

SCORING FORM

Scoring functions to calculate mitigation credits and debits in Western Washington

Name of wetland (if known): Boise Creek Mitigation Project Date of site visit: ____
East Wetland

Scored by Megan Webb

SEC: ____ TWNSHP: ____ RNGE: ____ Estimated size 2.357 ac Aerial photo included? _____

These scores are for:

____ Wetland being altered

____ Mitigation site before mitigation takes place

Mitigation site after goals and objectives are met

SUMMARY OF SCORING

FUNCTION	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	H	H	H
Rating of Landscape Potential	H	H	M
Rating of Value	H	H	H
Score Based on Ratings (see table below)	9	9	8

Wetland HGM Class Used for Rating	
Depressional	
Riverine	X
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	<input type="checkbox"/>

Scores
(Order of ratings is not important)
9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

NOTE: Form is not complete without the figures requested.

Put only the highest score for a question in each box of the form, even if more than one indicator applies to the unit. Do NOT add the scores within a question.

HGM Classification of Wetlands in Western Washington

For questions 1-7 the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO - go to 2

YES - the wetland class is **Tidal Fringe** - go to 1.1

1.1 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 an **Estuarine** wetland and not scored. This method cannot be used for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

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 entire wetland unit **meet all** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface) at least 20 acres (8 ha) in size;

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 entire wetland unit **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 <3 ft diameter and less than 1 ft deep).

NO - go to 5

YES - The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

The overbank flooding occurs at least once every two years.

NOTE: The riverine unit 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 entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during 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 entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit 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 unit seems to be difficult to classify and probably contains several different HGM classes. 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. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide).** Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

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 unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes Within the Wetland Unit Being Rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake-fringe	Depressional
Riverine + Lake-fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

Riverine and Freshwater Tidal Fringe Wetlands		
WATER QUALITY FUNCTIONS - Indicators that site functions to improve water quality Questions R 1.1 – R 1.2 are from the Wetland Rating System (Hruby 2004b).		
R 1. Does the wetland unit have the <u>potential</u> to improve water quality?		
R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: <i>If depressions > 1/2 of area of unit draw polygons on aerial photo or map</i>		Figure __ R1.1
Depressions cover >3/4 area of wetland	points = 8	4
Depressions cover > 1/2 area of wetland	points = 4	
Depressions present but cover < 1/2 area of wetland	points = 2	
No depressions present	points = 0	
R 1.2 Characteristics of the plants in the unit (areas with >90% cover at person height): <i>Include photo or map showing polygons of different plants types</i>		Figure 1
Trees or shrubs > 2/3 area of the unit	points = 8	8
Trees or shrubs > 1/3 area of the unit	points = 6	
Herbaceous plants (> 6" high) > 2/3 area of unit	points = 6	
Herbaceous plants (> 6" high) > 1/3 area of unit	points = 3	
Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit	points = 0	
Total for R 1	Add the points in the boxes above	12
Rating of Site Potential: If score is		H
12 - 16 = H		
6 - 11 = M		
0 - 5 = L		

Record the rating on the first page

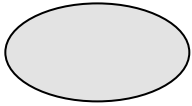
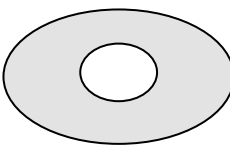
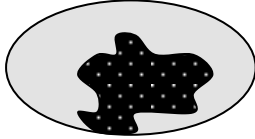
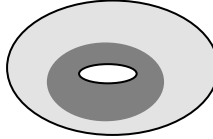
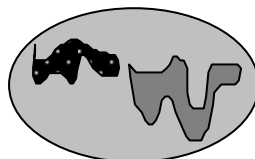
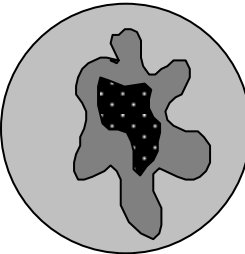
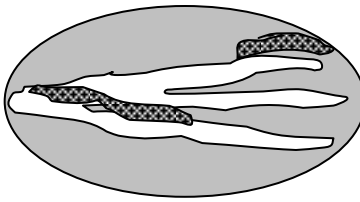
R 2.0 Does the landscape have the potential to support the water quality function at the site?		
R 2.1 Is the unit within an incorporated city or within its UGA?	Yes = 2 No = 0	0
R. 2.2 Does the contributing basin include a UGA or incorporated area?	Yes = 1 No = 0	1
R 2.3 Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?	Yes = 1 No = 0	1
R 2.4 Is more than 10% of the area within 150 ft of the wetland unit in agricultural, pasture, golf courses, residential, commercial, or urban?	Yes = 1 No = 0	1
Total for R 2	Add the points in the boxes above	3
Rating of Landscape Potential: If score is		H
3 - 5 = H		
1 or 2 = M		
0 = L		

Record the rating on the first page

R 3.0 Is the water quality improvement provided by the site valuable to society?		
R 3.1 Is the unit along a stream or river that is on the 303(d) list or on a tributary that drains to one?	Yes = 1 No = 0	1
R 3.2 Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	1
R 3.3 Has the site been identified in a watershed or local plan as important for maintaining water quality? (answer YES if there is a TMDL for the drainage in which unit is found)	Yes = 2 No = 0	2
Total for R 3	Add the points in the boxes above	4
Rating of Value:	If score is 2 - 4 = H 1 = M 0 = L	H

