King County Parks, Planning and Resource Department, Environmental Division, Resource Planning Section. Mapped, classified, inventoried and rated the wetlands in the cities of Kirkland, Bothell, Normandy Park, Duvall, and Lake Forest Park for inclusion in the King County Sensitive Areas Folio.
- Research Assistant for the NJ Division of Fish, Game and Wildlife's Endangered and Nongame Species Program. Responsible for the research, feeding, and monitoring of osprey fledglings for 3 seasons of the NJ osprey hacking program. Responsible for the collection and analysis of information pertaining to population size and migration along with species density and behavior of shorebirds along the Delaware Bay.
- Research Assistant for the NJ Division of Fish, Game and Wildlife. Responsible for the collection, processing and analysis of biological information pertaining to the whitetail deer population in NJ.

EDUCATION

B.S., Natural Resource Management, Wildlife Science Option, Rutgers University, Cook College, New Brunswick, NJ.

PROFESSIONAL MEMBERSHIPS

Society of Wetland Scientists
The Wildlife Society

Altmann Oliver Associates, LLC

PO Box 578

Carnation, WA 98014

Office (425) 333-4535

Fax (425) 333-4509

AOA

Environmental
Planning &
Landscape
Architecture



CRITICAL AREAS REPORT
for
VASA SHORT PLAT
BELLEVUE, WASHINGTON
(File 13-133321-LN)

Prepared For:

JOHN F. BUCHAN HOMES
2821 Northup Way, Suite 100
Bellevue, Washington 98004

October 28, 2013
Revised February 28, 2014

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- Appendix B: AOA Wetland Rating Forms
- Appendix C: Qualifications

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VASA CREEK SHORT PLAT BELLEVUE, WASHINGTON CRITICAL AREAS REPORT

October 28, 2013

Revised February 28, 2014

1.0 INTRODUCTION

This report is the result of a stream and wetland reconnaissance and delineation on the Vasa Short Plat project site located along Vasa Creek in the City of Bellevue, Washington (**Figures 1 and 2**). The purpose of this report is to: 1) describe the streams and wetlands identified on the site, 2) identify impacts to the critical areas from the proposed project, 3) address proposed deviations from code requirements, and 4) describe the measures that will be implemented to mitigate these impacts.

2.0 GENERAL PROPERTY DESCRIPTION AND LAND USE

The approximately 3.33-acre project site consists of three tax parcels (Parcels 122405-9037, 122405-9132, and 199470-0220) located at 3423, 3425, 3427 W. Lake Sammamish Pkwy SE. The property is situated in Section 12, of Township 24 North, Range 05 East, W.M.

The site is currently developed with a single-family residence and several associated outbuildings in the south-central portion of the property. A large dilapidated shed is located in the northwestern portion of the site. Existing access to the residence is via a gravel drive off West Lake Sammamish Parkway SE, which borders the site's eastern boundary. Vasa Creek flows from west to east along the southern boundary of the property. A historically excavated pond (Wetland A) is located to the east of the existing residence. The remainder of the site consists of a mix of trees and brush, with dense Himalayan blackberry (*Rubus armeniacus*) dominating the understory in places.

Surrounding land use includes single-family residential to the north, west, and east. Vasa Park is located immediately to the south.

3.0 METHODOLOGY

On December 12, 2012 an initial wetland and stream reconnaissance was conducted by John Altmann, principal ecologist with AOA, on the subject property utilizing the methodology outlined in the May 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*. The primary purpose of the reconnaissance was to verify that the wetland and stream delineation previously conducted on the property by Geomatrix Consultants, Inc. (**Appendix A**) was still valid. Wetland ratings on the site were also updated per current conditions (**Appendix B**).

During this reconnaissance observations were made of the general plant communities and wildlife habitats. Present and past land use practices were also

noted, as were significant geological and hydrological features. Additional field investigations were conducted on August 28 and October 11, 2013.

4.0 EXISTING STREAMS AND WETLANDS

Two streams (Vasa Creek and a tributary stream) and two wetlands (Wetlands A and B) have been identified on the site. In addition, FEMA indicates that a floodplain is located on the property. Each of the wetlands and streams is discussed below. In addition, the FEMA floodplain designation has been added to the site plans. However, it is our understanding that the line represented is digitized and is not currently deemed accurate. It is also our understanding that mapping by the City of the actual floodplain will be completed in April or May of 2014.

4.1 Vasa Creek

Vasa Creek flows from west to east along the southern property boundary. This stream is a tributary to Lake Washington and is known to provide habitat for salmonids, including cutthroat trout, kokanee, Coho salmon, and sockeye salmon.

Vasa Creek has been identified as a Type F water on the City of Bellevue's critical area mapping for the Vasa Creek Basin. Type F waters require a standard 100 foot buffer and 20-foot structure setback per LUC 20.25H.035A.

The existing buffer for Vasa Creek throughout the southwest portion of the site has been heavily degraded through historic and on-going residential land use. An existing single-family residence with associated outbuildings and yard area is currently located within the standard buffer in this portion of the property. The remaining portion of the Vasa Creek buffer in the southwest portion of the site consists of a deciduous forest with a dense understory dominated by Himalayan blackberry.

The Vasa Creek buffer in the central and southeastern portions of the property consists primarily of a mixture of trees and dense brush and includes a historically excavated stock pond (Wetland A) located to the east of the existing residence.

4.2 Stream 1

Stream 1 drains from north to south along the site's northwestern property line. This drainage was not identified in the Geomatrix report nor is it depicted on the City's critical area mapping for the Vasa Creek Basin. The stream emerges from a pipe near the site's northwest property corner and has been historically ditched along the property line. Intermittent or seasonal runoff within the channel is conveyed into a stormwater control structure located within the SE 35th Street right-of-way. Runoff within this structure is then apparently piped directly to Vasa Creek near the southwest property corner.

The ordinary high water of the stream was delineated on October 11, 2013 and subsequently surveyed. Stream 1 does not contain salmonid habitat and is considered a Type N water by the City of Bellevue. Type N waters require a standard 50-foot buffer plus 15-foot structure setback per LUC 20.25H.035A. The

pipd section of the stream does not require a buffer but does require a 10-foot structure setback.

The existing buffer of Stream 1 consists primarily of a deciduous forest with a dense understory of Himalayan blackberry. A large dilapidated shed is located within the buffer north of the right-of-way.

4.3 Wetland A

Wetland A (2,790 s.f.) is located east of the existing residence and consists of an excavated pond that was historically created in the 1930s as a stock pond. It is our understanding that the pond historically received diverted flows from Vasa Creek that entered and exited the pond via a cut inlet and outlet ditch. It is also our understanding that Vasa Creek flows are no longer diverted into the pond. At the time of an August 28, 2013 site visit the pond was dry.

Wetland A meets the criteria for a Category III wetland with less than 20 Habitat Points per current conditions (**Appendix B**). Category III wetlands with less than 20 Habitat Points require a standard 60-foot buffer plus 15-foot structure setback per LUC 20.25H.035A.

Vegetation along the pond perimeter and the buffer of Wetland A included red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), willow (*Salix* sp.), Himalayan blackberry, salmonberry (*Rubus spectabilis*), hazelnut (*Corylus cornuta*), and areas of disturbance associated with the residence.

4.4 Wetland B

Wetland B (243 s.f.) appears to consist of a small disturbance feature within the yard adjacent the existing residence. At the time of a December 12, 2012 site visit vegetation within the wetland consisted primarily of creeping buttercup (*Ranunculus repens*). Soils within the area were marginally hydric and were saturated near the surface following a period of heavy precipitation.

Wetland B meets the criteria for a Category IV wetland with less than 2,500 s.f. (**Appendix B**) and would be exempt from the provisions of the City of Bellevue's critical areas code per LUC 20.25H.095.B.4.

5.0 WETLAND FUNCTIONS AND VALUES

Wetlands, in general, provide many valuable ecological and social functions, including stormwater storage, water quality protection, groundwater recharge and discharge, and wildlife habitat. Wetland A on the project site functions primarily as a stormwater storage area and as a habitat component of the Vasa Creek riparian corridor. Wetland B is a small, low value marginal wetland area that does not provide any wetland functions.

Wetland A provides some stormwater storage that may reduce downstream flooding, while trapping sediments. The trapping of sediments and other pollutants within the wetland maintains water quality in downstream areas

and aids in the prevention of fish habitat degradation by limiting silt accumulation within spawning areas.

In addition to its hydrologic functions, Wetland A also provides habitat for a variety of wildlife species. Although privately owned, Wetland A does provide some cultural wetland functions as part of the overall open space associated with the Vasa Creek riparian corridor. The wetland contains some passive recreational opportunities such as wildlife viewing, and has the potential to provide educational opportunities.

6.0 CRITICAL AREA IMPACTS

The proposed project consists of an 8-lot short plat (**Drawing W1.1**). Recreational and stormwater facilities for the project would be constructed in the northeastern portion of the site. Access to the development would be from SE 35th Street. Although the project has been designed to avoid impacts to critical areas on the property, the extension of the access road into the site will require a crossing of the Type N stream within the SE 35th Street right-of-way.

Cumulative impacts to critical areas from the proposed project are associated with a general loss of wildlife habitat area and a potential reduction of some local populations of wildlife (such as shrews and voles) that have small home ranges. Population reductions would occur both as mortality due to a direct result of construction related activities, and as displacement into surrounding habitats. Displaced animals moving into surrounding areas would probably be subjected to high rates of mortality due to predation, accidents, competition, etc.

In addition, although the wildlife species currently utilizing the site are typical of similar habitats within suburban areas of western Washington, the area surrounding the built environment may undergo a shift toward a more urban species composition.

See the Habitat Assessment prepared for the project for a more detailed discussion of impacts to the wildlife habitat on the site.

6.1 Stream 1 (Type N) Road Crossing

A bottomless culvert with a minimum 6-foot span would be installed across the Type N stream for the crossing. This crossing will require the removal of several black cottonwood (*Populus trichocarpa*) trees located along the stream bank. The access road must also unavoidably impact 1,312 s.f. of buffer area for the Type N stream that is currently dominated by Himalayan blackberry (*Rubus armeniacus*).

Mitigation for the stream crossing would occur through a combination of on-site buffer replacement and buffer enhancement (see mitigation section below). To minimize potential impacts to downstream water quality during construction, the bottomless culvert should be installed during the dry season when the stream is dry.

6.2 Vasa Creek and Wetland A Buffer Reduction

As part of the proposed project, the 100-foot standard buffer would be reduced to a minimum of 78 feet within the existing degraded buffer area in the southwest portion

of the site. In addition, a small portion of the buffer for Wetland A would be reduced to a minimum of 45 feet. These reduced buffer areas currently consist primarily of an existing residence, associated outbuildings, and yard that do not currently provide any significant functions to Vasa Creek or Wetland A.

The City of Bellevue allows for the reduction of a standard buffer as long as the functions of the buffer are increased over the functions currently provided. Due to the highly degraded condition of the existing buffer, an enhancement plan will be implemented that will significantly increase the functions of the buffer over current conditions (see mitigation section below).

6.3 Conservation Subdivision

Although it is likely feasible to design the 8-lot plat with no reduction in the standard 100-foot stream buffer or 60-foot wetland buffer, the proposed buffer reduction allows for larger lot sizes and an improved site layout. All of the proposed buffer reduction areas are degraded and do not currently provide significant habitat or protective functions to the critical areas.

As part of the proposed project, 4,527 s.f. of degraded Vasa Creek/Wetland A buffer would be reduced and 60,029 s.f. of Vasa Creek/Wetland A buffer area would be significantly enhanced (over 13:1 enhancement area to impact ratio). This enhanced buffer area will provide much greater habitat and protective functions to the Vasa Creek riparian corridor than if the standard buffer widths were applied and no enhancement were conducted.

6.4 Consistency with Land Use Code

This section discusses each of the critical area land use code requirements that are proposed to be modified. Items are outlined in Table 1. Mitigation is discussed further in the following section.

Table 1. Consistency with Code Requirements for Critical Area Modifications

Code Requirement	Comment
Type F streams are required to have 100 foot undisturbed buffers and Category III wetlands with <20 habitat points are required to have 60 foot undisturbed buffers.	A portion (4,527 s.f.) of the Vasa Creek/Wetland A buffer is proposed to be reduced. The reduced area is currently degraded and will be enhanced by removing invasives and planting native vegetation within 60,029 s.f. of the Vasa Creek riparian corridor. The proposed buffer after the project is anticipated to have greater functions and values than the existing degraded buffer.
Type N streams are required to have 50 foot undisturbed buffers.	Crossing the Type N stream with a 6-foot minimum span bottomless culvert will be required to access the site. This access road would unavoidably impact 1,312 s.f. of buffer area. Mitigation for the crossing and buffer impact will occur by providing 1,796 s.f. of additional stream buffer and enhancing 8,709 s.f. of the riparian corridor. Additional mitigation for the stream crossing will be addressed through culvert design (bottomless box culvert), and construction timing and methods to reduce threat of mobilizing sediment that could impair downstream resources.

7.0 CRITICAL AREA MITIGATION

A mitigation plan (**Drawings W1.1 and W1.2**) has been developed that would significantly increase the functions of the stream and wetland buffers on the site over current conditions. Mitigation would be provided for both the crossing of Stream 1 and the buffer reduction associated with Vasa Creek and Wetland A.

7.1 Stream 1 (Type N) Road Crossing

Mitigation for the crossing of Stream 1 and its associated buffer impacts would occur through the replacement of 1,796 s.f. of additional buffer and the enhancement of the entire proposed Stream 1 riparian corridor. The additional buffer area located to the south of the access road would be contiguous with the Vasa Creek buffer to provide a connected habitat corridor.

As part of the buffer enhancement plan, the dilapidated shed and all invasive species would be removed within the buffer and the area planted with a variety of native tree and shrub species (detailed planting plan to be prepared as part of final design). The native plantings would increase the plant species and structural diversity of the buffer while providing a visual and physical screen to the stream from the proposed project. Implementation of the buffer replacement and enhancement plan would increase the habitat and protective functions of the buffer over current conditions.

7.2 Vasa Creek and Wetland A Buffer Enhancement

As part of the project, the existing residence, associated outbuildings and all invasive species would be removed from the buffer throughout the southwest portion of the site. This entire buffer area would then be planted with a wide variety of native trees and shrubs. Similar to the buffer enhancement proposed for Stream 1, the enhancement adjacent Vasa Creek and Wetland A buffer would significantly increase the plant species and structural diversity of the buffer over current conditions.

To further protect the wetland, a rail-fence would be installed along the edge of the entire buffer area. The plantings and fence would provide a visual and physical screen to the stream and wetland from the proposed project and would increase the habitat and protective functions of the buffer over current conditions.

7.3 Goal, Objectives, and Performance Standards for Enhancement Areas

The primary goal of the mitigation plan is to increase the functions of the buffers on the site over current conditions. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the enhancement areas.

Performance Standard: *Following every monitoring event for a period of at least five years, the enhancement area will contain at least 14 native plant species. In addition, there will be 100% survival of all woody planted species throughout the enhancement area at the end of the first year of planting. Following Year 1, success*

will be based on an 80% survival rate. Areal coverage of plantings or native re-colonized species will be at least 15% at Year 1, 20% at year 2, 40% at year 3, and 60% at year 5.

Objective B: Limit the amount of invasive and exotic species within the enhancement areas.

Performance Standard: *After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 20% total cover in all planted areas. These species include, but are not limited to, Himalayan and evergreen blackberry, reed canarygrass, Scot's broom, morning glory, Japanese knotweed, English ivy, thistle, and creeping nightshade.*

7.4 Construction Management

Prior to commencement of any work in the enhancement areas, the clearing limits will be staked and all existing vegetation to be saved will be clearly marked. A pre-construction meeting will be held at the site to review and discuss all aspects of the project with the landscape contractor and the owner.

A consultant will supervise plan implementation during construction to ensure that objectives and specifications of the enhancement plan are met. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Bellevue and the consultant prior to their implementation.

7.5 Monitoring Methodology

The monitoring program will be conducted for a period of five years, with annual reports submitted to the City of Bellevue. Permanent vegetation sampling plots will be established to monitor the general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the enhancement areas. Review of the photos over time will provide a visual representation of success of the plan.

7.6 Maintenance Plan

Maintenance will be conducted on a routine, year round basis. Additional maintenance needs will be identified and addressed following a twice-yearly maintenance review. Contingency measures and remedial action on the site shall be implemented on an as-needed basis at the direction of the consultant or the owner.

Routine removal and control of non-native and other invasive plants (e.g., reed canarygrass, Himalayan and evergreen blackberry, Japanese knotweed, Scot's broom, English ivy, morning glory, thistle and creeping nightshade) shall be performed only by manual means (i.e., no chemical use within riparian corridor). Undesirable and weedy exotic plant species shall be maintained at levels below 20% total cover within any given stratum at any time during the five-year monitoring period.