Record the rating on the first page

Riverine and Freshwater Tidal Fringe Wetlands		
HYDROLOGIC FUNCTIONS - Indicators that site functions to reduce flooding and stream erosion		
Questions R 4.1 and R 4.2 are from Wetland Rating System (Hruby 2004b).		
R 4.0 Does the wetland unit have the potential to reduce flooding and erosion?		
R 4.1 Characteristics of the overbank storage the unit provides: <i>Provide aerial photo showing average widths</i> Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks). If the ratio is more than 20 points = 9 If the ratio is between 10 - 20 points = 6 If the ratio is between 5 - <10 points = 4 If the ratio is between 1 - <5 points = 2 If the ratio is < 1 points = 1	Figure R4.1	6
R 4.2 Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description</i> (polygons need to have >90% cover at person height NOT Cowardin classes): <i>Provide photo or map showing polygons of different plants types</i> Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Plants do not meet above criteria points = 0	Figure 1	7
Total for R 4	Add the points in the boxes above	13
Rating of Site Potential:	If score is 12 - 16 = H 6 - 11 = M 0 - 5 = L	H

<p>H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion between Cowardin plants 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> <p style="text-align: center;"><i>Provide map of Cowardin plant classes (same as H1.1)</i></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <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: center; 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 with 2 classes]</p> </div> </div> <p>NOTE: If you have four or more classes or three plants classes and open water the rating is always "high."</p>	<p>Figure <u>1</u></p> <p style="font-size: 2em;">3</p>
<p>H 1.5. Special Habitat Features: 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 checked="" type="checkbox"/> Large, downed, woody debris within the unit (>4 inches diameter and 6 ft long).</p> <p><input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) within the unit</p> <p><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging plants 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 checked="" 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 weathered where wood is exposed</i>)</p> <p><input checked="" type="checkbox"/> At least ¼ acre of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	<p>5</p>
<p>H 1. TOTAL Score - potential for providing habitat</p> <p style="text-align: center;">Add the scores from H 1.1, H 1.2, H 1.3, H 1.4, and H 1.5</p>	<p>15</p>

Snags included in design are paid for using other funds and excluded here.

Rating of Site Potential: If score is

15 - 18 = H

7 - 14 = M

0 - 6 = L

H

Record the rating on the first page

H 2.0 Does the landscape have the potential to support habitat at the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] = _____ <i>Provide map of land use within 1 km of unit edge</i> If total accessible habitat is: > 1/3 (33.3%) of 1 km circle (~100 hectares or 250 acres) points = 3 20 - 33% of 1 km circle points = 2 10 - 19% of 1 km circle points = 1 <10% of 1 km circle points = 0		Figure__ H 2.1 2
H 2.2 Undisturbed habitat in 1 km circle around unit. If: Undisturbed habitat > 50% of circle points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of circle points = 0		1
H 2.3 Land use intensity in 1 km circle. If: > 50% of circle is high intensity land use points = (- 2) Does not meet criterion above points = 0		0
Total for H 2 Add the points in the boxes above		3

Rating of Landscape Potential: If score is 4- 6 = H
 1-3 = M
 < 1 = L

M

Record the rating on the first page

H 3.0 Is the Habitat provided by the site valuable to society?		
H3.1 Does the site provides habitat for species valued in laws, regulations or policies? (choose <i>only the highest score</i>) Site meets ANY of the following criteria: points = 2 <input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is a "priority area" for an individual WDFW species <input type="checkbox"/> It is a Natural Heritage Site as determined by the Department of Natural Resources <input type="checkbox"/> It scores 4 on question H2.3 of the wetland rating system <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site scores 1-3 on question H2.3 of the wetland rating system points = 1 Site does not meet any of the criteria above points = 0		2

Rating of Value: If score is

2 = H
 1 = M
 0 = L

H

Record the rating on the first page

Appendix D: Question H 2.3 of the Wetland Rating System

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>)

Count how many of the following priority habitats are within 330 ft (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 – see web link above*).

___ **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 – see web link above*).

___ **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 – see web link on previous page*).

___ **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Scoring for H 2.3:

- 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

"CREDIT" WORKSHEET

Mitigation Site: Boise Creek Mitigation Project East Wetland Wetland Unit: _____ Date _____

To calculate the CREDITS fill out the following worksheets using the data from the Scoring Form. Also,

- Use additional worksheets if more than one wetland unit is being used for mitigation.
- Use the map of Cowardin plant types from question H 1.1 on the Scoring Form to determine the boundaries of areas dominated by emergent plants (if needed for the calculations).
- Map out and estimate the areas in the wetland unit that will be created or re-established and the areas that will be rehabilitated or enhanced. The credits from creation/re-establishment and rehabilitation/enhancement are calculated separately before being combined at the end.

Additional notes:

Note 1: B = 0 for all three functions in mitigation sites that are not currently wetlands (creation or re-establishment).

Note 2: If you are increasing the size of an existing wetland the credits are calculated by rating the functions for the entire future wetland (original wetland + area created or re-established). However, you only get credits based on the area (footprint) of the area created or re-established.

Note 3: For enhancement and rehabilitation you cannot score only the parts of a wetland where mitigation takes place. You need to score the entire unit as defined in Chapter 4. This is done for both "before" and "after" conditions. The score for the unit after mitigation [A] will be the same for either enhancement or rehabilitation. This method is based on calculating the "lift" in functions without considering whether the mitigation is called enhancement or rehabilitation.

Note 4: Scoring the landscape potential of a mitigation site to calculate credits after the mitigation takes place depends on how its rating changes. Specifically:

- 4.1 **If the score for the landscape potential decreases as a result of the mitigation activity** then the score for the current conditions can be used for calculating credits. For example, the rating of landscape potential might decrease for a large mitigation project that removes sources of pollutants in the buffer. In this case the scores for the site might decrease even though positive actions are being taken.

- 4.2 **If the score for the landscape potential decreases as a result of the development or proposed impacts** then the score for the “future” condition should be used to calculate credits. For example, on-site mitigation should be getting a lower rating for the landscape potential if development to which it is linked breaks corridors or reduces the area of undisturbed habitat. These reduce the effectiveness of the mitigation site as habitat.
- 4.3 **If the score for the landscape potential increases as a result of the mitigation actions** then the score for the “future” condition can be used in calculating credits. For example, new corridors or habitat connections that are made as a result of the project should be given credit. Also, riverine wetlands that are reconnected to their floodplain should get credit (e.g., question R 5.1).
- 4.4 **If the score for the landscape potential increases as a result of the development or proposed impacts** then the score for landscape potential for the current conditions has to be used in calculating credits. A development could provide a source of pollutants or excess water to the mitigation site that would increase its level of flood storage and removal of pollutants. We do not want to give mitigation credits to increases in functioning of a wetland that are a result of the impacts associated with the project.

Use the following worksheet to calculate credits. Totals are in acre-points for comparison with the debits worksheet. Separate the mitigation site into different areas (polygons on a map) by the type of mitigation proposed (creation, re-establishment [C/R], and rehabilitation/enhancement [R/E]) and by the plant community proposed for that polygon. These areas have different risk factors.

Boise Creek Mitigation Project East Wetland

Scores for unit before any mitigation takes place

B = 0 for Creation and Re-establishment

FUNCTION From Scoring Form - Unit ID _____	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	0	0	0
Rating of Landscape Potential	0	0	0
Rating of Value	0	0	0
Score for mitigation site [B]efore	B = 0	B = 0	B = 0

Scores for unit based on the expected wetland ecosystem when all the vegetation has reached maturity and the water regime has stabilized

FUNCTION From Scoring Form - Unit ID _____	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	H	H	H
Rating of Landscape Potential	H	H	M
Rating of Value	H	H	H
Score for mitigation site [A]fter	A = 9	A = 9	A = 8

Calculations for Credits Unit ID _____	Improving Water Quality		Hydrologic Function		Habitat Function	
	C/R f/s e	R/E f/s e	C/R f/s e	R/E f/s e	C/R f/s e	R/E f/s e
Increase in Score at mitigation site (A - B) = [f/s] – forest/shrub/aquatic bed [e] – emergent	9		9		8	
Acres of mitigation (<i>should be same for the 3 functions for each type of mitigation</i>)	2.357		2.357		2.357	
Basic mitigation credit (BMC) = Increase in Score x acres of mitigation	21.213		21.213		18.856	
Risk factor (RF) (see table below)	1		1		1	
Mitigation credits available for each area CREDITS = BMC x RF	21.213		21.213		18.856	
TOTAL CREDITS AVAILABLE Add the credits from the different types of mitigation	21.213		21.213		18.856	

TOTAL EAST WETLAND: 61.282






Risk Factors:

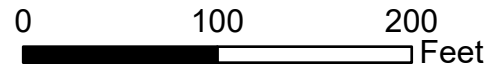
Type of Mitigation	Risk Factor
<p>Advance mitigation</p> <p>The site meets criteria in Charts 1 and 3 of the site selection guidance [i.e., identified in a local plan and is sustainable] AND meets the criteria in Charts 4-11 for the appropriate functions. (Ecology publication #09-06-032)</p> <p><i>Advance means that at least two years has passed since plantings were completed or one year since "as-built" plans were submitted to regulatory agencies.</i></p>	1.0
<p>Advance mitigation without meeting criteria in Ecology publication #09-06-032</p>	0.83
<p>Concurrent Mitigation</p> <p>Mitigation site meets criteria in Charts 1 and 3 of the site selection guidance [i.e., identified in a local plan and is sustainable]</p> <p>AND meets the criteria in Charts 4-11 for the appropriate functions. (All worksheets for Chart 3 and in Appendix D of Ecology publication #09-06-032 are submitted)</p> <p><i>Risk factor applies to all types of mitigation.</i></p>	0.9
<p>Mitigation site chosen meets the criteria in Charts 2 and 3 of the site selection guidance [i.e., identified as a site with potential and that is sustainable] ;</p> <p>AND meets criteria in Charts 4-11 for the appropriate functions. (All worksheets for Chart 3 and in Appendix D of Ecology publication #09-06-032 are submitted)</p> <p><i>Risk factor applies to all types of mitigation.</i></p>	0.80
<p><i>Site does not meet criteria in site selection guide, or guide was not used.</i></p> <p>Re-establishment, rehabilitation, or enhancement of an aquatic bed, shrub, or forest community 0.67</p> <p>Re-establishment, rehabilitation, or enhancement of an emergent community 0.5</p> <p>Creation of an aquatic bed, shrub, or forest community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10. 0.67</p> <p>Creation of an emergent community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10. 0.5</p> <p>Creation of an aquatic bed, shrub, or forest community <u>without</u> adequate hydrologic data. 0.5</p> <p>Creation of an emergent community <u>without</u> adequate hydrologic data. 0.4</p>	



2024 Aerial Image

Habitat Types in Wetland Unit




-  Wetland Unit (2.357 ac)
-  Emergent Wetland (0.496 ac)
-  Scrub Shrub Wetland (0.830 ac)
-  Forested Wetland (1.031 ac)
-  OHWM