7.7 Contingency Plan

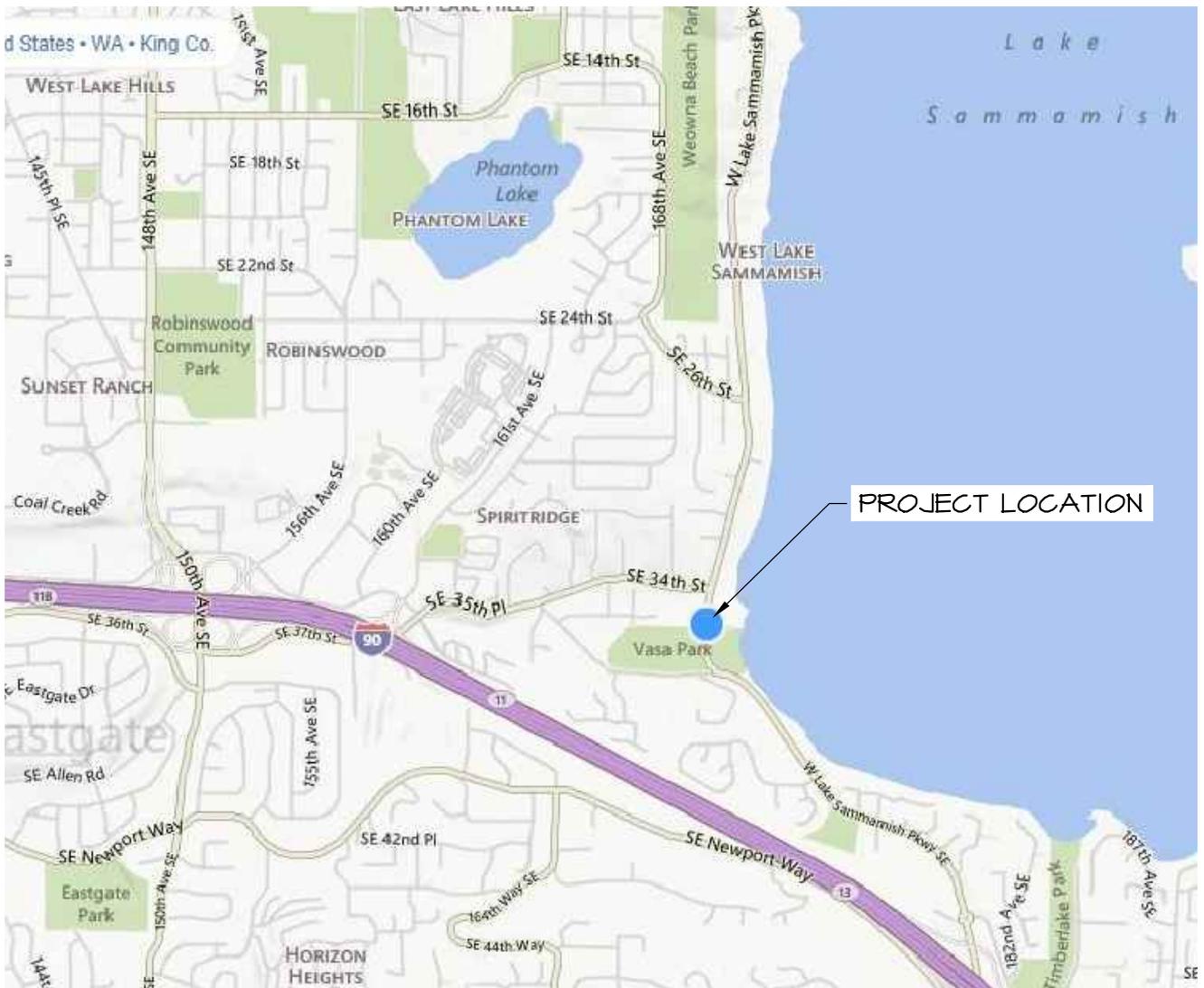
All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the enhancement plan. Plant material shall meet the same specifications as originally-installed material. Replanting will not occur until after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). Replanting shall be completed under the direction of the consultant, City of Bellevue, or the owner.

7.8 As-Built Plan

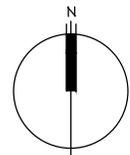
Following completion of construction activities, an as-built plan for the restoration area will be provided to the City of Bellevue. The plan will identify and describe any changes in relation to the original approved plan.

7.9 Financial Guarantee

A financial guarantee will be posted to ensure that the mitigation and monitoring program is fully implemented.



SOURCE: BING MAPS, KING COUNTY, 2014



Altmann Oliver Associates, LLC

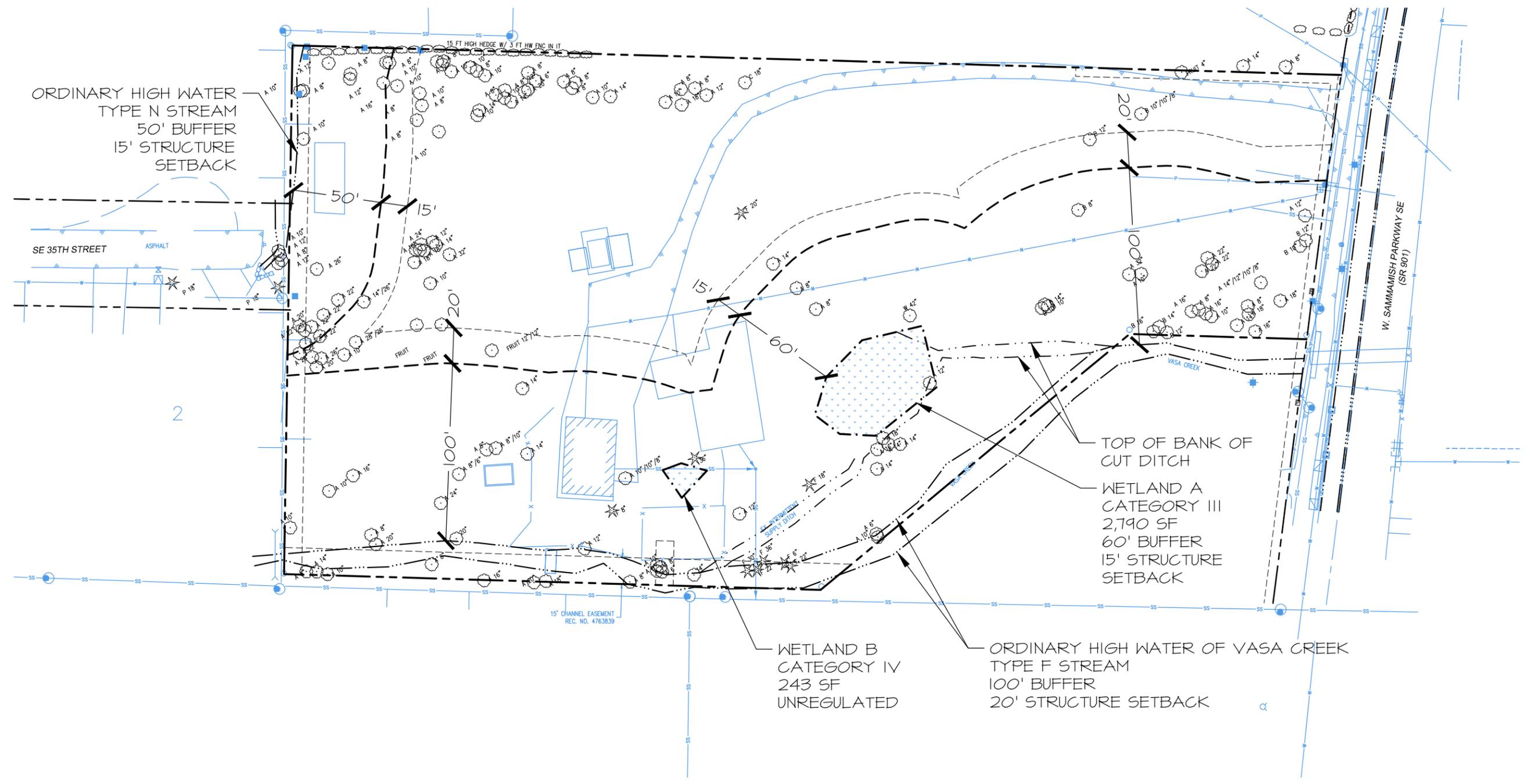
PO Box 578 Caman, WA 98014 Office (425) 333-4535 Fax (425) 333-4509



FIGURE 1: VICINITY MAP
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON

DRAWN SO	PROJECT 4287
SCALE NTS	1/2
DATE 2-28-14	
REVISED	

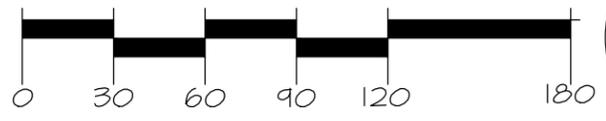
FIGURE 2: EXISTING CONDITIONS CRITICAL AREAS MAP
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON



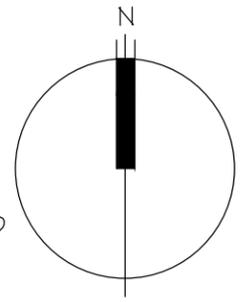
PLAN LEGEND

- PROPERTY LINE
- ORDINARY HIGH WATER OF VASA CREEK
- TOP OF BANK OF CUT DITCH
- [Dotted Area] EXISTING WETLAND
- STANDARD STREAM/WETLAND BUFFER
- STRUCTURE SETBACK

GRAPHIC SCALE
(IN FEET)

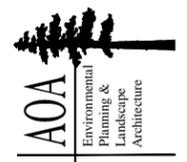


SCALE: 1:60

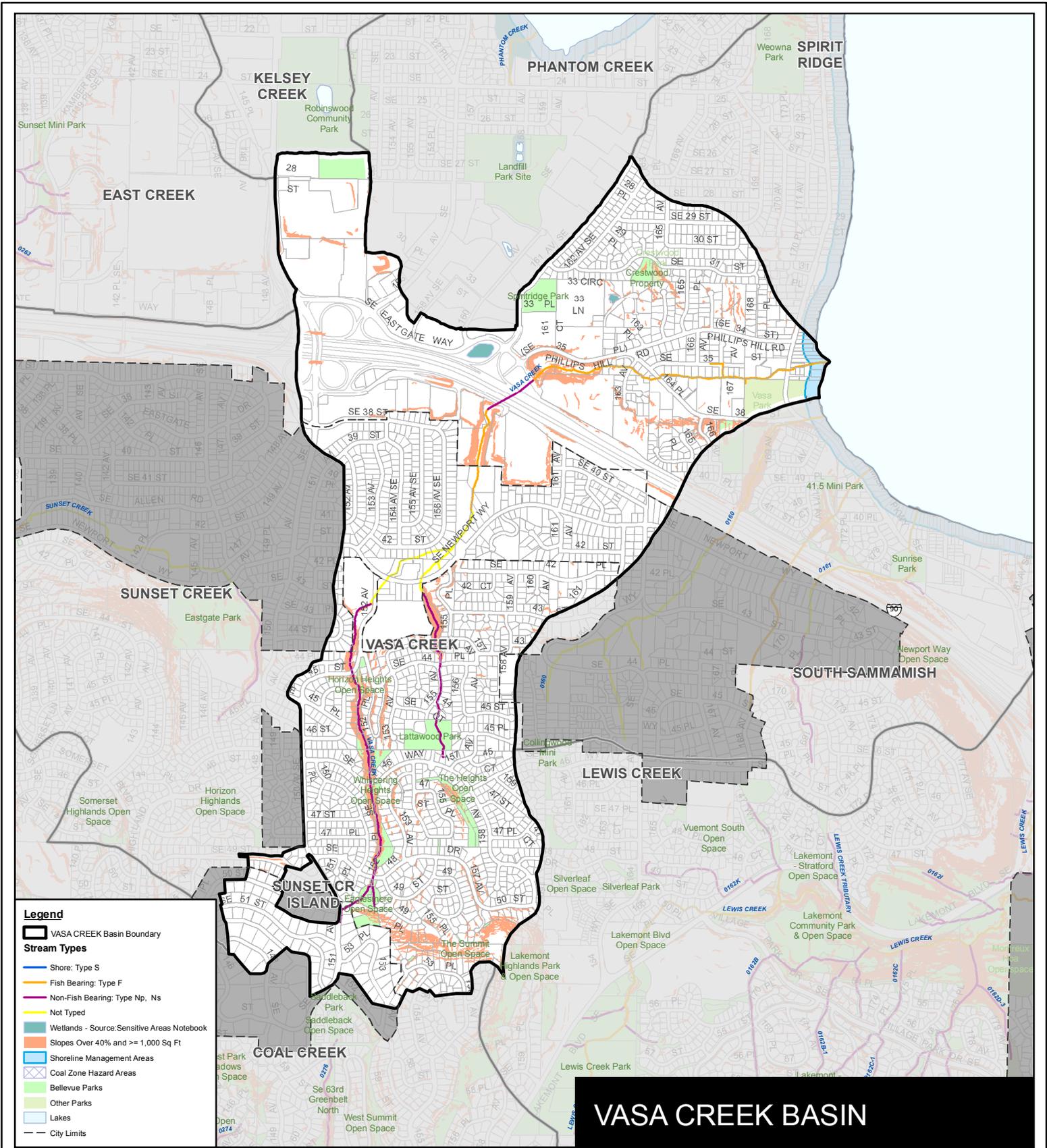


NOTES

- I. BASE INFORMATION PROVIDED BY CORE DESIGN, INC., 14711 NE 29TH PLACE, SUITE 101, BELLEVUE, WA 98007, (425) 885-1877.



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Legend

- VASA CREEK Basin Boundary
- Stream Types**
- Shore: Type S
- Fish Bearing: Type F
- Non-Fish Bearing: Type Np, Ns
- Not Typed
- Wetlands - Source: Sensitive Areas Notebook
- Slopes Over 40% and >= 1,000 Sq Ft
- Shoreline Management Areas
- Coal Zone Hazard Areas
- Bellevue Parks
- Other Parks
- Lakes
- City Limits

VASA CREEK BASIN

= 1,800 feet

City of Bellevue
IT Department
GIS Services
Plot Date: 7/28/2009

NORTH

Critical Areas by Storm Drainage Basin

City of Bellevue

This data is a geographic representation derived from the City of Bellevue Geographic Information System. The City of Bellevue does not guarantee that the information provided herein is accurate or complete. This information is provided on an "as is" basis and disclaims all warranties, express or implied, including but not limited to warranties of merchantability, fitness for a particular purpose and non-infringement. Any commercial use or sale of the information and data provided herein, or portions thereof, is prohibited without express written authorization by the City of Bellevue. The City of Bellevue is not responsible for any damages arising from the use of this data. Users should verify the information before making project.



v:\p1\ArcGIS\Storm\BasinFactSheets\2008\Map\KPLTS\CriticalAreas\SOB\basin\Atlas_gifs.mxd

APPENDIX A
WETLAND DELINEATION REPORT
GEOMATRIX CONSULTANTS, INC

WETLAND DELINEATION

Boscole Property

Bellevue, Washington

Prepared for:

Jeff Boscole
3425 W Lake Sammamish Parkway SE
Bellevue, Washington 98008

April 2006

Project No. 12367.000.0



Geomatrix

WETLAND DELINEATION

Boscole Property

Bellevue, Washington

Prepared for:

Jeff Boscole

3425 W Lake Sammamish Parkway SE
Bellevue, Washington 98008

Prepared by:

Geomatrix Consultants, Inc.

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(425) 697-4340

April 2006

Project No. 12367.000.0



Geomatrix

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TABLE

Table Plant Species Found on the Project Site

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Figure 2 Delineated Wetlands

APPENDICES

Appendix A Methods of Determining Wetland Characteristic and Classification
Appendix B Wetland Determination Data Forms
Appendix C Wetland Rating Forms
Appendix D Site Photographs

WETLAND DELIENATION

Boscole Property

Bellevue, Washington

1.0 INTRODUCTION

On April 6, 2006 Geomatrix Consultants, Inc. (Geomatrix) conducted an investigation to determine the presence and extent of wetlands on the Boscole property, located in Township 24 North, Range 5 East, Section 12 in Bellevue, Washington (Figure 1). The property is currently planned for residential development. This report documents the work performed, describes identified wetland locations and boundaries, and characterizes the wetlands.

The Boscole property is located at 3425 West Lake Sammamish Parkway, in King County. Mature coniferous and deciduous trees are scattered across the site. A dense Himalayan blackberry (*Rubus discolor*) community exists along the western southwestern portion of the site.

The site is developed with a small house and several sheds. Vasa Creek is located along the southern property edge. A new residential house, to replace a house destroyed by fire, is proposed.