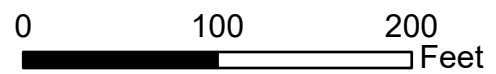


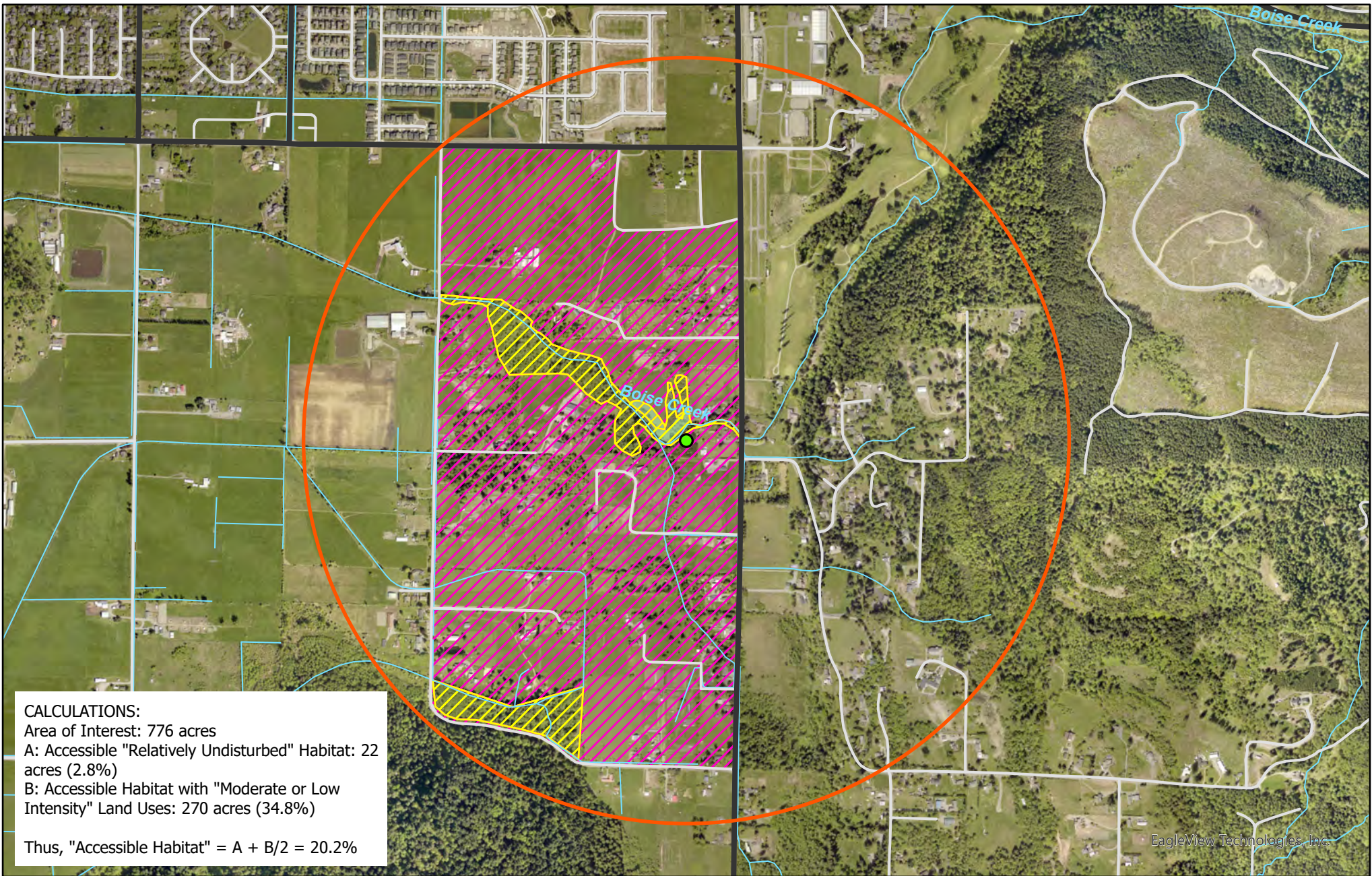


2024 Aerial Image

R 1.1 Poned Depressions

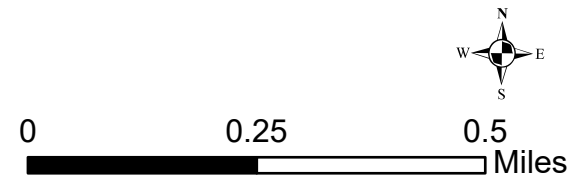
-  Wetland Unit (2.357 ac)
-  Poned Depressions (1.325 ac; 56.2% of Wetland Unit)
-  OHWM





H 2.1 Accessible Habitat

- Wetland Unit (Centerpoint)
- Area of Interest (1 km radius around Wetland Unit)
- Accessible "Moderate or Low Intensity" Land Uses (270 acres)
- Accessible "Relatively Undisturbed" Habitat (22 acres)
- Arterial Streets
- Local Streets and Roads
- Rivers and Streams



SCORING FORM

Scoring functions to calculate mitigation credits and debits in Western Washington

Name of wetland (if known): Boise Creek Mitigation Project Date of site visit: ____
West Wetland

Scored by Megan Webb

SEC: ____ TWNSHP: ____ RNGE: ____ Estimated size 0.30 ac Aerial photo included? _____

These scores are for:

____ Wetland being altered

____ Mitigation site before mitigation takes place

X Mitigation site after goals and objectives are met

SUMMARY OF SCORING

FUNCTION	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	H	M	H
Rating of Landscape Potential	H	H	M
Rating of Value	H	H	H
Score Based on Ratings (see table below)	9	8	8

Wetland HGM Class Used for Rating	
Depressional	
Riverine	X
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	<input type="checkbox"/>

Scores
<i>(Order of ratings is not important)</i>
9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

NOTE: Form is not complete without the figures requested.

Put only the highest score for a question in each box of the form, even if more than one indicator applies to the unit. Do NOT add the scores within a question.

HGM Classification of Wetlands in Western Washington

For questions 1-7 the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO - go to 2

YES - the wetland class is **Tidal Fringe** - go to 1.1

1.1 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 an **Estuarine** wetland and not scored. This method cannot be used for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

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 entire wetland unit **meet all** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface) at least 20 acres (8 ha) in size;

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 entire wetland unit **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 <3 ft diameter and less than 1 ft deep).

NO - go to 5

YES - The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

The overbank flooding occurs at least once every two years.

NOTE: The riverine unit 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 entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during 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 entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit 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 unit seems to be difficult to classify and probably contains several different HGM classes. 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. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide).** Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

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 unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes Within the Wetland Unit Being Rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake-fringe	Depressional
Riverine + Lake-fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

Riverine and Freshwater Tidal Fringe Wetlands
WATER QUALITY FUNCTIONS - Indicators that site functions to improve water quality
 Questions R 1.1 – R 1.2 are from the Wetland Rating System (Hruby 2004b).

R 1. Does the wetland unit have the <u>potential</u> to improve water quality?		
R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: <i>If depressions > 1/2 of area of unit draw polygons on aerial photo or map</i>		Figure 1
Depressions cover >3/4 area of wetland	points = 8	2 +2
Depressions cover > 1/2 area of wetland	points = 4	
Depressions present but cover < 1/2 area of wetland	points = 2	
No depressions present	points = 0	
R 1.2 Characteristics of the plants in the unit (areas with >90% cover at person height): <i>Include photo or map showing polygons of different plants types</i>		Figure 1
Trees or shrubs > 2/3 area of the unit	points = 8	8
Trees or shrubs > 1/3 area of the unit	points = 6	
Herbaceous plants (> 6" high) > 2/3 area of unit	points = 6	
Herbaceous plants (> 6" high) > 1/3 area of unit	points = 3	
Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit	points = 0	
Total for R 1	Add the points in the boxes above	12
Rating of Site Potential: If score is		H
12 - 16 = H		
6 - 11 = M		
0 - 5 = L		

See attachment for rationale for increase in score for Water Quality Functions

Record the rating on the first page

R 2.0 Does the landscape have the potential to support the water quality function at the site?		
R 2.1 Is the unit within an incorporated city or within its UGA?	Yes = 2 No = 0	0
R. 2.2 Does the contributing basin include a UGA or incorporated area?	Yes = 1 No = 0	1
R 2.3 Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?	Yes = 1 No = 0	1
R 2.4 Is more than 10% of the area within 150 ft of the wetland unit in agricultural, pasture, golf courses, residential, commercial, or urban?	Yes = 1 No = 0	1
Total for R 2	Add the points in the boxes above	3

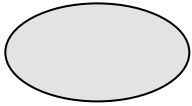
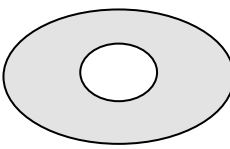
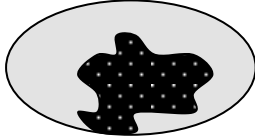
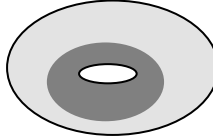
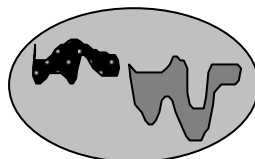
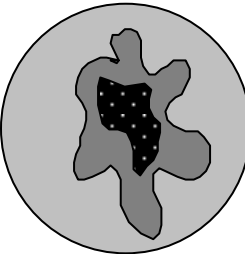
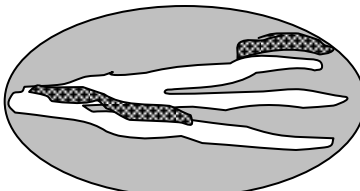
Rating of Landscape Potential: If score is
 3 - 5 = H
 1 or 2 = M
 0 = L

Record the rating on the first page

R 3.0 Is the water quality improvement provided by the site valuable to society?		
R 3.1 Is the unit along a stream or river that is on the 303(d) list or on a tributary that drains to one?	Yes = 1 No = 0	1
R 3.2 Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	1
R 3.3 Has the site been identified in a watershed or local plan as important for maintaining water quality? (answer YES if there is a TMDL for the drainage in which unit is found)	Yes = 2 No = 0	2
Total for R 3	Add the points in the boxes above	4
Rating of Value:	If score is 2 - 4 = H 1 = M 0 = L	H

Record the rating on the first page

Riverine and Freshwater Tidal Fringe Wetlands		
HYDROLOGIC FUNCTIONS - Indicators that site functions to reduce flooding and stream erosion		
Questions R 4.1 and R 4.2 are from Wetland Rating System (Hruby 2004b).		
R 4.0 Does the wetland unit have the potential to reduce flooding and erosion?		
R 4.1 Characteristics of the overbank storage the unit provides: <i>Provide aerial photo showing average widths</i> Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks). If the ratio is more than 20 points = 9 If the ratio is between 10 - 20 points = 6 If the ratio is between 5 - <10 points = 4 If the ratio is between 1 - <5 points = 2 If the ratio is < 1 points = 1	Figure R4.1	2
R 4.2 Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description</i> (polygons need to have >90% cover at person height NOT Cowardin classes): <i>Provide photo or map showing polygons of different plants types</i> Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Plants do not meet above criteria points = 0	Figure 1	7
Total for R 4	Add the points in the boxes above	9
Rating of Site Potential:	If score is 12 - 16 = H 6 - 11 = M 0 - 5 = L	M

<p>H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion between Cowardin plants 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> <p style="text-align: center;"><i>Provide map of Cowardin plant classes (same as H1.1)</i></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <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: center; 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 with 2 classes]</p> </div> </div> <p>NOTE: If you have four or more classes or three plants classes and open water the rating is always "high."</p>	<p>Figure <u>1</u></p> <p style="font-size: 2em;">3</p>
<p>H 1.5. Special Habitat Features: 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 checked="" type="checkbox"/> Large, downed, woody debris within the unit (>4 inches diameter and 6 ft long).</p> <p><input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) within the unit</p> <p><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging plants 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 checked="" 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 weathered where wood is exposed</i>)</p> <p><input checked="" type="checkbox"/> At least ¼ acre of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	<p>5</p>
<p>H 1. TOTAL Score - potential for providing habitat</p> <p style="text-align: center;">Add the scores from H 1.1, H 1.2, H 1.3, H 1.4, and H 1.5</p>	<p>15</p>

Rating of Site Potential: If score is

15 - 18 = H

7 - 14 = M

0 - 6 = L

H

Record the rating on the first page

Snags included in design are paid for using other funds and excluded here.