Two areas meeting all three wetland criteria (Corps 1987) were delineated on the site (Figure 2). Wetland A is located in the east of the existing house, north of Vasa Creek. Wetland A is a pond originally created in the 1930s as a horse stock-water pond. Since the 1940s the pond has collected stormwater runoff from the existing structures. The pond is approximately 2,797 square feet.

Wetland B is located south of the existing house adjacent to the wood shed. Wetland B is approximately 343 square feet.

According to the Soil Survey of King County area, Washington (Snyder et al., 1973), the soils are mapped as Everett gravelly loam and Norma sandy loam. These soils are excessively and poorly drained, respectively.

2.0 METHODS

2.1 DELINEATION

Geomatrix staff delineated wetlands based on best professional judgment, existing site conditions during field analysis, and information provided by the client. Wetland boundaries were delineated using the Routine Determinations method described by the Corps Wetland Determination Manual (Corps 1987) to comply with Snohomish County and federal regulations. The Corps requires that the following three characteristics be present for an area to be identified as a wetland: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology. The methods used to determine the presence of each characteristic are described in the following subsections. Delineated and surveyed wetland boundaries are subject to verification and approval by jurisdictional agencies. The methods used to determine the presence of each characteristic are described in Appendix A.

2.2 WETLAND RATING

Geomatrix staff determined wetland ratings using the *Wetland Rating System for Western Washington* (Ecology et al., 2004) to determine the resource value of the wetlands identified on the site. This rating system is based on the wetland functions and values, sensitivity to disturbance, rarity, and irreplaceability. Wetland rating data forms are shown in Appendix C.

Category I Wetlands are generally considered uncommon wetlands that have the following characteristics:

- provide life support for threatened or endangered species;
- are on file in databases maintained by state agencies;
- are not hydrologically isolated (e.g., connected to estuarine water or tidal freshwater);
- represent a high-quality example of a rare wetland; are rare within a given region; or
- are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.

Examples of Category I wetlands are mature forested wetlands, estuarine wetlands, kelp beds, bogs, and fens.

Category II Wetlands have the following characteristics:

- occur more commonly than Category I wetlands;
- provide habitat for very sensitive or important wildlife of plant species;
- are partially or completely hydrologically isolated;
- are difficult to replace; or
- provide very high functions, particularly for wildlife.

Examples of Category II wetlands are bogs and fens less than ½ acre in size and wetlands with high wildlife functions but with human-related disturbances such as diking, ditching, or grazing.

Category III Wetlands have the following characteristics:

- provide habitat for a variety of wildlife;
- occur more commonly than Category I or II wetlands; or
- are smaller, less diverse, and more hydrologically isolated than Category II wetlands.

Examples of Category III wetlands are hydrologically-isolated scrub-shrub or emergent wetlands with moderate wildlife functions.

Category IV Wetlands have the following characteristics:

- are less than 1 acre in size with one dominate vegetation class by one species;
- are less than 2 acres in size with one dominate vegetation class by one species by invasive or exotic species; and
- are hydrologically isolated.

Examples of Category IV wetlands are hydrologically-isolated wetlands dominated by reed canarygrass.

3.0 RESULTS

3.1 WETLANDS

The wetland delineation was conducted during the growing season (March 1 through October 31). The two areas identified as wetlands met all three jurisdictional wetland criteria (hydrophytic vegetation, hydric soils, and wetland hydrology). The field data sheets are provided in Appendix B. Plant species found in the wetlands are listed in the Table with their associated wetland indicator statuses (Reed 1988, Reed et al., 1993). The location and extent of wetlands are shown in Figure 2. Photos of the wetlands are shown in Appendix D.

3.1.1 Wetland A

Wetland A is located to the east of the existing house, north of Vasa Creek (Figure 2). Wetland A is a 2,797 square feet pond originally created in the 1930s as a horse stock-water pond. During this time, water from Vasa Creek passed through the pond via two man-made ditches. A v-notch weir was constructed in Vasa Creek, creating a dam pool which partially back flowed into the pond via one ditch. The pond discharged into Vasa Creek, downstream of the weir via the other ditch (Figure 2). Since the 1940s the pond has also collected stormwater runoff from the existing structures. In 19XX the weir was removed and flow cut off from the pond. Based on the dry soil conditions, layers of dry leaf litter, and Himalayan blackberries growing in the ditches, it is apparent that the surface water connection between Vasa Creek and the pond has been cut off for an extended period of time.

Red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera* spp. *trichocarpa*), duckweed (*Lemna minor*), and veronica (*Veronica* sp.) dominate this wetland. Wetland A is classified as a permanently ponded, palustrine wetland with persistent vegetation according to the Cowardin classification system (Cowardin et al., 1979).

No test pits were dug. Hydric soils were assumed because of the permanently ponded water. Standing water of 24 to 36 inches deep during the growing season (March 1 through October 31) is a positive indicator of primary wetland hydrology. Water marks, drift lines, sediment deposits, a positive FAC neutral test, and drainage patterns were present and are secondary indicators of wetland hydrology.

According to the Washington State Department of Ecology, Wetland A is rated as a Category III wetland with a habitat score of 19 (Appendix C).

3.1.2 Wetland B

Wetland B is located west of Wetland A, north of the existing wood shed. Wetland B is approximately 343 square feet. Creeping buttercup (*Ranunculus repens*) dominate this wetland. Wetland B is classified as a seasonally saturated, palustrine wetland with persistent vegetation according to the Cowardian classification system (Cowardin et al. 1979).

Two soil test pits (T-4 and T-5) were dug in Wetland B (Figure 2). The surface (A) horizon at T-4 extends to 11 inches and is a moist, very dark brown (10YR2/2) sandy loam without mottles. The B horizon extends to 17 inches and is a moist to saturated, very dark brown (10YR2/2) loam with brownish yellow (10YR6/8) few, medium, and distinct mottles. The C horizon extends to at least 18 inches and is a saturated, very dark grayish brown (10YR3/2) loam with yellowish red (5YR4/6) moderate, small, and distinct mottles. A low chroma horizon above a mottled horizon with a matrix chroma of 2 is a positive indicator of hydric soils.

The surface horizon at T-5 extends to 18 inches and is a dusky red (2.5YR3/2) moist loam with yellowish red (5YR4/6) many, small, and distinct mottles. A mottled horizon with a matrix chroma of 2 is a positive indicator of hydric soils.

The two primary indicators of hydrology included saturated soils at a depth of 14 inches and free water in the test pit at 15 inches. No secondary indicators of wetland hydrology were present.

According to the Washington State Department of Ecology, Wetland A is rated as a Category IV wetland with a habitat score of 11 (Appendix C).

3.2 UPLANDS

Most of the upland areas on site lack indicators of hydrophytic vegetation, hydric soils, or wetland hydrology. The site is dominated by Himalayan blackberry, lawn, creeping buttercup, and ornamental shrubs and trees. Because of the lack of hydrophytic vegetation and hydrologic indicators (FAC neutral test, watermarks, drift lines, sediment deposits, or drainage patterns), soils colors and depth of saturation were examined. Exceptions to this typical upland community are described below.

Test pit T-1 was dug in areas dominated by hydrophytic vegetation (i.e., creeping buttercup) adjacent to the pond. The surface horizon extends to four inches and is a dry to moist, very

dark brown (10YR2/2) loam without mottles. The B horizon extends to 18 inches and is moist very dark grayish brown (2.5Y3/2) sand without mottles. Unmottled soils with a matrix chroma of 2 or 3 are not considered hydric soils. In addition to the absence of hydric soils, no indicators of wetland hydrology are present. Because this area lacks any positive indicators of hydric soils or wetland hydrology, it is considered upland.

Test pit T-2 was also dug in areas dominated by hydrophytic vegetation (i.e. creeping buttercup) adjacent to the pond. The surface horizon extends to six inches and is a moist, very dark brown (10YR2/2) loam without mottles. The B horizon extends to 18 inches and is moist very dark grayish brown (10YR3/2) gravelly sand without mottles. Unmottled soils with a matrix chroma of 2 or 3 are not considered hydric soils. In addition to the absence of hydric soils, no indicators of wetland hydrology are present. Because this area lacks any positive indicators of hydric soils or wetland hydrology, it is considered upland.

Test pit T-3 was also dug in areas dominated by hydrophytic vegetation (i.e., creeping buttercup) east of the pond. The surface horizon extends to six inches and is a moist, very dark brown (10YR2/2) loam without mottles. The B horizon extends to 18 inches and is moist, very dark brown (10YR2/2) gravelly sand without mottles. Unmottled soils with a matrix chroma of 2 are not considered hydric soils. In addition to the absence of hydric soils, no primary indicators of wetland hydrology are present. Because this area lacks any positive indicators of hydric soils or wetland hydrology, it is considered upland.

Test pits T-6 through T-9 are located adjacent to Wetland B. Test pit T-6 was dug in an area dominated by hydrophytic vegetation (i.e., creeping buttercup and velvet grass [*Holcus lantus*]). The surface horizon extends to six inches and is a dry, very dark brown (10YR2/2) loam without mottles. The B horizon extends to 18 inches and is a dark grayish brown (10YR4/2) gravelly loam without mottles. Unmottled soils with a matrix chroma of 2 are not considered hydric soils. In addition to the absence of hydric soils, no primary indicators of wetland hydrology are present. Because this area lacks any positive indicators of hydric soils or wetland hydrology, it is considered upland.

Test pit T-7 was dug in an area dominated by hydrophytic vegetation (i.e., creeping buttercup). The surface horizon extends to 18 inches and is a dry to damp, dark brown (10YR3/3) loam without mottles. Unmottled soils with a matrix chroma of 2 are not considered hydric soils. In addition to the absence of hydric soils, no primary indicators of wetland hydrology are present.

Because this area lacks any positive indicators of hydric soils or wetland hydrology, it is considered upland.

Test pit T-8 was dug in the wood shed. Vegetation is dominated by non-hydrophytic vegetation (i.e., Himalayan blackberry, swordfern [*Polystichum munitum*], and red elderberry [*Sambucus racemosa*]). The surface horizon extends to 18 inches and is a moist, very dark grayish brown (10YR3/2) gravelly loam with dark reddish brown (5YR3/3), moderate, small to medium, and faint mottles. Mottled soils with a matrix chroma of 2 are considered hydric soils. In addition to the absence of hydrophytic vegetation, no primary indicators of wetland hydrology are present. Because this area lacks any positive indicators of wetland hydrology or dominance by hydrophytic vegetation, it is considered upland.

Test pit T-9 was dug east of the existing house. Vegetation is dominated by non-hydrophytic vegetation (i.e., Himalayan blackberry, sword fern, and red elderberry). The surface horizon extends to 18 inches and is a moist, very dark grayish brown (10YR3/2) gravelly loam without mottles. Unmottled soils with a matrix chroma of 2 are not considered hydric soils. In addition to the absence of hydrophytic vegetation and hydric soils, no primary indicators of wetland hydrology are present. Because this area lacks any positive indicators of wetland hydrology, hydric soils or dominance by hydrophytic vegetation, it is considered upland.

3.3 STREAMS

Vasa Creek flows east along the southern edge of the property. Vasa Creek is approximately 2.3 miles in length and empties into the southwestern shore of Lake Sammamish (Williams et al., 1875). Coho salmon (*Oncorhynchus kisutch*), cutthroat trout (*O. clarki*), and possibly sockeye salmon (*O nerka*) utilize Vasa Creek (Williams et al., 1975; King County 2001). Chinook salmon (*O. tshawytscha*), which is listed as threatened under the Endangered Species Act, is not known to occur in Vasa Creek (King County 2001).

4.0 CONCLUSIONS AND REGULATORY IMPLICATIONS

4.1 WETLAND A

It is unclear whether Wetland A would be regulated by the City of Bellevue as a wetland, since the pond was excavated in an upland area, originally for a source of stock-water and then as a stormwater retention/detention pond. A jurisdictional determination by the City of Bellevue will need to be completed. However, should Wetland A be regulated by the City of Bellevue, it would be classified as a Type A wetland because it is adjacent to the Type A riparian corridor

of Vasa Creek (Bellevue City Code [BCC] Title 20.50.054). Type A wetlands require a 50 foot buffer and a 20 foot structure setback.

According to BCC 20.25H.090B, structure setbacks can be modified if the applicant can demonstrate that vegetation will not be disturbed by construction or maintenance activities and will be maintained in a healthy condition, solar access to vegetation must be maintained at least 50 percent of daylight hours during the normal growing season, and access for repair, or maintenance of culverts or other structures will be preserved.

According to BCC 20.25H.070.B2, wetland buffers may be averaged to reduce the minimum dimension up to 25 percent to accommodate specific design features, provided you meet the Codes requirements.

Should any modification to Wetland A itself be proposed, a Joint Aquatic Resource Application (JARPA) and a copy of this report would need to be submitted to the US Army Corps of Engineers (Corps). The Corps would then make a jurisdictional determination. Should the Corps decide Wetland A is jurisdictional, a permit would be required for any modification.

4.2 WETLAND B

It is unclear whether Wetland A would be regulated by the City of Bellevue as a wetland, since there is no surface water connection to Vasa Creek. However, should Wetland B be regulated by the City of Bellevue, it may also be classified as a Type A wetland because it is adjacent to the Type A riparian corridor of Vasa Creek (Bellevue City Code [BCC] Title 20.50.054). The same setbacks as Wetland A would be required for Wetland B.

Should any modification to Wetland B be proposed, you would need to notify the Corps by submitting a JARPA and a copy of this report. However, Wetland B is not expected to be jurisdictional because of its size and there is no surface water connection to water of the U.S.

5.0 REFERENCES

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Table

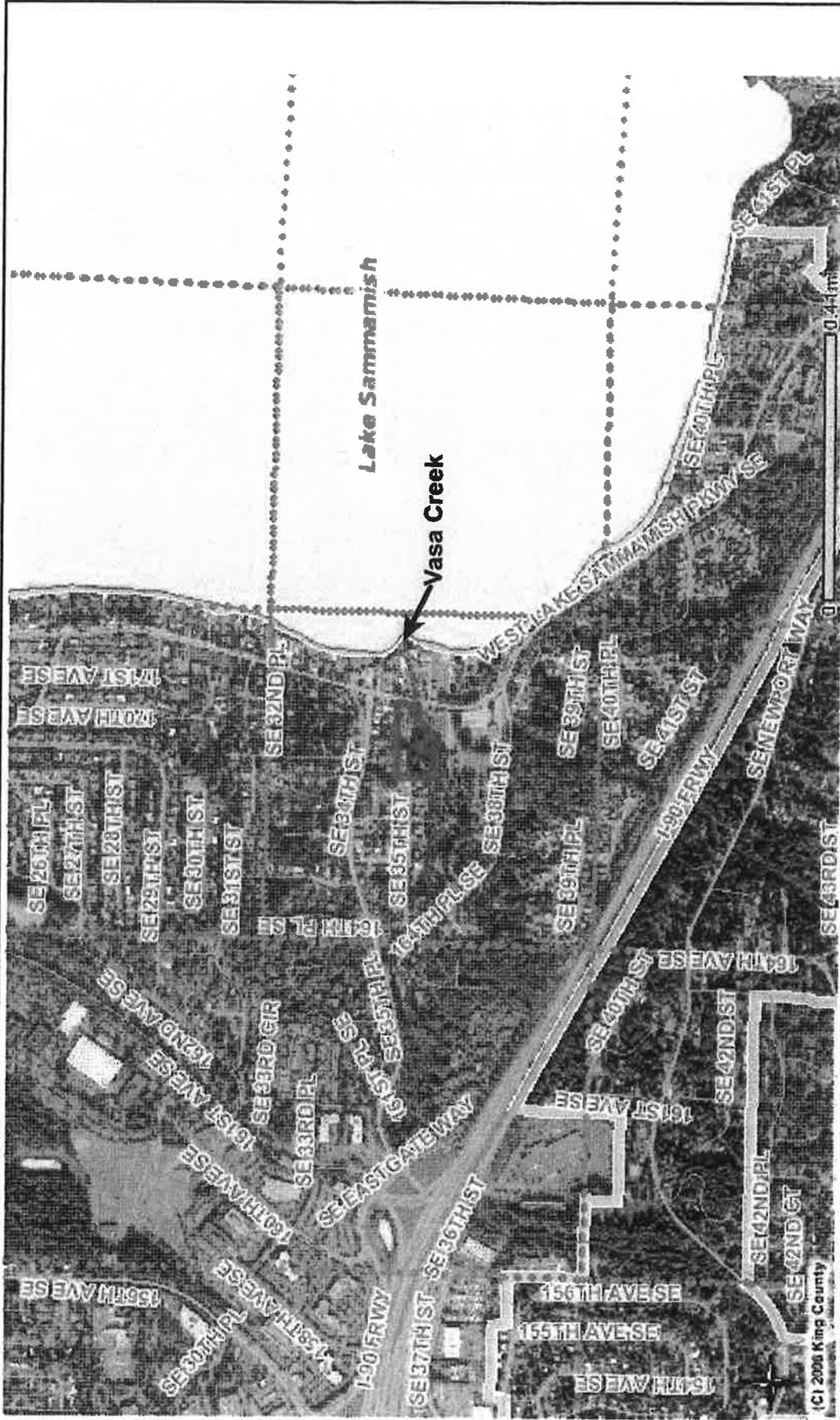
TABLE
PLANT SPECIES FOUND ON THE PROJECT SITE
 Boscole Wetland Delineation
 Bellevue, Washington

Cover Class	Scientific Name	Common Name	Wetland Indicator Status
Trees	<i>Populus balsamifera</i>	black cottonwood	FAC
	<i>Alnus rubra</i>	red alder	FAC
	—	unidentified ornamental tree	NI
Shrubs	<i>Salix</i> sp.	weeping willow	NI
	<i>Rubus discolor</i>	Himalayan blackberry	FACU
	<i>Sambucus racemosa</i>	red elderberry	FACU
Herbs	<i>Rubus spectabilis</i>	salmonberry	FAC
	<i>Holcus lanatus</i>	common velvetgrass	FAC
	<i>Ranunculus repens</i>	creeping buttercup	FACW
	<i>Iris</i> sp.	cultivated iris	NI
	<i>Spirodela polyrhiza</i>	duckweed	OBL
	<i>Hedera helix</i>	English ivy	NI
	<i>Carex tumulicola</i>	foothill sedge	FACU
	—	grasses (lawn), unidentified	NI
	<i>Equisetum telmateia</i>	horsetail	FACW
	<i>Athyrium filix-femina</i>	lady fern	FAC
	<i>Geum macrophyllum</i>	large leaf avens	FACW-
	<i>Phalaris arundinacea</i>	reed canarygrass	FACW
	<i>Juncus effuses</i>	soft rush	FACW
<i>Polystichum munitum</i>	swordfern	FACU	
<i>Veronica Americana</i>	veronica	OBL	

+ A plus (+) sign or minus (-) sign is used with the facultative indicator categories to more specifically define the regional frequency of occurrence in wetlands. The + indicates a more frequent occurrence.

* An asterisk (*) identifies a tentative assignment based on limited information.

Figures

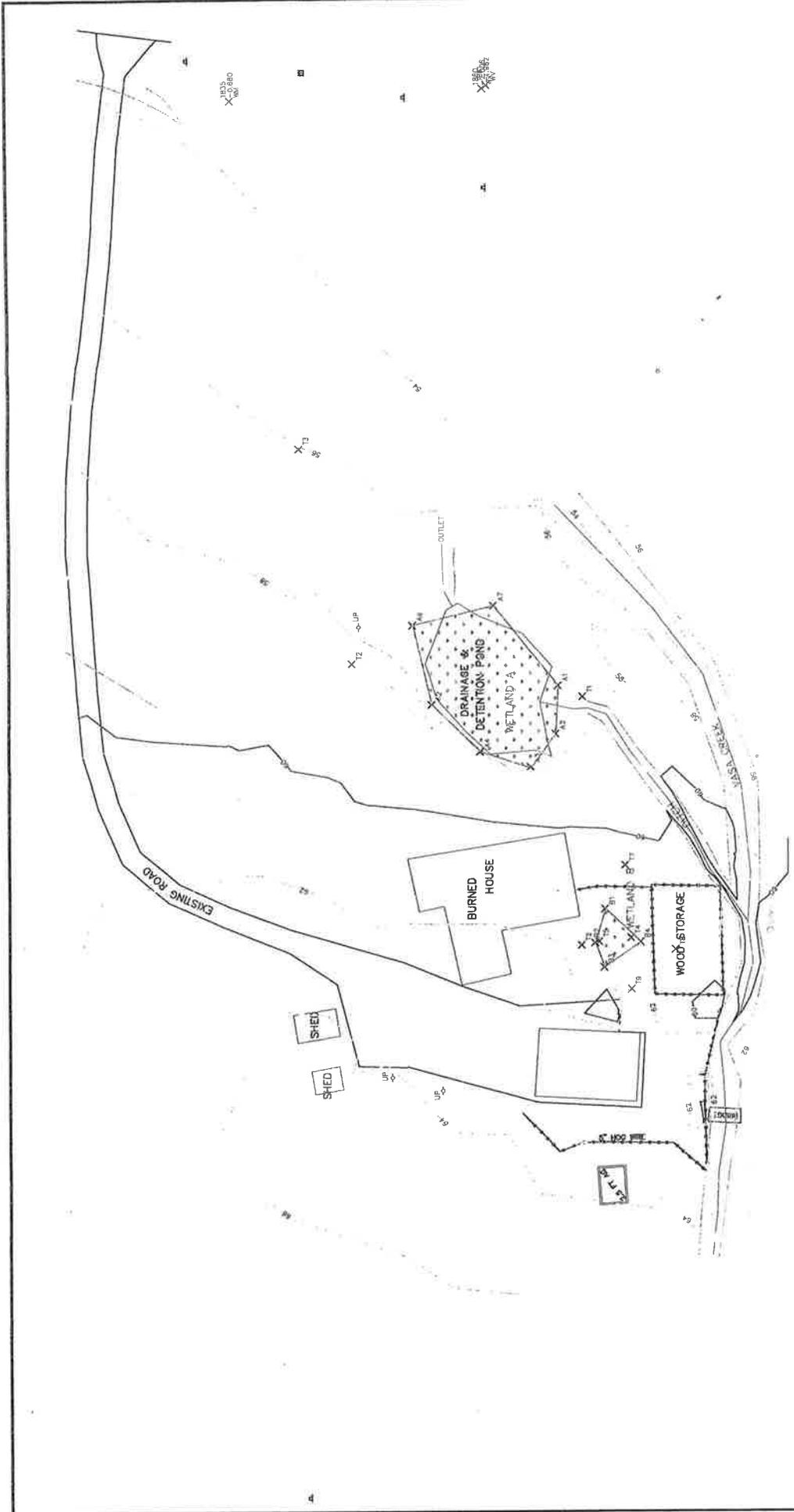


SITE VICINITY
Wetland Delineation
Boscole Property
Bellevue, Washington

By: ACJ | Date: 04/18/2006 | Project No. 12367.000

 **Geomatrix**

Figure 1



Appendix A

Methods of Determining Wetland Characteristic and Classification

APPENDIX A

METHODS OF DETERMINING WETLAND CHARACTERISTICS AND CLASSIFICATION

WETLAND CHARACTERISTICS

The Washington State Department of Ecology (Ecology, 1997) and the US Army Corps of Engineers (Corps, 1987) usually requires that the following three characteristics be present for an area to be identified as a wetland: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology. The following subsections detail the methods we used to determine whether these characteristics are present on site.

HYDROPHYTIC VEGETATION

To determine whether an area has hydrophytic vegetation, the dominant plant species are identified. Pentec uses the method described in the 1989 Federal Manual for Wetland Identifying and Delineating Jurisdictional Wetlands (FICWD, 1989) to determine the dominant plants in each stratum. Dominant plants are those species that, when ranked in descending order of abundance and cumulatively totaled, immediately exceed 50 percent of the dominance threshold number, plus any additional species comprising 20 percent or more of the sum of the midpoints for a given stratum. The dominance threshold number is equal to 50 percent of the sum of the midpoints for a given stratum. Cover classes (and midpoints) are as follows: T = <1% (none), 1 to 5% (3.0), 6 to 15% (10.5), 16 to 25% (20.5), 26 to 50% (38.0), 51 to 75% (63.0), 76 to 95% (85.5), 95 to 100% (98.0). Reed (1988) and Reed et al. (1993) have evaluated many plant species common in western Washington, and have assigned a wetland indicator status to each based on the species' probability of occurring in wetlands (Table 1). A plant community dominated by species commonly found in wetlands (OBL, FACW, and FAC) meets the criteria for hydrophytic vegetation.

**TABLE 1
KEY TO WETLAND INDICATOR STATUS**

Code	Wetland Indicator Status	Probability of Occurrence in Wetland
OBL	Obligate wetland species	>99%
FACW	Facultative wet	67 to 99%
FAC	Facultative	34 to 66%
FACU	Facultative upland	1 to 33%
UPL	Obligate upland	<1%

HYDRIC SOIL

To determine whether an area has hydric soil, test pits are dug and the soil color and other characteristics are examined. Soil in which any of the following indicators is present meets the criteria for hydric soil:

Low-chroma matrix. Soil with a low-chroma matrix typically develops when mineral soil is saturated or inundated for sufficient periods of time to result in anaerobic (oxygen-less) conditions. Anaerobic conditions cause elements common in soil, particularly iron compounds, to exist in reduced forms that are usually bluish, greenish, or grayish in color. Soil colors are determined using a Munsell color chart (Kollmorgen, 1995), which uses abbreviations to describe colors; e.g., 10YR 2/1. In the abbreviation, the last number indicates the chroma; a chroma of 1 (without mottles) or 2 (with mottles) in the subsurface horizon is considered low. Soils with a matrix chroma of 2 are usually considered hydric when mottles are present.

Mottles. In seasonally saturated wetlands, fluctuating water levels can trap air bubbles in the soil. The air pockets allow magnesium and iron compounds in the soil to oxidize, forming rust-colored mottles (spots or blotches). Mottles found in soil with a matrix chroma of 2 or less often indicate the soil is hydric.

High organic content. Organic soils form if inundation prevents decomposition and organic debris accumulates. Organic content is considered high if the soil is composed of more than 20 to 30 percent (range fluctuates depending upon other soil characters) organic material by weight in the upper 32 inches of the soil profile.

Other hydric indicators. Other positive indicators of hydric soils include histic epipedons, sulfide or “rotten egg” odor, aquic or peraquic moisture regimes, presence of soils listed as hydric soils, and presence of iron or manganese concretions.

WETLAND HYDROLOGY

To determine whether an area has wetland hydrology, the area is examined for inundation, soil saturation, or shallow groundwater tables, or for hydrologic indicators. In western Washington, an area in which soils are saturated to the surface for at least 12.5 percent of the growing season (30 days) meets the criteria for wetland hydrology; however, seasonal changes in water levels and immediacy of precipitation events must be considered when an area’s hydrology is evaluated. When wetland hydrology is not present at the time of the site visit, it can be inferred

from the presence of any of the following hydrologic indicators: watermarks on vegetation, drift lines, sediment deposits, water-stained leaves, surface-scoured areas, wetland drainage patterns, or oxidized root channels. Presence of hydrophytic vegetation and hydric soils also are strong indicators that wetland hydrology is likely present.

CLASSIFICATION

Wetlands are classified according to Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979). Under the Cowardin classification scheme, wetlands and deepwater habitats are grouped into systems based on shared hydrologic factors. The systems described in Cowardin et al. (1979) are palustrine, marine, estuarine, riverine, and lacustrine.

The palustrine system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, mosses and lichens, and all such wetlands that occur in tidal areas where the salinity due to ocean-derived salts is below 5 parts per thousand. Wetlands included in the palustrine system are those commonly referred to as marshes, swamps, bogs, fens, prairies, seeps, and intermittent ponds.

Palustrine wetlands are divided into classes by the dominant vegetation: Forested wetlands are dominated by trees greater than approximately 20 feet tall with 30 percent cover, scrub-shrub wetlands are dominated by woody shrubs, and emergent wetlands are dominated by nonwoody plants. Other common palustrine wetland classes include unconsolidated bottom (<30% plant cover) and aquatic bed. These latter two classes are usually permanently inundated areas and sometimes referred to as open water.

REFERENCES

- Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T., 1979, Classification of Wetlands and Deepwater Habitats of the United States: U.S. Fish and Wildlife Service, Office of Biological Services, Publication FWS/OBS-79/31, Washington, D.C.
- Federal Interagency Committee for Wetland Delineation (FICWD), 1989, Federal Manual for Identifying and Delineating Jurisdictional Wetlands: U.S. Army Corps of Engineers, US Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Agriculture Soil Conservation Service, cooperative technical publication, Washington, D.C.
- Kollmorgen Corporation, 1995, Munsell Soil Color Charts: Kollmorgen Corporation, Baltimore, Maryland.
- Reed, P.B., Jr., 1988, National List of Plant Species That Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service, Biological Report 88(26.9), Washington, D.C.
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- US Army Corps of Engineers (Corps), 1987, Corps of Engineers Wetlands Delineation Manual: Technical Report Y-87-1, Waterways Experiment Station, Vicksburg, Mississippi.
- Washington State Department of Ecology (Ecology), 1997, Washington State Wetlands Identification and Delineation Manual: Publication No. 96-94, Olympia.

Appendix B

Wetland Determination Data Forms

DATA FORM 1
Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscele</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscele</u>	County: <u>King</u>
Investigator(s): <u>KIAM KM</u>	State: <u>WA</u>
Do Normal Circumstances exist on the site? Is the site significantly disturbed (atypical situation)? Is the area a potential Problem Area?	<input checked="" type="radio"/> yes <input type="radio"/> no <input checked="" type="radio"/> yes <input type="radio"/> no <input checked="" type="radio"/> yes <input type="radio"/> no
Community ID: <u>Wetland A</u>	
Transect ID: <u>Pond</u>	
Plot ID:	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>alder</u>	<u>T</u>	<u>FAC</u>	<u>duckweed</u>	<u>H</u>	<u>OBL</u>
<u>BCW</u>	<u>T</u>	<u>FAC</u>	<u>veronica</u>	<u>H</u>	<u>OBL</u>
<u>rcg</u>	<u>H</u>	<u>FACW</u>	<u>salmanberry</u>	<u>S</u>	<u>FAC</u>
<u>horsetail</u>	<u>H</u>	<u>FACW</u>			
<u>buttercup (creeping)</u>	<u>H</u>	<u>FACW</u>			

HYDROPHYTIC VEGETATION INDICATORS:
 % of dominants OBL, FACW, & FAC: 8/8

Check all indicators that apply & explain below:

Regional knowledge of plant communities	<input checked="" type="checkbox"/>	Wetland plant list (nat'l or regional)	<input checked="" type="checkbox"/>	OTHER	<input type="checkbox"/>
Physiological or reproductive adaptations	<input type="checkbox"/>	Morphological adaptations	<input type="checkbox"/>		
Technical Literature	<input type="checkbox"/>	Wetland Plant Data Base	<input type="checkbox"/>		

Hydrophytic vegetation present? yes no
 Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: <input checked="" type="radio"/> yes <input type="radio"/> no	Sediment Deposits: <input checked="" type="radio"/> yes <input type="radio"/> no
Based on:	Drift Lines: <input checked="" type="radio"/> yes <input type="radio"/> no	Drainage Patterns: <input checked="" type="radio"/> yes <input type="radio"/> no
Dept. of inundation: <u>24-36</u> inches	Oxidized Root (live roots) Channels <12 in. <input type="checkbox"/> yes <input type="checkbox"/> no	Local Soil Survey: <input type="checkbox"/> yes <input checked="" type="radio"/> no
Depth to free water in pit: <u>—</u> inches	FAC Neutral: <input checked="" type="radio"/> yes <input type="radio"/> no	Water-stained Leaves: <input checked="" type="radio"/> yes <input type="radio"/> no
Depth to saturated soil: <u>—</u> inches	Check all that apply & explain below: Stream, Lake or gage data: <input type="checkbox"/> Aerial photographs: <input type="checkbox"/> Other: <input type="checkbox"/>	

Wetland hydrology present? yes no
 Rationale for decision/Remarks:
Pond - used for collection of roof water + french drains

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Norma sandy loam

Drainage Class excessively & poorly
 Field observations confirm (Yes) No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? (yes) no
 Rationale for decision/Remarks:

Assumed hydric soils b/c area is an open water pond

Wetland Determination (circle)

Hydrophytic vegetation present? (yes) no
 Hydric soils present? (yes) no
 Wetland hydrology present? (yes) no
 Is the sampling point within a wetland? (yes) no

Rationale/Remarks:

NOTES: outlet ditch has 0-3 in. standing water 4/10 sat. soils to where it meets w/ Vasa Cr.