H 2.0 Does the landscape have the potential to support habitat at the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] = _____ <i>Provide map of land use within 1 km of unit edge</i> If total accessible habitat is:		Figure__ H 2.1
> 1/3 (33.3%) of 1 km circle (~100 hectares or 250 acres)	points = 3	2
20 - 33% of 1 km circle	points = 2	
10 - 19% of 1 km circle	points = 1	
<10% of 1 km circle	points = 0	
H 2.2 Undisturbed habitat in 1 km circle around unit. If:		
Undisturbed habitat > 50% of circle	points = 3	1
Undisturbed habitat 10 - 50% and in 1-3 patches	points = 2	
Undisturbed habitat 10 - 50% and > 3 patches	points = 1	
Undisturbed habitat < 10% of circle	points = 0	
H 2.3 Land use intensity in 1 km circle. If:		
> 50% of circle is high intensity land use	points = (- 2)	0
Does not meet criterion above	points = 0	
Total for H 2	Add the points in the boxes above	3

Rating of Landscape Potential: If score is 4- 6 = H
 1-3 = M
 < 1 = L

Record the rating on the first page

H 3.0 Is the Habitat provided by the site valuable to society?		
H3.1 Does the site provides habitat for species valued in laws, regulations or policies? (choose only the highest score)		
Site meets ANY of the following criteria:	points = 2	2
<input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)		
<input type="checkbox"/> It is a "priority area" for an individual WDFW species		
<input type="checkbox"/> It is a Natural Heritage Site as determined by the Department of Natural Resources		
<input type="checkbox"/> It scores 4 on question H2.3 of the wetland rating system		
<input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan		
Site scores 1-3 on question H2.3 of the wetland rating system	points = 1	
Site does not meet any of the criteria above	points = 0	

Rating of Value: If score is 2 = H
 1 = M
 0 = L

Record the rating on the first page

Appendix D: Question H 2.3 of the Wetland Rating System

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>)

Count how many of the following priority habitats are within 330 ft (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 – see web link above*).

___ **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 – see web link above*).

___ **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 – see web link on previous page*).

___ **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Scoring for H 2.3:

- 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

"CREDIT" WORKSHEET

Mitigation Site: Boise Creek Mitigation Project West Wetland Wetland Unit: _____ Date _____

To calculate the CREDITS fill out the following worksheets using the data from the Scoring Form. Also,

- Use additional worksheets if more than one wetland unit is being used for mitigation.
- Use the map of Cowardin plant types from question H 1.1 on the Scoring Form to determine the boundaries of areas dominated by emergent plants (if needed for the calculations).
- Map out and estimate the areas in the wetland unit that will be created or re-established and the areas that will be rehabilitated or enhanced. The credits from creation/re-establishment and rehabilitation/enhancement are calculated separately before being combined at the end.

Additional notes:

Note 1: B = 0 for all three functions in mitigation sites that are not currently wetlands (creation or re-establishment).

Note 2: If you are increasing the size of an existing wetland the credits are calculated by rating the functions for the entire future wetland (original wetland + area created or re-established). However, you only get credits based on the area (footprint) of the area created or re-established.

Note 3: For enhancement and rehabilitation you cannot score only the parts of a wetland where mitigation takes place. You need to score the entire unit as defined in Chapter 4. This is done for both "before" and "after" conditions. The score for the unit after mitigation [A] will be the same for either enhancement or rehabilitation. This method is based on calculating the "lift" in functions without considering whether the mitigation is called enhancement or rehabilitation.

Note 4: Scoring the landscape potential of a mitigation site to calculate credits after the mitigation takes place depends on how its rating changes. Specifically:

- 4.1 **If the score for the landscape potential decreases as a result of the mitigation activity** then the score for the current conditions can be used for calculating credits. For example, the rating of landscape potential might decrease for a large mitigation project that removes sources of pollutants in the buffer. In this case the scores for the site might decrease even though positive actions are being taken.

- 4.2 **If the score for the landscape potential decreases as a result of the development or proposed impacts** then the score for the “future” condition should be used to calculate credits. For example, on-site mitigation should be getting a lower rating for the landscape potential if development to which it is linked breaks corridors or reduces the area of undisturbed habitat. These reduce the effectiveness of the mitigation site as habitat.
- 4.3 **If the score for the landscape potential increases as a result of the mitigation actions** then the score for the “future” condition can be used in calculating credits. For example, new corridors or habitat connections that are made as a result of the project should be given credit. Also, riverine wetlands that are reconnected to their floodplain should get credit (e.g., question R 5.1).
- 4.4 **If the score for the landscape potential increases as a result of the development or proposed impacts** then the score for landscape potential for the current conditions has to be used in calculating credits. A development could provide a source of pollutants or excess water to the mitigation site that would increase its level of flood storage and removal of pollutants. We do not want to give mitigation credits to increases in functioning of a wetland that are a result of the impacts associated with the project.