Flaps A-1 thru A-7 delineat pond

Photo 1 - pond w/ T1 in background

DATA FORM 1
 Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u> State: <u>WA</u>
Investigator(s): <u>KAM TM</u>	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: Transect ID: Plot ID: <u>T1</u>
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>black cottonwood</u>	<u>T</u>	<u>FAC</u>	<u>alder</u>	<u>T</u>	<u>FAC</u>
<u>H. Blackberry</u>	<u>S</u>	<u>PACU</u>			
<u>reed canary grass</u>	<u>H</u>	<u>FAC</u>			
<u>horsetail</u>	<u>H</u>	<u>FACW</u>			
<u>english ivy</u>	<u>H</u>	<u>NI</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 34/5

Check all indicators that apply & explain below:

Regional knowledge of plant communities Wetland plant list (nat'l or regional) OTHER _____
 Physiological or reproductive adaptations _____ Morphological adaptations _____
 Technical Literature _____ Wetland Plant Data Base _____

Hydrophytic vegetation present? yes no
 Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots)	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>0</u> inches	Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>0</u> inches	<u>1.1</u>	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>

Check all that apply & explain below:
 Stream, Lake or gage data: _____
 Aerial photographs: _____ Other: _____

Wetland hydrology present? yes no
 Rationale for decision/Remarks:

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Norma Sandy loam

Drainage Class excessively +

Field observations confirm ^{poorly} Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
4	A	10YR 2/2	—	—	loam	
18	B	2.5Y 3/2	—	—	sand	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

No mottling

Wetland Determination (circle)

Hydrophytic vegetation present? yes no

Hydric soils present? yes no

Wetland hydrology present? yes no

Is the sampling point within a wetland? yes no

Rationale/Remarks:

NOTES:

DATA FORM 1
 Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>Kirby</u> State: <u>WA</u> S/T/R:
Investigator(s): <u>KAM/JM</u>	Community ID:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Transect ID:
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	Plot ID: <u>T2</u>
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>creeping buttercup</u>	<u>H</u>	<u>FACW</u>	<u>ornamental tree</u>	<u>T</u>	<u>NI</u>
<u>ing. leaf awens</u>	<u>H</u>	<u>FACW-</u>			
<u>Common velvetgrass</u>	<u>H</u>	<u>FAC</u>			
<u>weeping willow</u>	<u>T</u>	<u>NI</u>			
<u>H. blackberry</u>	<u>S</u>	<u>FACU</u>			

HYDROPHYTIC VEGETATION INDICATORS:
 % of dominants OBL, FACW, & FAC: 3/6

Check all indicators that apply & explain below:

Regional knowledge of plant communities <input checked="" type="checkbox"/>	Wetland plant list (nat'l or regional) <input checked="" type="checkbox"/>	OTHER _____
Physiological or reproductive adaptations _____	Morphological adaptations _____	
Technical Literature _____	Wetland Plant Data Base _____	

Hydrophytic vegetation present? yes no
 Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: <input type="radio"/> yes <input checked="" type="radio"/> no	Sediment Deposits: <input type="radio"/> yes <input checked="" type="radio"/> no
Based on:	Drift Lines: <input type="radio"/> yes <input checked="" type="radio"/> no	Drainage Patterns: <input checked="" type="radio"/> yes <input type="radio"/> no
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots) Channels <12 in. <input type="radio"/> yes <input checked="" type="radio"/> no	Local Soil Survey: <input type="radio"/> yes <input checked="" type="radio"/> no
Depth to free water in pit: <u>5</u> inches	FAC Neutral: <input checked="" type="radio"/> yes <input type="radio"/> no	Water-stained Leaves: <input type="radio"/> yes <input checked="" type="radio"/> no
Depth to saturated soil: <u>0</u> inches	<u>201</u>	
Check all that apply & explain below:	Other:	
Stream, Lake or gage data: _____		
Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no
 Rationale for decision/Remarks:
moist soils; very weak drainage ptns

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Norma Sandy loam

Drainage Class excessively & poorly

Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
6	A	10YR 2/2	—	—	loam	
18	B	10YR 3/2	—	—	sand, gravel	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no
 Rationale for decision/Remarks:

No mottling

Wetland Determination (circle)

Hydrophytic vegetation present? yes no
 Hydric soils present? yes no
 Wetland hydrology present? yes no
 Is the sampling point within a wetland? yes no

Rationale/Remarks:

open field where cbc + vg have dominated recently, disturbed area

NOTES:

photo 2 T2 in foreground | T3 in background

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscote</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscote</u>	County: <u>King</u> State: <u>WA</u>
Investigator(s): <u>YAM/JM</u>	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: Transect ID: Plot ID: <u>T3</u>
Is the site significantly disturbed (atypical situation)? <input checked="" type="radio"/> yes <input type="radio"/> no	
Is the area a potential Problem Area? <input checked="" type="radio"/> yes <input type="radio"/> no	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>carex (Foothill)</u>	<u>H</u>	<u>FACW</u>	<u>hydroseed</u>	<u>H</u>	<u>NI</u>
<u>soft rush</u>	<u>H</u>	<u>FACW</u>	<u>alder</u>	<u>T</u>	<u>FAC</u>
<u>iris (cultivated)</u>	<u>H</u>	<u>NI</u>	<u>H. blackberry</u>	<u>S</u>	<u>FACW</u>
<u>veg</u>	<u>H</u>	<u>FACW</u>			
<u>C. bullerianus</u>	<u>H</u>	<u>FACW</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 4/8

Check all indicators that apply & explain below:

Regional knowledge of plant communities Wetland plant list (nat'l or regional) OTHER _____
 Physiological or reproductive adaptations _____ Morphological adaptations _____
 Technical Literature _____ Wetland Plant Data Base _____

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

Weak wet, veg

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>1</u> inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>0</u> inches	FAC Neutral: <u>3/1</u> <input checked="" type="radio"/> yes <input type="radio"/> no	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>MOIST</u> inches	Other:	
Check all that apply & explain below: Stream, Lake or gage data: _____ Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no

Rationale for decision/Remarks:

very weak drainage pattern

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Norma sandy loam

Drainage Class excessively +
poorly
 Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
6	A	10YR 2/2	—	—	loam	
18	B	10YR 2/2	—	—	gravel sand	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

No mottling

Wetland Determination (circle)

Hydrophytic vegetation present?	<input checked="" type="radio"/> yes no	Is the sampling point within a wetland?	yes <input checked="" type="radio"/> no
Hydric soils present?	yes <input checked="" type="radio"/> no		
Wetland hydrology present?	yes <input checked="" type="radio"/> no		

Rationale/Remarks:

NOTES: photo 3

DATA FORM 1
Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u>
Investigator(s): <u>KAM/PM</u>	State: <u>WA</u>
	S/T/R: _____
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: _____
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	Transect ID: <u>Wetland B</u>
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	Plot ID: <u>T4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>c. buttercup</u>	<u>H</u>	<u>FACW</u>	<u>Wormseed/Kawn</u>	<u>H</u>	<u>NI</u>
<u>Sword fern</u>	<u>A</u>	<u>FACU</u>			
<u>Salmonberry</u>	<u>S</u>	<u>FAC</u>			
<u>Lady bracket fern</u>	<u>H</u>	<u>FAC</u>			
<u>Ira leaf awens</u>	<u>H</u>	<u>FACW-</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 40/50

Check all indicators that apply & explain below:

Regional knowledge of plant communities Wetland plant list (nat'l or regional) OTHER _____
 Physiological or reproductive adaptations _____ Morphological adaptations _____
 Technical Literature _____ Wetland Plant Data Base _____

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks: _____

HYDROLOGY

Is it the growing season? yes no

Based on: _____

Dept. of inundation: 2 inches

Depth to free water in pit: 15 inches

Depth to saturated soil: 14 inches

Check all that apply & explain below:

Stream, Lake or gage data: _____

Aerial photographs: _____ Other: _____

Wetland hydrology present? yes no

Rationale for decision/Remarks: _____

Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>

Other: 2:2

SOILS

Map Unit Name Peverett gravelly loam 4
 (Series & Phase) Norma Sandy loam

Drainage Class extremely +
poorly
 Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
11	A	10YR 2/2	—	—	sandy loam	
17	B	10YR 2/2	10YR 4/8	low med distinct	loam	
18	C	10YR 3/2	5YR 4/6	small med. distinct	loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

Wetland Determination (circle)

Hydrophytic vegetation present?	<input checked="" type="radio"/> yes <input type="radio"/> no	Is the sampling point within a wetland?	<input checked="" type="radio"/> yes <input type="radio"/> no
Hydric soils present?	<input checked="" type="radio"/> yes <input type="radio"/> no		
Wetland hydrology present?	<input checked="" type="radio"/> yes <input type="radio"/> no		

Rationale/Remarks:

NOTES:

Flags B1 thru B

T5 is w/in boundary of B4

photo 4 view to W of B

5 = T7

@ B3 we dug 2 tests one on w/side & one on upland side to determine boundary @ topo break

DATA FORM 1
 Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u>
Investigator(s): <u>KAM/TM</u>	State: <u>WA</u>
	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: <u>Wetland B</u>
Is the site significantly disturbed (atypical situation)? <input checked="" type="radio"/> yes <input type="radio"/> no	Transect ID:
Is the area a potential Problem Area? <input checked="" type="radio"/> yes <input type="radio"/> no	Plot ID: <u>75</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>C. velvetgrass</u>	<u>H</u>	<u>FAC</u>			
<u>buttercup</u>	<u>HA</u>	<u>FACW</u>			
<u>conifer (unid.)</u>	<u>T</u>	<u>NI</u>			
<u>hydroseed/Lawn</u>	<u>H</u>	<u>NI</u>			
<u>H. tail</u>	<u>H</u>	<u>FACW</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/5

Check all indicators that apply & explain below:

Regional knowledge of plant communities <input checked="" type="checkbox"/>	Wetland plant list (nat'l or regional) <input checked="" type="checkbox"/>	OTHER _____
Physiological or reproductive adaptations _____	Morphological adaptations _____	
Technical Literature _____	Wetland Plant Data Base _____	

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>15</u> inches	FAC Neutral: <u>2:0</u> yes <input checked="" type="radio"/> no <input type="radio"/>	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>6-8</u> inches		

Check all that apply & explain below:

Stream, Lake or gage data: _____	Other: _____
Aerial photographs: _____	Other: _____

Wetland hydrology present? yes no

Rationale for decision/Remarks:

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Norma Sandy loam

Drainage Class excessively +

Field observations confirm poorly (Yes) No mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
18	A	2.5YR 3/2	5YR 4/6	many small dots distinct	loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

mottling in a low-chroma color

Wetland Determination (circle)

Hydrophytic vegetation present? yes no

Hydric soils present? yes no

Wetland hydrology present? yes no

Is the sampling point within a wetland? yes no

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u>
Investigator(s): <u>KAM/KM</u>	State: <u>WA</u>
	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: <u>Near Wet. B</u>
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	
	Transect ID:
	Plot ID: <u>TL</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>velvet grass</u>	<u>H</u>	<u>FAC</u>			
<u>buller w/p</u>	<u>H</u>	<u>FACW</u>			
<u>wind canifer</u>	<u>T</u>	<u>NI</u>			
<u>lawn</u>	<u>H</u>	<u>NI</u>			
<u>H-tail</u>	<u>H</u>	<u>FACW</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/5

Check all indicators that apply & explain below:

Regional knowledge of plant communities <input checked="" type="checkbox"/>	Wetland plant list (nat'l or regional) <input checked="" type="checkbox"/>	OTHER _____
Physiological or reproductive adaptations _____	Morphological adaptations _____	
Technical Literature _____	Wetland Plant Data Base _____	

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>0</u> inches	FAC Neutral: <input checked="" type="radio"/> yes <input type="radio"/> no	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>0</u> inches	Other:	
Check all that apply & explain below:		
Stream, Lake or gage data: _____		
Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no

Rationale for decision/Remarks:

SOILS

Map Unit Name Everett gravelly loam +
 (Series & Phase) Normal Sandy loam

Drainage Class excessively &
poorly
 Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
6	A	10YR 2/2	—	—	loam	
18	B	10YR 4/2	—	—	gravelly loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

No mottling

Wetland Determination (circle)

Hydrophytic vegetation present?	<input checked="" type="radio"/> yes no	Is the sampling point within a wetland?	yes <input checked="" type="radio"/> no
Hydric soils present?	yes <input checked="" type="radio"/> no		
Wetland hydrology present?	yes <input checked="" type="radio"/> no		

Rationale/Remarks:

NOTES:

DATA FORM 1
 Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u> State: <u>WA</u>
Investigator(s): <u>KAM/JM</u>	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: <u>Near Wet B</u> Transect ID: Plot ID: <u>T-7</u>
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>Buttercup</u>	<u>H</u>	<u>FACW</u>			
<u>H. Blackberry</u>	<u>S</u>	<u>FACU</u>			
<u>wood ornamental trees</u>	<u>T</u>	<u>NI</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/1

Check all indicators that apply & explain below:

Regional knowledge of plant communities <input checked="" type="checkbox"/>	Wetland plant list (nat'l or regional) <input checked="" type="checkbox"/>	OTHER _____
Physiological or reproductive adaptations _____	Morphological adaptations _____	
Technical Literature _____	Wetland Plant Data Base _____	

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots) _____	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>0</u> inches	Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>0</u> inches	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>	
Check all that apply & explain below:		Other:
Stream, Lake or gage data: _____		
Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no

Rationale for decision/Remarks: soil damp to dry

SOILS

Map Unit Name Everett gravelly loam
 (Series & Phase) Norma Sandy loam

Drainage Class excessively & poorly
 Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
18	A	10YR 3/3	—	—	loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? yes no

Rationale for decision/Remarks:

Not low-chroma color

Wetland Determination (circle)

Hydrophytic vegetation present?	<input checked="" type="radio"/> yes <input type="radio"/> no	Is the sampling point within a wetland?	yes <input checked="" type="radio"/> no
Hydric soils present?	<input type="radio"/> yes <input checked="" type="radio"/> no		
Wetland hydrology present?	<input type="radio"/> yes <input checked="" type="radio"/> no		

Rationale/Remarks:

NOTES: T₆ is equal to stream drop (step pools)

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/16/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u>
Investigator(s): <u>WAM/TM</u>	State: <u>WA</u>
	S/T/R:
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID: <u>wood shed</u>
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	Transect ID:
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	Plot ID: <u>T8</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>H blackberry</u>	<u>S</u>	<u>FACU</u>			
<u>Sword fern</u>	<u>H</u>	<u>FACU</u>			
<u>elderberry</u>	<u>S</u>	<u>FACU</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC:

Check all indicators that apply & explain below:

Regional knowledge of plant communities Wetland plant list (nat'l or regional) OTHER _____
 Physiological or reproductive adaptations _____ Morphological adaptations _____
 Technical Literature _____ Wetland Plant Data Base _____

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: <input type="radio"/> yes <input checked="" type="radio"/> no	Sediment Deposits: <input type="radio"/> yes <input checked="" type="radio"/> no
Based on:	Drift Lines: <input type="radio"/> yes <input checked="" type="radio"/> no	Drainage Patterns: <input type="radio"/> yes <input checked="" type="radio"/> no
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots): <input type="radio"/> yes <input checked="" type="radio"/> no	Local Soil Survey: <input type="radio"/> yes <input checked="" type="radio"/> no
Depth to free water in pit: <u>0</u> inches	Channels <12 in. <input type="radio"/> yes <input checked="" type="radio"/> no	FAC Neutral: <input type="radio"/> yes <input checked="" type="radio"/> no
Depth to saturated soil: <u>0</u> inches	Water-stained Leaves: <input type="radio"/> yes <input checked="" type="radio"/> no	
Check all that apply & explain below:	Other:	
Stream, Lake or gage data: _____		
Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no

Rationale for decision/Remarks:

soils moist

SOILS

Map Unit Name Everett gravelly loam
 (Series & Phase) Norma sandy loam

Drainage Class excessively + poorly
 Field observations confirm Yes No
 mapped type?

Taxonomy (subgroup) _____

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
18	A	10YR 3/2	5YR 3/3	small-med moderate faint	gravelly loam	

Hydric Soil Indicators: (check all that apply)

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (explain in remarks)

Hydric soils present? yes no
 Rationale for decision/Remarks:

Wetland Determination (circle)

Hydrophytic vegetation present?	yes <input type="radio"/> no <input checked="" type="radio"/>	Is the sampling point within a wetland?	yes <input type="radio"/> no <input checked="" type="radio"/>
Hydric soils present?	yes <input checked="" type="radio"/> no <input type="radio"/>		
Wetland hydrology present?	yes <input type="radio"/> no <input checked="" type="radio"/>		

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
 (WA State Wetland Delineation Manual or
 1987 Corps Wetland Delineation Manual)

Project/Site: <u>Boscole</u>	Date: <u>4/6/06</u>
Applicant/owner: <u>Boscole</u>	County: <u>King</u>
Investigator(s): <u>KLAM/HM</u>	State: <u>WA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	S/T/R:
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	Community ID:
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	Transect ID:
	Plot ID: <u>T9</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<u>buttercup</u>	<u>H</u>	<u>FACW</u>			
<u>e. lilyberry</u>	<u>S</u>	<u>FACU</u>			
<u>sword fern</u>	<u>A</u>	<u>FACU</u>			
<u>lady fern</u>	<u>H</u>	<u>FAC</u>			
<u>H. blackberry</u>	<u>S</u>	<u>FACU</u>			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 2/5

Check all indicators that apply & explain below:

Regional knowledge of plant communities Wetland plant list (nat'l or regional) OTHER _____
 Physiological or reproductive adaptations _____ Morphological adaptations _____
 Technical Literature _____ Wetland Plant Data Base _____

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on:	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: <u>0</u> inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to free water in pit: <u>0</u> inches	FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>	Water-stained Leaves: yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: <u>0</u> inches	<u>1/3</u> <input checked="" type="radio"/>	
Check all that apply & explain below:	Other:	
Stream, Lake or gage data: _____		
Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes no

Rationale for decision/Remarks:

MOIST to 18"

SOILS

Map Unit Name Beverett gravelly loam
 (Series & Phase) Norma sandy loam

Drainage Class excessively +
 Field observations confirm ^{poorly} (Yes) No mapped type?