Use the following worksheet to calculate credits. Totals are in acre-points for comparison with the debits worksheet. Separate the mitigation site into different areas (polygons on a map) by the type of mitigation proposed (creation, re-establishment [C/R], and rehabilitation/enhancement [R/E]) and by the plant community proposed for that polygon. These areas have different risk factors.

Boise Creek Mitigation Project West Wetland

Scores for unit before any mitigation takes place

B = 0 for Creation and Re-establishment

FUNCTION From Scoring Form - Unit ID _____	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	0	0	0
Rating of Landscape Potential	0	0	0
Rating of Value	0	0	0
Score for mitigation site [B]efore	B = 0	B = 0	B = 0

Scores for unit based on the expected wetland ecosystem when all the vegetation has reached maturity and the water regime has stabilized

FUNCTION From Scoring Form - Unit ID _____	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	H	M	H
Rating of Landscape Potential	H	H	M
Rating of Value	H	H	H
Score for mitigation site [A]fter	A = 9	A = 8	A = 8

Calculations for Credits Unit ID _____	Improving Water Quality		Hydrologic Function		Habitat Function	
	C/R f/s e	R/E f/s e	C/R f/s e	R/E f/s e	C/R f/s e	R/E f/s e
Increase in Score at mitigation site (A - B) = [f/s] – forest/shrub/aquatic bed [e] – emergent	9		8		8	
Acres of mitigation (<i>should be same for the 3 functions for each type of mitigation</i>)	0.252		0.252		0.252	
Basic mitigation credit (BMC) = Increase in Score x acres of mitigation	2.268		2.016		2.016	
Risk factor (RF) (see table below)	1		1		1	
Mitigation credits available for each area CREDITS = BMC x RF	2.268		2.016		2.016	
TOTAL CREDITS AVAILABLE Add the credits from the different types of mitigation	2.268		2.016		2.016	

TOTAL WEST WETLAND: 6.3






Risk Factors:

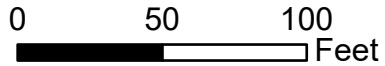
Type of Mitigation	Risk Factor
<p>Advance mitigation</p> <p>The site meets criteria in Charts 1 and 3 of the site selection guidance [i.e., identified in a local plan and is sustainable] AND meets the criteria in Charts 4-11 for the appropriate functions. (Ecology publication #09-06-032)</p> <p><i>Advance means that at least two years has passed since plantings were completed or one year since "as-built" plans were submitted to regulatory agencies.</i></p>	1.0
<p>Advance mitigation without meeting criteria in Ecology publication #09-06-032</p>	0.83
<p>Concurrent Mitigation</p> <p>Mitigation site meets criteria in Charts 1 and 3 of the site selection guidance [i.e., identified in a local plan and is sustainable]</p> <p>AND meets the criteria in Charts 4-11 for the appropriate functions. (All worksheets for Chart 3 and in Appendix D of Ecology publication #09-06-032 are submitted)</p> <p><i>Risk factor applies to all types of mitigation.</i></p>	0.9
<p>Mitigation site chosen meets the criteria in Charts 2 and 3 of the site selection guidance [i.e., identified as a site with potential and that is sustainable] ;</p> <p>AND meets criteria in Charts 4-11 for the appropriate functions. (All worksheets for Chart 3 and in Appendix D of Ecology publication #09-06-032 are submitted)</p> <p><i>Risk factor applies to all types of mitigation.</i></p>	0.80
<p><i>Site does not meet criteria in site selection guide, or guide was not used.</i></p> <p>Re-establishment, rehabilitation, or enhancement of an aquatic bed, shrub, or forest community 0.67</p> <p>Re-establishment, rehabilitation, or enhancement of an emergent community 0.5</p> <p>Creation of an aquatic bed, shrub, or forest community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10. 0.67</p> <p>Creation of an emergent community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10. 0.5</p> <p>Creation of an aquatic bed, shrub, or forest community <u>without</u> adequate hydrologic data. 0.5</p> <p>Creation of an emergent community <u>without</u> adequate hydrologic data. 0.4</p>	