Taxonomy (subgroup) _____

Profile Description						Drawing of soil profile (match description)
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	
18	A	10YR 3/2	—	—	gravelly loam	

- Hydric Soil Indicators:** (check all that apply)
- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (explain in remarks): |

Hydric soils present? yes no
 Rationale for decision/Remarks:

No mottling

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	<u>no</u>	Is the sampling point within a wetland?	yes	<u>no</u>
Hydric soils present?	yes	<u>no</u>			
Wetland hydrology present?	yes	<u>no</u>			

Rationale/Remarks:

NOTES:

Appendix C

Wetland Rating Forms

WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): Boscole Wetland A

Location: SEC: 12 TOWNSHIP: 24N RANGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: KAM Affiliation: Geomatrix Date of site visit: 4/6/06

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II ___ III X IV ___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions

6

Score for Hydrologic Functions

20

Score for Habitat Functions

19

TOTAL score for functions

45

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ Does not Apply X

Final Category (choose the "highest" category from above)

III

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class
Estuarine	Depressional <u>X</u>
Natural Heritage Wetland	Riverine
Bog	Lake-fringe
Mature Forest	Slope
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	
None of the above	<u>X</u>

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
<p>SP1. <i>Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		X
<p>SP2. <i>Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.</p>		X
<p>SP3. <i>Does the wetland contain individuals of Priority species listed by the WDFW for the state?</i></p>		X
<p>SP4. <i>Does the wetland have a local significance in addition to its functions?</i> For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.</p>		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: Boscole Wetland A Date: 4/6/00

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?

NO - go to 2

YES - the wetland class is Tidal Fringe

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES - Freshwater Tidal Fringe NO - Saltwater Tidal Fringe (Estuarine)

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.

NO - go to 3

YES - The wetland class is Flats

If your wetland can be classified as a "Flats" wetland, use the form for Depressional wetlands.

3. Does the wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO - go to 4

YES - The wetland class is Lake-fringe (Lacustrine Fringe)

4. Does the wetland meet all of the following criteria?

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland without being impounded?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5

YES - The wetland class is Slope

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

NO - go to 6

YES - The wetland class is Riverine

6. Is the wetland in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. **NOTE:** Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		
D	D 1. Does the wetland have the <u>potential</u> to improve water quality? (see p. 38)	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet points = 3 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland has an unconstricted surface outlet points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0	1
D	D1.4 Characteristics of seasonal ponding or inundation. <i>This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0 NOTE: See text for indicators of seasonal and permanent inundation..	0
D	Total for D 1 <i>Add the points in the boxes above</i>	3
D	D 2. Does the wetland have the <u>opportunity</u> to improve water quality? (see p. 44) Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	TOTAL - Water Quality Functions Multiply the score from D1 by D2 <i>Add score to table on p. 1</i>	6

D Depressional and Flats Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation.		
D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? (see p. 46)		
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	2
D	D 3.2 Depth of storage during wet periods <i>Estimate the height of ponding above the bottom of the outlet</i> Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	5
D	D 3.3 Contribution of wetland to storage in the watershed <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.</i> The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	3
D	Total for D 3 <i>Add the points in the boxes above</i>	10
D	D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? (see p. 49) Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. <i>Note which of the following indicators of opportunity apply.</i> — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems <input checked="" type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	20

These questions apply to wetlands of all HGM classes.

Points

HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

H 1. Does the wetland have the potential to provide habitat for many species?

H 1.1. Vegetation structure (see p. 72)

Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or 1/4 acre.

- Aquatic bed
- Emergent plants
- Scrub/shrub (areas where shrubs have >30% cover)
- Forested (areas where trees have >30% cover)
- Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)

Add the number of vegetation types that qualify. If you have:

- | | |
|-----------------|------------|
| 4 types or more | points = 4 |
| 3 types | points = 2 |
| 2 types | points = 1 |
| 1 type | points = 0 |

0

H 1.2. Hydroperiods (see p. 73)

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count. (see text for descriptions of hydroperiods)

- | | | |
|---|-------------------------|------------|
| <input checked="" type="checkbox"/> Permanently flooded or inundated | 4 or more types present | points = 3 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present | points = 2 |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present | point = 1 |
| <input type="checkbox"/> Saturated only | | |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake-fringe wetland = 2 points | | |
| <input type="checkbox"/> Freshwater tidal wetland = 2 points | | |

2

H 1.3. Richness of Plant Species (see p. 75)

Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold)

You do not have to name the species.

Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle

- | | | | |
|---|-----------------|----------------|------------|
| <i>List species below if you want to:</i> | If you counted: | > 19 species | points = 2 |
| | | 5 - 19 species | points = 1 |
| | | < 5 species | points = 0 |

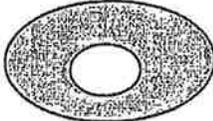
1

H 1.4. Interspersion of habitats (see p. 76)

Decide from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



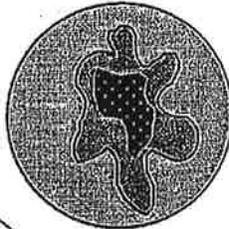
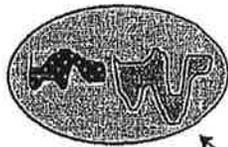
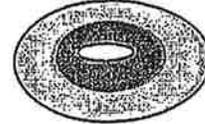
None = 0 points



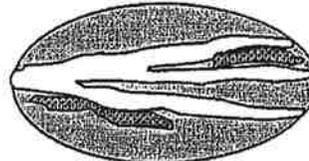
Low = 1 point



Moderate = 2 points



High = 3 points



[riparian braided channels]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

H 1.5. Special Habitat Features: (see p. 77)

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
- Standing snags (diameter at the bottom > 4 inches) in the wetland
- Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)
- Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present
- At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (structures for egg-laying by amphibians)
- Invasive plants cover less than 25% of the wetland area in each stratum of plants

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

Comments

<p>H 2. Does the wetland have the opportunity to provide habitat for many species?</p>	
<p>H 2.1 Buffers (see p. 80) Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</p> <ul style="list-style-type: none"> — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) Points = 5 — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none"> — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0. — Buffer does not meet any of the criteria above. Points = 1 	
<p>H 2.2 Corridors and Connections (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H.2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? <p style="text-align: center;">YES = 1 point NO = 0 points</p>	

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82)

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.
- Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
- Marine/Estuarine Shorelines:** Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).
- If wetland has 3 or more priority habitats = 4 points
If wetland has 2 priority habitats = 3 points
If wetland has 1 priority habitat = 1 point No habitats = 0 points

3

<p>H 2.4 <u>Wetland Landscape</u> (choose the one description of the landscape around the wetland that best fits) (see p. 84)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile. points = 2</p> <p>There are no wetlands within ½ mile. points = 0</p>	<p>4</p>
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores in the column above</p>	<p>10</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1.</p>	<p>19</p>

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i> S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___</p> <p>YES ___ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category I NO <input checked="" type="checkbox"/></p>	<p>Cat. I</p>
<p>SC 3.0 Bogs (see p. 87) Does the wetland (or part of the wetland) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the wetland have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No <input checked="" type="checkbox"/> - go to Q. 2</p> <p>2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No <input checked="" type="checkbox"/> - Is not a bog for purpose of rating</p> <p>3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes - Is a bog for purpose of rating No <input checked="" type="checkbox"/> - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.</p> <p>3. Is the wetland forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</p> <p>4. YES = Category I No <input checked="" type="checkbox"/> Is not a bog for purpose of rating</p>	<p>Cat. I</p>

<p>SC 4.0 Forested Wetlands (see p. 90) Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. <p>NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <ul style="list-style-type: none"> — Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. <p>YES = Category I NO X</p>	<p>Cat. I</p>
<p>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) <p>YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meets all of the following three conditions?</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) <p>YES = Category I NO = Category II</p>	<p>Cat. I</p> <p>Cat. II</p>

<p>SC 6.0 Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES - go to SC 6.1 NO <input checked="" type="checkbox"/> not an interdunal wetland for rating <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger?</p> <p> YES = Category II NO – go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p> YES = Category III</p>	<p>Cat. II</p> <p>Cat. III</p>
<p>Category of wetland based on Special Characteristics <i>(Choose the "highest" rating if wetland falls into several categories and record on p. 11)</i></p> <p>If you answered NO for all types enter "Not Applicable" on p. 11</p>	<p>NA</p>

WETLAND RATING FORM - WESTERN WASHINGTON

Name of wetland (if known): Boscole - Wetland B

Location: SEC: 12 TOWNSHIP: 4N RANGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: KAM Affiliation: Geomatrix Date of site visit: 4/6/00

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I II III IV

Category I = Score \geq 70
 Category II = Score 51-69
 Category III = Score 30-50
 Category IV = Score < 30

Score for Water Quality Functions

8

Score for Hydrologic Functions

0

Score for Habitat Functions

11

TOTAL score for functions

19

Category based on SPECIAL CHARACTERISTICS of wetland

I II Does not Apply

Final Category (choose the "highest" category from above)

IV

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class	
Estuarine	Depressional	<input checked="" type="checkbox"/>
Natural Heritage Wetland	Riverine	<input type="checkbox"/>
Bog	Lake-fringe	<input type="checkbox"/>
Mature Forest	Slope	<input type="checkbox"/>
Old Growth Forest	Flats	<input type="checkbox"/>
Coastal Lagoon	Freshwater Tidal	<input type="checkbox"/>
Interdunal		<input type="checkbox"/>
None of the above		<input type="checkbox"/>

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
<p>SP1. <i>Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		X
<p>SP2. <i>Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.</p>		X
<p>SP3. <i>Does the wetland contain individuals of Priority species listed by the WDFW for the state?</i></p>		X
<p>SP4. <i>Does the wetland have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.</i></p>		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: Boscole Wetland B Date: 11/6/66

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
NO - go to 2 YES - the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES - **Freshwater Tidal Fringe** NO - **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
 NO - go to 3 YES - The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

- NO - go to 4 YES - The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland meet all of the following criteria?

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland without being impounded?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

- NO - go to 5 YES - The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

- NO - go to 6 YES - The wetland class is **Riverine**

6. Is the wetland in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO - go to 7 \ **YES** - The wetland class is **Depressional**

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO - go to 8 **YES** - The wetland class is **Depressional**

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

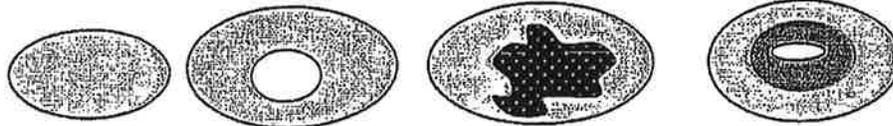
D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		
D	D 1. Does the wetland have the <u>potential</u> to improve water quality? (see p. 38)	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet points = 3 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland has an unconstricted surface outlet points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0	5
D	D1.4 Characteristics of seasonal ponding or inundation. <i>This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0 NOTE: See text for indicators of seasonal and permanent inundation..	0
D	Total for D 1 <i>Add the points in the boxes above</i>	4
D	D 2. Does the wetland have the <u>opportunity</u> to improve water quality? (see p. 44) Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ✗ Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	TOTAL - Water Quality Functions Multiply the score from D1 by D2 <i>Add score to table on p. 1</i>	8

D Depressional and Flats Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation		
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? <i>(see p. 46)</i>	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	0
D	D 3.2 Depth of storage during wet periods <i>Estimate the height of ponding above the bottom of the outlet</i> Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland to storage in the watershed <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.</i> The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	Total for D 3 <i>Add the points in the boxes above</i>	0
D	D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? <i>(see p. 49)</i> Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. <i>Note which of the following indicators of opportunity apply.</i> — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 1
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	0

<i>These questions apply to wetlands of all HGM classes.</i>		Points																								
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat																										
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?																										
<p>H 1.1 <u>Vegetation structure</u> (see p. 72) Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or 1/4 acre.</p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants <input type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input type="checkbox"/> Forested (areas where trees have >30% cover) <input type="checkbox"/> Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)</p> <p>Add the number of vegetation types that qualify. If you have:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>4 types or more</td> <td>points = 4</td> </tr> <tr> <td>3 types</td> <td>points = 2</td> </tr> <tr> <td>2 types</td> <td>points = 1</td> </tr> <tr> <td>1 type</td> <td>points = 0</td> </tr> </table>		4 types or more	points = 4	3 types	points = 2	2 types	points = 1	1 type	points = 0	0																
4 types or more	points = 4																									
3 types	points = 2																									
2 types	points = 1																									
1 type	points = 0																									
<p>H 1.2. <u>Hydroperiods</u> (see p. 73) Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count. (see text for descriptions of hydroperiods)</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Permanently flooded or inundated</td> <td>4 or more types present</td> <td>points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td>3 types present</td> <td>points = 2</td> </tr> <tr> <td><input type="checkbox"/> Occasionally flooded or inundated</td> <td>2 types present</td> <td>point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Lake-fringe wetland = 2 points</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Freshwater tidal wetland = 2 points</td> <td></td> <td></td> </tr> </table>		<input type="checkbox"/> Permanently flooded or inundated	4 or more types present	points = 3	<input type="checkbox"/> Seasonally flooded or inundated	3 types present	points = 2	<input type="checkbox"/> Occasionally flooded or inundated	2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only			<input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland			<input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland			<input type="checkbox"/> Lake-fringe wetland = 2 points			<input type="checkbox"/> Freshwater tidal wetland = 2 points			2
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<input type="checkbox"/> Freshwater tidal wetland = 2 points																										
<p>H 1.3. <u>Richness of Plant Species</u> (see p. 75) Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle</p> <p>If you counted:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>> 19 species</td> <td>points = 2</td> </tr> <tr> <td>5 - 19 species</td> <td>points = 1</td> </tr> <tr> <td>< 5 species</td> <td>points = 0</td> </tr> </table> <p>List species below if you want to:</p>		> 19 species	points = 2	5 - 19 species	points = 1	< 5 species	points = 0	1																		
> 19 species	points = 2																									
5 - 19 species	points = 1																									
< 5 species	points = 0																									

H 1.4. Interspersion of habitats (see p. 76)

Decide from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points

Low = 1 point

Moderate = 2 points



High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

H 1.5. Special Habitat Features: (see p. 77)

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
- Standing snags (diameter at the bottom > 4 inches) in the wetland
- Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)
- Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present
- At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (structures for egg-laying by amphibians)
- Invasive plants cover less than 25% of the wetland area in each stratum of plants

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers (see p. 80)

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

- 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) **Points = 5**
- 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**
- 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**
- 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**
- 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the criteria above

- No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**
- No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**
- Heavy grazing in buffer. **Points = 1**
- Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0.**
- ✗ Buffer does not meet any of the criteria above. **Points = 1**

H 2.2 Corridors and Connections (see p. 81)

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).

YES = 4 points (go to H 2.3) **NO = go to H 2.2.2**

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?

YES = 2 points (go to H 2.3) **NO = H 2.2.3**

H 2.2.3 Is the wetland:

- within 5 mi (8km) of a brackish or salt water estuary OR
- within 3 mi of a large field or pasture (>40 acres) OR
- within 1 mi of a lake greater than 20 acres?

YES = 1 point

NO = 0 points

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82)

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
 - Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).
 - Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
 - Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.
 - Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
 - Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
 - Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
 - Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages
 - Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
 - Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
 - Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
 - Marine/Estuarine Shorelines:** Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).
- If wetland has 3 or more priority habitats = 4 points
If wetland has 2 priority habitats = 3 points
If wetland has 1 priority habitat = 1 point No habitats = 0 points

5

<p>H 2.4 <u>Wetland Landscape</u> (<i>choose the one description of the landscape around the wetland that best fits</i>) (<i>see p. 84</i>)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile. points = 2</p> <p>There are no wetlands within ½ mile. points = 0</p>	2
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores in the column above</i></p>	7
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	11

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the appropriate Category when the appropriate criteria are met.</i>	Category
<p>SC 1.0 Estuarine wetlands (see p. 86) Does the wetland meet the following criteria for Estuarine wetlands?</p> <ul style="list-style-type: none"> — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. <p style="text-align: right;">YES = Go to SC 1.1 NO <u>X</u></p>	
<p>SC 1.1 Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2</p>	Cat. I
<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. 	Cat. I Cat. II Dual rating I/II

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i> S/TR information from Appendix D ___ or accessed from WNHP/DNR web site ___</p> <p>YES ___ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO <input checked="" type="checkbox"/></p>	<p>Cat. I</p>
<p>SC 3.0 Bogs (see p. 87) Does the wetland (or part of the wetland) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <ol style="list-style-type: none"> Does the wetland have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes - Is a bog for purpose of rating No - go to Q. 4 <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.</p> <ol style="list-style-type: none"> Is the wetland forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? <p>4. YES = Category I No <input checked="" type="checkbox"/> Is not a bog for purpose of rating</p>	<p>Cat. I</p>

Appendix D
Site Photographs

APPENDIX D
SITE PHOTOGRAPHS



PHOTO 1 – VIEW TO SOUTHWEST OF WETLAND A
Boscole Wetland Delineation, Bellevue, Washington



**PHOTO 2 – VIEW TO EAST OF TEST PIT T-2
Boscole Wetland Delineation, Bellevue, Washington**



**PHOTO 3 – VIEW TO EAST OF TEST PIT T-3
Boscole Wetland Delineation, Bellevue, Washington**



**PHOTO 4 – VIEW TO WEST OF WETLAND B
Boscole Wetland Delineation, Bellevue, Washington**



**PHOTO 5 – VIEW TO SOUTH OF TEST PIT T-7
Boscole Wetland Delineation, Bellevue, Washington**

APPENDIX B
AOA WETLAND RATINGS

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): VASA SHORT PLAT Date of site visit: 12/12/12

Rated by ALTMANN Trained by Ecology? Yes No Date of training 03/08

SEC: 12 TOWNSHIP: 24N RANGE: 5E Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure 1 Estimated size 2,790 S.F.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I II III IV

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	14
TOTAL score for Functions	44

Category based on SPECIAL CHARACTERISTICS of wetland

I II Does not Apply

Final Category (choose the "highest" category from above)

III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	<input checked="" type="checkbox"/>
Natural Heritage Wetland		Riverine	<input type="checkbox"/>
Bog		Lake-fringe	<input type="checkbox"/>
Mature Forest		Slope	<input type="checkbox"/>
Old Growth Forest		Flats	<input type="checkbox"/>
Coastal Lagoon		Freshwater Tidal	<input type="checkbox"/>
Interdunal			<input type="checkbox"/>
None of the above	<input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

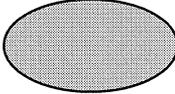
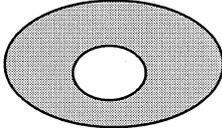
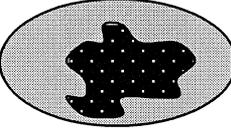
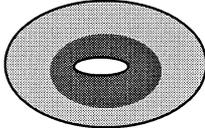
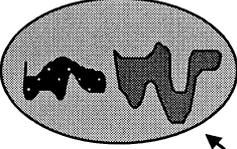
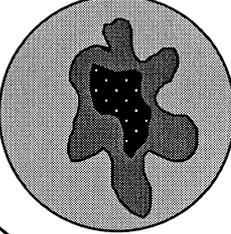
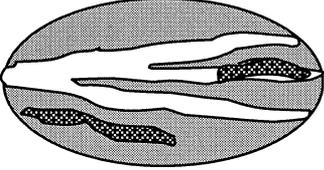
Wetland name or number A

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<p>D 1.1 Characteristics of surface water flows out of the wetland:</p> <p>Unit is a depression with no surface water leaving it (no outlet) points = 3</p> <p>Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = <u>2</u></p> <p>Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 1</p> <p>Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1</p> <p>(If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure <u>2</u>
D	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>)</p> <p>YES points = 4</p> <p>NO points = <u>0</u></p>	<u>0</u>
D	<p>D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)</p> <p>Wetland has persistent, ungrazed, vegetation >= 95% of area points = 5</p> <p>Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p>Wetland has persistent, ungrazed vegetation >= 1/10 of area points = <u>1</u></p> <p>Wetland has persistent, ungrazed vegetation <1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure <u>1</u>
D	<p>D1.4 Characteristics of seasonal ponding or inundation.</p> <p><i>This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i></p> <p>Area seasonally ponded is > 1/2 total area of wetland points = <u>4</u></p> <p>Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p>Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure <u>4</u>
D	Total for D 1	<i>Add the points in the boxes above</i>
		<u>7</u>
D	D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?	(see p. 44)
	<p>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i></p> <ul style="list-style-type: none"> — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ <p>YES multiplier is <u>2</u> NO multiplier is 1</p>	multiplier <u>2</u>
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2
		<i>Add score to table on p. 1</i>
		<u>14</u>

Wetland name or number A

D Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		Points (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	2
D	D 3.2 Depth of storage during wet periods <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	Total for D 3 <i>Add the points in the boxes above</i>	8
D	D 4. Does the wetland unit have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i> — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems X Other <u>downstream resources</u> YES multiplier is 2 NO multiplier is 1	(see p. 49) multiplier 2
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	16

Wetland name or number A

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p>NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes</p>	<p>Figure</p> <p style="font-size: 2em;">1</p>	
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland</p> <p><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown)</p> <p><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (structures for egg-laying by amphibians)</p> <p><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p style="font-size: 2em;">2</p>	
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>		<p style="font-size: 2em;">5</p>

Comments

Wetland name or number A

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	Figure <u> </u>
<p>H 2.1 Buffers (see p. 80) <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</i></p> <ul style="list-style-type: none">— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none">— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2— Heavy grazing in buffer. Points = 1— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.— Buffer does not meet any of the criteria above. Points = 1 <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure <u> </u></p> <p style="font-size: 2em;">2</p>
<p>H 2.2 Corridors and Connections (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>) YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? ✓ YES = 1 point NO = 0 points</p>	<p>Figure <u> </u></p> <p style="font-size: 2em;">1</p>

Total for page 3

Wetland name or number A

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.

Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).

Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**

If wetland has **2** priority habitats = **3 points**

If wetland has **1** priority habitat = **1 point**

No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

3

Wetland name or number A

<p>H 2.4 Wetland Landscape (<i>choose the one description of the landscape around the wetland that best fits</i>) (<i>see p. 84</i>)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p style="text-align: center;"><i>ASSUME</i></p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile. points = 2</p> <p>There are no wetlands within ½ mile. points = 0</p>	<p>3</p>
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	<p>9</p>
<p>TOTAL for H 1 from page 14</p>	<p>5</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	<p>14</p>

Wetland name or number B

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): VASA SHORT PLAT Date of site visit: 12/12/12

Rated by ACTMANIS Trained by Ecology? Yes No Date of training 03/08

SEC: 12 TOWNSHIP: 24N RANGE: 5E Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure 1 Estimated size 243 s.f.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I II III IV

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	<u>2</u>
Score for Hydrologic Functions	<u>6</u>
Score for Habitat Functions	<u>8</u>
TOTAL score for Functions	<u>16</u>

Category based on SPECIAL CHARACTERISTICS of wetland

I II Does not Apply

Final Category (choose the “highest” category from above)

IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	<input checked="" type="checkbox"/>
Natural Heritage Wetland		Riverine	<input type="checkbox"/>
Bog		Lake-fringe	<input type="checkbox"/>
Mature Forest		Slope	<input type="checkbox"/>
Old Growth Forest		Flats	<input type="checkbox"/>
Coastal Lagoon		Freshwater Tidal	<input type="checkbox"/>
Interdunal			<input type="checkbox"/>
None of the above	<input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

Wetland name or number B

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the potential to improve water quality?	(see p.38)
D	<p>D 1.1 Characteristics of surface water flows out of the wetland:</p> <p>Unit is a depression with no surface water leaving it (no outlet) points = 3</p> <p>Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p>Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = <u>1</u></p> <p>Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1</p> <p>(If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure <u> </u>
D	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>)</p> <p>YES points = 4</p> <p>NO points = <u>0</u></p>	<u>0</u>
D	<p>D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)</p> <p>Wetland has persistent, ungrazed, vegetation >= 95% of area points = 5</p> <p>Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p>Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1</p> <p>Wetland has persistent, ungrazed vegetation <1/10 of area points = <u>0</u></p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure <u> </u>
D	<p>D1.4 Characteristics of seasonal ponding or inundation.</p> <p><i>This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i></p> <p>Area seasonally ponded is > 1/2 total area of wetland points = 4</p> <p>Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p>Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure <u> </u>
D	Total for D 1	<i>Add the points in the boxes above</i>
D	D 2. Does the wetland unit have the opportunity to improve water quality?	(see p. 44)
	<p>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i></p> <ul style="list-style-type: none"> — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ <p>YES multiplier is <u>2</u> NO multiplier is 1</p>	multiplier <u>2</u>
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2
		<i>Add score to table on p. 1</i>
		<u>2</u>

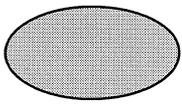
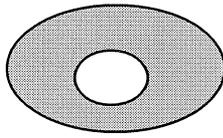
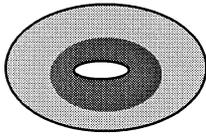
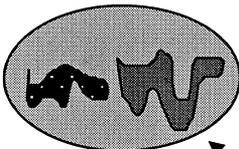
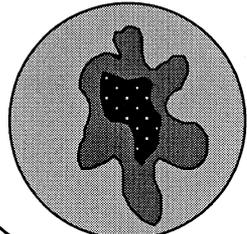
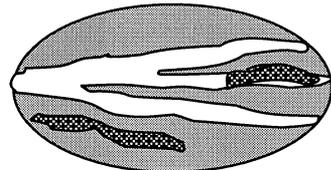
Wetland name or number B

D Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		Points (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0	0
D	D 3.2 Depth of storage during wet periods <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit to storage in the watershed <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	Total for D 3 <i>Add the points in the boxes above</i>	3
D	D 4. Does the wetland unit have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i> <ul style="list-style-type: none"> — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems <input checked="" type="checkbox"/> Other <u>DOWNSTREAM RESOURCES</u> YES multiplier is 2 NO multiplier is 1	(see p. 49) multiplier <u>2</u>
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	6

Wetland name or number B

<i>These questions apply to wetlands of all HGM classes.</i>		Points (only 1 score per box)												
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat														
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?														
<p>H 1.1 <u>Vegetation structure</u> (see p. 72) Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants <input type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input type="checkbox"/> Forested (areas where trees have >30% cover)</p> <p>If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon</p> <p>Add the number of vegetation structures that qualify. If you have:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> 4 structures or more</td> <td style="width: 50%; text-align: right;">points = 4</td> </tr> <tr> <td><input type="checkbox"/> 3 structures</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> 2 structures</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> 1 structure</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p><input type="checkbox"/> Map of Cowardin vegetation classes</p>		<input type="checkbox"/> 4 structures or more	points = 4	<input type="checkbox"/> 3 structures	points = 2	<input type="checkbox"/> 2 structures	points = 1	<input type="checkbox"/> 1 structure	points = 0	<p>Figure <u> </u></p> <p style="font-size: 2em; margin-top: 100px;">0</p>				
<input type="checkbox"/> 4 structures or more	points = 4													
<input type="checkbox"/> 3 structures	points = 2													
<input type="checkbox"/> 2 structures	points = 1													
<input type="checkbox"/> 1 structure	points = 0													
<p>H 1.2. <u>Hydroperiods</u> (see p. 73) Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 25%;">4 or more types present</td> <td style="width: 25%; text-align: right;">points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td>3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> Occasionally flooded or inundated</td> <td>2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td>1 type present</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p><input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland</p> <p><input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points</p> <p style="text-align: right;"><input type="checkbox"/> Map of hydroperiods</p>		<input type="checkbox"/> Permanently flooded or inundated	4 or more types present	points = 3	<input type="checkbox"/> Seasonally flooded or inundated	3 types present	points = 2	<input type="checkbox"/> Occasionally flooded or inundated	2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	1 type present	points = 0	<p>Figure <u> </u></p> <p style="font-size: 2em; margin-top: 100px;">0</p>
<input type="checkbox"/> Permanently flooded or inundated	4 or more types present	points = 3												
<input type="checkbox"/> Seasonally flooded or inundated	3 types present	points = 2												
<input type="checkbox"/> Occasionally flooded or inundated	2 types present	point = 1												
<input checked="" type="checkbox"/> Saturated only	1 type present	points = 0												
<p>H 1.3. <u>Richness of Plant Species</u> (see p. 75) Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle</p> <p style="text-align: center;">If you counted:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%;">> 19 species</td> <td style="width: 25%; text-align: right;">points = 2</td> </tr> <tr> <td>List species below if you want to:</td> <td>5 - 19 species</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td></td> <td>< 5 species</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p style="font-size: 1.2em; margin-top: 10px;">Creeping buttercup</p>			> 19 species	points = 2	List species below if you want to:	5 - 19 species	points = 1		< 5 species	points = 0	<p>Figure <u> </u></p> <p style="font-size: 2em; margin-top: 100px;">0</p>			
	> 19 species	points = 2												
List species below if you want to:	5 - 19 species	points = 1												
	< 5 species	points = 0												

Total for page 0

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  None = 0 points </div> <div style="text-align: center;">  Low = 1 point </div> <div style="text-align: center;">  Moderate = 2 points </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  High = 3 points </div> <div style="text-align: center;">  [riparian braided channels] </div> </div> <p>NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes</p>	<p>Figure _____</p> <p style="text-align: center;">0</p>	
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).</p> <p><input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</p> <p><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</p> <p><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	<p style="text-align: center;">0</p>	
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>		<p style="text-align: center;">0</p>

Comments

Wetland name or number B

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	Figure <u> </u>
<p>H 2.1 Buffers (see p. 80) Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</p> <ul style="list-style-type: none">— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none">— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2— Heavy grazing in buffer. Points = 1— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.— Buffer does not meet any of the criteria above. Points = 1 <p style="text-align: center;">Aerial photo showing buffers</p>	1
<p>H 2.2 Corridors and Connections (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>) YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? ✓ YES = 1 point NO = 0 points</p>	1

Total for page 2

Wetland name or number B

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests:** (**Old-growth west of Cascade crest**) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (**Mature forests**) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.
- If wetland has **3 or more** priority habitats = **4 points**
 If wetland has **2** priority habitats = **3 points**
 If wetland has **1** priority habitat = **1 point** No habitats = 0 points
- Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*

3

Wetland name or number B

<p>H 2.4 Wetland Landscape (choose the one description of the landscape around the wetland that best fits) (see p. 84)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile. points = 2</p> <p>There are no wetlands within ½ mile. points = 0</p>	<p>3</p>
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	<p>8</p>
<p>TOTAL for H 1 from page 14</p>	<p>0</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	<p>8</p>

APPENDIX C

QUALIFICATIONS



JOHN J. ALTMANN, PRINCIPAL

Ecologist, Project Manager

Wetland Delineations, Stream Studies, Functional Analysis, Mitigation, Environmental Impact Assessments, Planning, Regulatory Analysis & Permitting, Wildlife Studies

EXPERIENCE

Mr. Altmann has 26 years of experience working in resource and environmental planning, project management, and field analysis. His main area of concentration has been wetlands and his experience includes: wetland delineations; environmental assessments; impact statements; mitigation plans and other wetland studies; natural resource inventories and sensitivity analyses; site planning; and wildlife habitat management studies in Washington, Oregon, Idaho, Alaska, California, Wyoming, New Jersey, New York, and Pennsylvania.

REPRESENTATIVE PROJECTS

Responsible for over fifteen hundred wetland and wildlife studies conducted in past 26 years, with most of these projects occurring in King, Snohomish, Skagit, Whatcom, Pierce, Thurston, Clark, Lewis, Kitsap, and Mason counties in Washington State. Most of these projects involved analysis of wetland conditions in relation to some proposed construction activity that could potentially affect their functions and values. Many of the studies involved wetland delineation only, whereas others required determination of wetland functions and values and wetland impact mitigation planning and other sensitive areas analyses. Project sizes ranged from under 1 acre to over 600 acres, with the wetlands on these properties being nearly as variable as their size. Wildlife studies include flora and fauna inventories, habitat impact assessments, and threatened and endangered species studies. Some of the projects representative of this experience are listed below.

Shoreline Delineation & Habitat Assessment for private land owners on Lake Sammamish, Bellevue, WA

Wetland Mitigation and Long-Term Monitoring for Weyerhaeuser Real Estate Development Company's Mint Farm Phase II project in the City of Longview, WA

Stream Delineation Study, Mitigation Plan for the Greystone PRD, Redmond, WA

Wetland Delineation and Study for the Group Health Support Facility in the City of Tukwila, WA

Critical Areas Delineation, Study, and Mitigation Plan for the Cadman High Rock Quarry in Snohomish County, WA

Critical Areas Delineations, Studies, and Mitigation Plans for the Microsoft Corporate Campus in the City of Redmond, WA

Critical Areas Study, Mitigation Plan, Biological Assessment, and Long-Term Monitoring on 90-acre Northpointe Corporate Campus for OPUS NW in Snohomish County, WA
Wetland Delineation, Study, and Mitigation Plan for the Puyallup Downs Residential Development in the City of Puyallup, WA
Wildlife Study on 40-acre Site in North Bend Area of King County, WA for Private Developer
Critical Areas Delineation and Study for Data I/O Corporation in Redmond, WA for the Quadrant Corporation
Sensitive Areas Assessment for 74-acre Church site in Redmond, King County, WA
Wetland Delineation on 47-acre Marine Industrial Site Location in Snohomish River Estuary, Everett, Snohomish County, WA for Private Developer
Wetland Study and Mitigation Plan for 37-acre Office Park Site in Redmond, King County, WA for Private Developer
Wetland Maintenance and Monitoring Plan for Property on Raging River in King County, WA for Private Developer

OTHER PROJECT EXPERIENCE

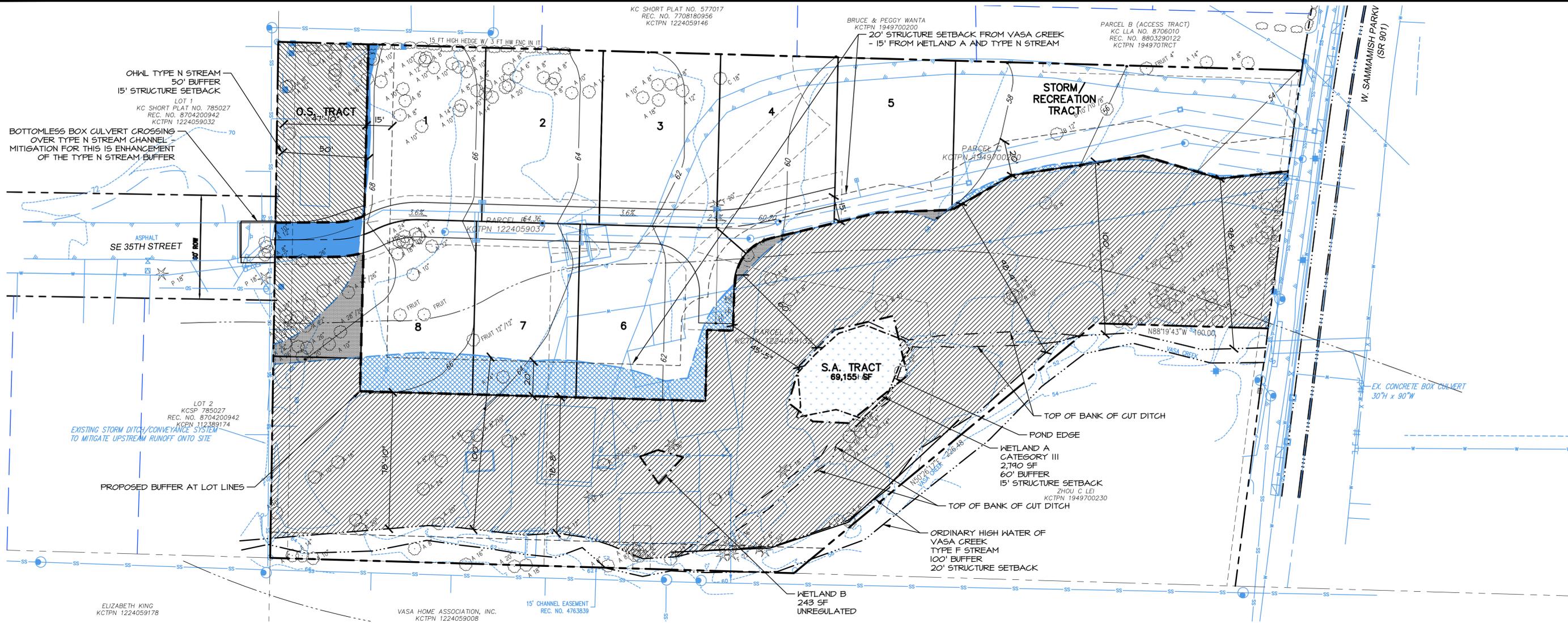
- Wetland Biologist for the King County Parks, Planning and Resource Department, Environmental Division, Resource Planning Section. Mapped, classified, inventoried and rated the wetlands in the cities of Kirkland, Bothell, Normandy Park, Duvall, and Lake Forest Park for inclusion in the King County Sensitive Areas Folio.
- Research Assistant for the NJ Division of Fish, Game and Wildlife's Endangered and Nongame Species Program. Responsible for the research, feeding, and monitoring of osprey fledglings for 3 seasons of the NJ osprey hacking program. Responsible for the collection and analysis of information pertaining to population size and migration along with species density and behavior of shorebirds along the Delaware Bay.
- Research Assistant for the NJ Division of Fish, Game and Wildlife. Responsible for the collection, processing and analysis of biological information pertaining to the whitetail deer population in NJ.

EDUCATION

B.S., Natural Resource Management, Wildlife Science Option, Rutgers University, Cook College, New Brunswick, NJ.

PROFESSIONAL MEMBERSHIPS

Society of Wetland Scientists
The Wildlife Society



PLAN LEGEND

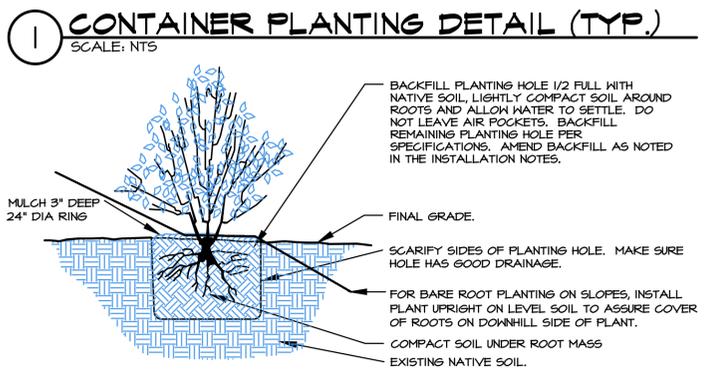
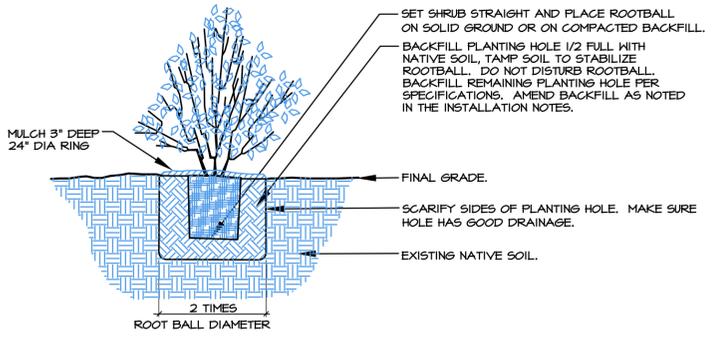
- PROPERTY LINE
- ORDINARY HIGH WATER OF VASA CREEK
- TOP OF BANK OF CUT DITCH
- POND EDGE
- EXISTING WETLAND
- STANDARD STREAM/WETLAND BUFFER
- PROPOSED STREAM/WETLAND BUFFER
- STRUCTURE SETBACK

IMPACT LEGEND

- TYPE N STREAM BUFFER IMPACT 1,312 SF
- TYPE F STREAM/WETLAND BUFFER IMPACT 4,527 SF

MITIGATION LEGEND

- TYPE N STREAM BUFFER ENHANCEMENT 6,913 SF
- TYPE F STREAM / WETLAND BUFFER ENHANCEMENT 60,024 SF
- BUFFER REPLACEMENT WITH ENHANCEMENT 1,746 SF



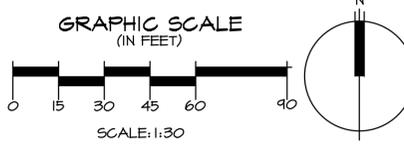
SPECIFICATIONS

1. PRIOR TO ANY SITE WORK, THERE SHALL BE A PRE-CONSTRUCTION MEETING BETWEEN THE OWNER, LANDSCAPE CONTRACTOR, AND AOA.
2. PROJECT SURVEYOR SHALL DELINEATE WITH COLORED FLAGGING, THE PROPOSED BUFFER AND ENHANCEMENT AREAS PRIOR TO ANY WORK.
3. PRIOR TO PLANTING, ALL EXISTING UTILITIES WITHIN BUFFER AREAS SHALL BE REMOVED PER CIVIL ENGINEERING PLANS.
4. PRIOR TO PLANTING, ALL STRUCTURES, GRAVEL, CONCRETE AND OTHER NON-ORGANIC DEBRIS AND ALL INVASIVE PLANTS SHALL BE GRUBBED (ALL PLANTS WITH ROOTS) AND EXPORTED FROM THE SITE. THESE SPECIES INCLUDE, BUT ARE NOT LIMITED TO: HIMALAYAN AND EVERGREEN BLACKBERRY, REED CANARYGRASS, PURPLE LOOSESTRIPE, MORNING GLORY, JAPANESE KNOTWEED, ENGLISH IVY, HOLLY THISTLE, PERIWINKLE, BIRDSFOOT TREFLOIL, POISON HEMLOCK AND CREEPING NIGHTSHADE.
5. COMPACTED AREAS SHALL BE DECONSOLIDATED WITH TILLING TO A MINIMUM DEPTH OF 12 INCHES. IMPORTED OR STOCKPILED TOPSOIL SHALL BE REPLACED TO PRE-CLEARING GRADES.
6. SEED ALL EXPOSED GROUND WITH SEED MIX AT RATES PER THE PLANT SCHEDULE AND MULCH WITH STRAW TO A DEPTH OF 1 INCH.
7. ALL PLANTS SHOULD BE INSTALLED BETWEEN DECEMBER 1ST AND MARCH 15TH UNLESS SUPPLEMENTAL IRRIGATION IS PROVIDED IMMEDIATELY FOLLOWING PLANT INSTALLATION.
8. PRIOR TO PLANTING, AOA SHALL REVIEW PLANT LAYOUT IN ALL PLANTING AREAS.
9. ALL PLANTS SHALL BE PIT-PLANTED IN PLANTING PITS EXCAVATED 2X THE DIAMETER OF THE PLANT. PITS SHALL BE BACKFILLED WITH A 30/70 MIX OF STEERCO TO NATIVE SOIL. PLANTS SHALL BE INSTALLED 2" HIGH AND SURFACED MULCHED TO A DEPTH OF 2" WITH MEDIUM-COURSE BARK MULCH OR COMPOSTED HOG-FUEL PLACED WITHIN A 24" DIAMETER FOR ALL TREES AND SHRUBS.
10. ALL PLANTS SHALL BE NURSERY GROWN (IN W. WA OR OR.) FOR AT LEAST 1 YEAR FROM PURCHASE DATE, FREE FROM DISEASE OR PESTS, WELL-ROOTED, BUT NOT ROOT-BOUND AND TRUE TO SPECIES.
11. BARE-ROOT PLANTS OF EQUAL OR LARGER SIZE CAN BE SUBSTITUTED FOR NOOTKA ROSE, OCEAN SPRAY AND SNOWBERRY ONLY. ALL OTHER PLANTS SHALL BE CONTAINER MATERIAL.
12. AOA SHALL REVIEW DURING INVASIVE REMOVAL, PLANT LAYOUT AND AFTER PLANTING.
13. UPON COMPLETION OF PLANTING, ALL PLANTS AND SEEDED GROUND SHALL BE THOROUGHLY WATERED.
14. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, CITY OF BELLEVUE WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
15. ALL PLANTS WITHIN THE BUFFER SHALL BE WATERED VIA A TEMPORARY ABOVE-GROUND IRRIGATION SYSTEM DESIGN-BUILT BY THE LANDSCAPE CONTRACTOR. WATERING SHOULD OCCUR TWICE-WEEKLY JUNE 15-OCTOBER 31 THE FIRST YEAR AFTER PLANTING AND ONCE WEEKLY JULY 1-OCTOBER 1 THE SECOND YEAR AFTER PLANTING. FLOW SHOULD OCCUR AT A RATE OF 1/2" OF WATER DURING EACH WATERING EVENT, ENSURING COMPLETE SATURATION OF THE ROOT ZONE OF ALL PLANTED PLANTS. WINTERIZE BY OCTOBER 31 OF EACH YEAR.
16. MAINTENANCE SHALL BE IMPLEMENTED ON A REGULAR BASIS ACCORDING TO THE SCHEDULE BELOW.

ANNUAL MAINTENANCE SCHEDULE

MAINTENANCE ITEM	J	F	M	A	M	J	J	A	S	O	N	D
WEED CONTROL												
GENERAL MAINT.												
WATERING - YEAR 1						4	8	8	8	4		
WATERING - YEAR 2						4	4	4				

1-8 = NUMBER OF TIMES TASK SHALL BE PERFORMED PER MONTH.



GENERAL NOTES

1. BASE INFORMATION PROVIDED BY CORE DESIGN, INC., 14711 NE 24TH PLACE, SUITE 101, BELLEVUE, WA 98007, (425)885-7877.

Revisions	By	Date

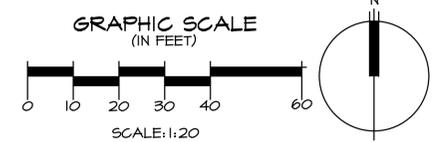
Date 02-28-14
 Scale AS NOTED
 Project# 4287



PLANT SCHEDULE

TREES						
KEY	SCIENTIFIC NAME	COMMON NAME	DENSITY	QTY.	SIZE	NOTES
AC	ACER CIRCINATUM	VINE MAPLE	12' O.C.	58	2 GAL.	MULTI-STEM (3 MIN)
AM	ACER MACROPHYLLUM	BIG LEAF MAPLE	12' O.C.	43	2 GAL.	SINGLE TRUNK, WELL BRANCHED
CC	CORYLUS CORNUTA	WESTERN HAZELNUT	12' O.C.	63	2 GAL.	MULTI-STEM (3 MIN)
FL	FRAXINUS LATIFOLIA	OREGON ASH	12' O.C.	40	2 GAL.	SINGLE TRUNK, WELL BRANCHED
PS	PICEA SITCHENSIS	SITKA SPRUCE	12' O.C.	74	2 GAL.	FULL & BUSHY
PE	PRUNUS EMARGINATA	BITTERCHERRY	12' O.C.	60	2 GAL.	SINGLE TRUNK, WELL BRANCHED
PM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	12' O.C.	46	2 GAL.	FULL & BUSHY
TP	THUJA PLICATA	WESTERN RED CEDAR	12' O.C.	133	2 GAL.	FULL & BUSHY
SHRUBS						
KEY	SCIENTIFIC NAME	COMMON NAME	DENSITY	QTY.	SIZE	NOTES
C	CORNUS SERICEA	RED OSIER DOGWOOD	8' O.C.	151	1 GAL.	MULTI-STEM (3 MIN)
HD	HOODISCUS DISCOLOR	OCEAN SPRAY	8' O.C.	120	1 GAL.	MULTI-STEM (3 MIN)
L	LONICERA INVOLUCRATA	BLACK THIN-BERRY	8' O.C.	205	1 GAL.	MULTI-STEM (3 MIN)
M	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	8' O.C.	142	1 GAL.	FULL & BUSHY
RS	RIBES SANGUINEUM	RED CURRANT	8' O.C.	94	1 GAL.	MULTI-STEM (3 MIN)
R	ROSA NUTKANA	NOOTKA ROSE	8' O.C.	205	1 GAL.	MULTI-STEM (3 MIN)
M*	SALIX SCOULERIANA	SCOULER WILLOW	8' O.C.	321	4' CUTTING	1/2" DIA. MIN., BARK INTACT
SR	SAMBUCUS RACEMOSA	RED ELDERBERRY	8' O.C.	112	1 GAL.	MULTI-STEM (3 MIN)
S	SYMPHORICARPOS ALBUS	SNOWBERRY	8' O.C.	186	1 GAL.	MULTI-STEM (3 MIN)

*3 WILLOW STAKES PER SYMBOL



GENERAL NOTES

- BASE INFORMATION PROVIDED BY CORE DESIGN, INC., 14711 NE 24TH PLACE, SUITE 101, BELLEVUE, WA 98001, (425)885-1071.

A0A
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 PO Box 378 Camanion, WA 98014

FINAL BUFFER ENHANCEMENT PLAN
PLANTING PLAN
VASA CREEK SHORT PLAT
BELLEVUE, WASHINGTON

By	
Date	
Revisions	
Date	02-28-14
Scale	AS NOTED
Project#	4287
Sheet #	WL2

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