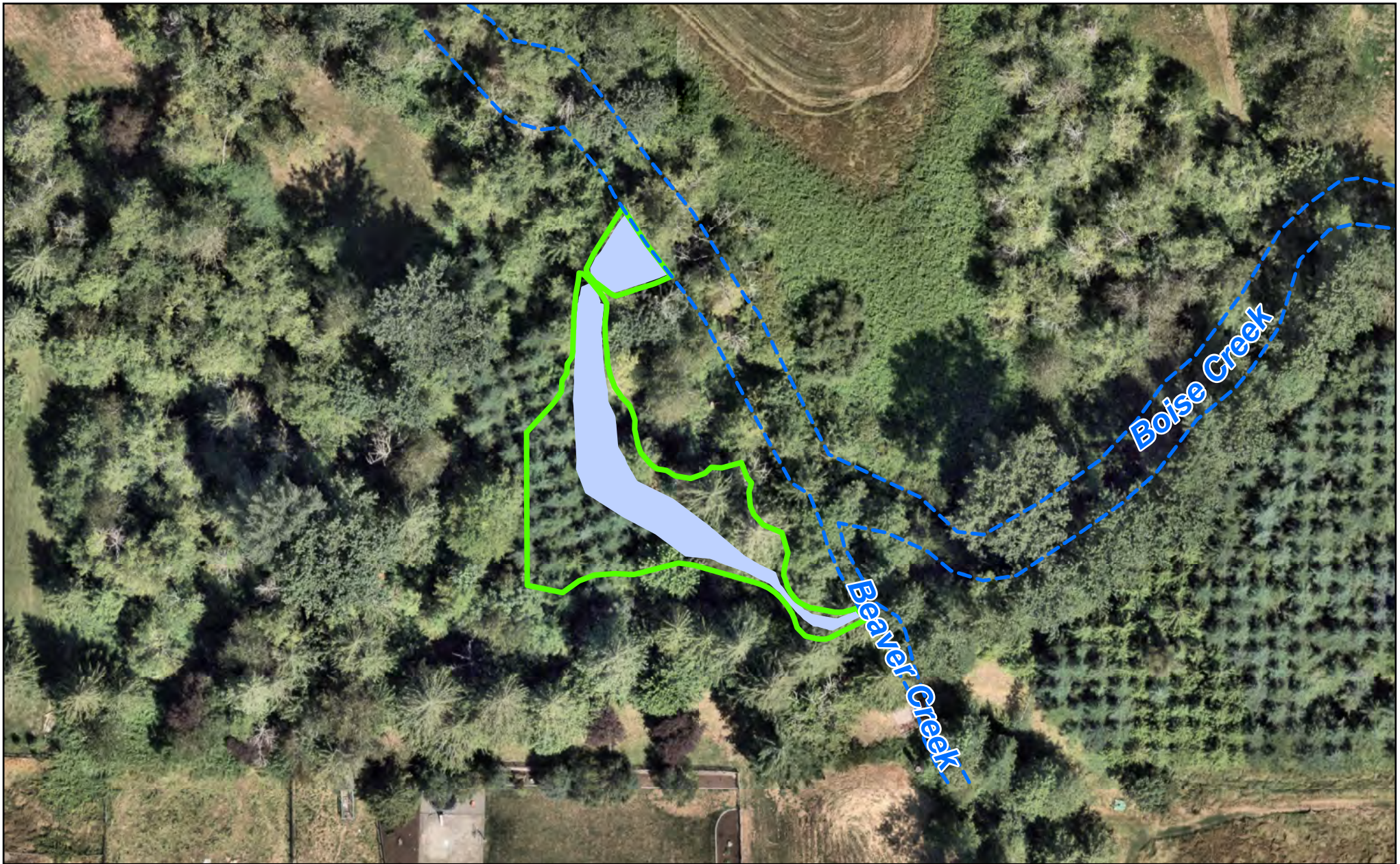


2024 Aerial Image

Habitat Types in Wetland Unit




-  Wetland Unit (0.252 ac)
-  Emergent Wetland (0.051 ac)
-  Scrub Shrub Wetland (0.042 ac)
-  Forested Wetland (0.159 ac)
-  OHWM

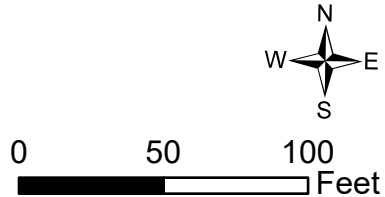




2024 Aerial Image

R 1.1 Ponded Depressions

-  Wetland Unit (0.252 ac)
-  Ponded Depressions (0.093 ac; 36.9% of Wetland Unit)
-  OHWM



Rationale for Change in Score R 1.1.

Boise Creek Mitigation Project West Wetland

August 22, 2024

The Boise Creek Mitigation Project (BC Mitigation Project) wetlands were designed with the landscape setting in mind. The design focuses on constructing wetlands that provide water quality, hydrologic, and habitat benefits, including benefits to Endangered Species Listed Chinook salmon that use adjacent Boise Creek and will also use the constructed wetland.

Boise Creek Water Quality

The reach of Boise Creek where the BC Mitigation Project site is located is on Ecology's 303(d) list (Category 5) for not meeting standards for pH and bacteria (fecal coliform). It is also listed as "Waters of Concern" (Category 2) for having evidence of water quality problem associated with temperature and dissolved oxygen, but not enough to require production of a Total Maximum Daily Load (TMDL) (Ecology, 2023).

Geomorphology

Currently, near the BC Mitigation Project site, Boise Creek is confined in a constructed channel excavated in low permeability, erosion resistant lahar (volcanic mudflow) deposits. The channel was constructed and maintained through most of the 1900's to accommodate farming, improve agricultural drainage, and convey sediment across the low gradient Enumclaw plateau.

Channel morphology is typically a simple trapezoidal channel with a planar bed, gravel substrate and infrequent forced pools. Channel slope, confinement, and sediment transport capacity all decrease rapidly as the channel transitions from the foothills to the plateau approximately one mile upstream of the BC Mitigation Project site resulting in a zone of significant sediment deposition upstream of the site.

At the BC Mitigation Project site, sediment supply and transport capacity appear to be nearly balanced. There is some evidence of net deposition near the confluence with Beaver Creek where there is increased channel and connected floodplain width, but in-channel conditions throughout the project site are generally stable. Downstream of the BC Mitigation Project site, channel slope and confinement gradually decrease causing a drop in sediment transport capacity and locally significant sediment deposition until the stream enters a deeply incised ravine leading down to the White River floodplain.

Wetland Design Based on Site Conditions

Given the geomorphology and the water quality concerns, including concerns about increasing temperatures in Boise Creek, the BC Mitigation Project design balances the benefits of constructing depressions with the benefits of retaining trees in and adjacent to the wetlands. The BC Mitigation Project site includes two wetland units. The west wetland was designed to be intertwined between existing large trees. The forested wetland component is more pronounced, with a single thread of scrub shrub and emergent wetland. The east wetland was designed in a section of the site that has been more affected by past development and use of the property. The east wetland incorporates larger depressions that will collect sediment if present, without extensive loss of mature trees. This balanced approach re-

establishes a wetland complex that will provide both the depressions needed to collect polluted sediment and the shade needed to keep water cool.

Tree Retention

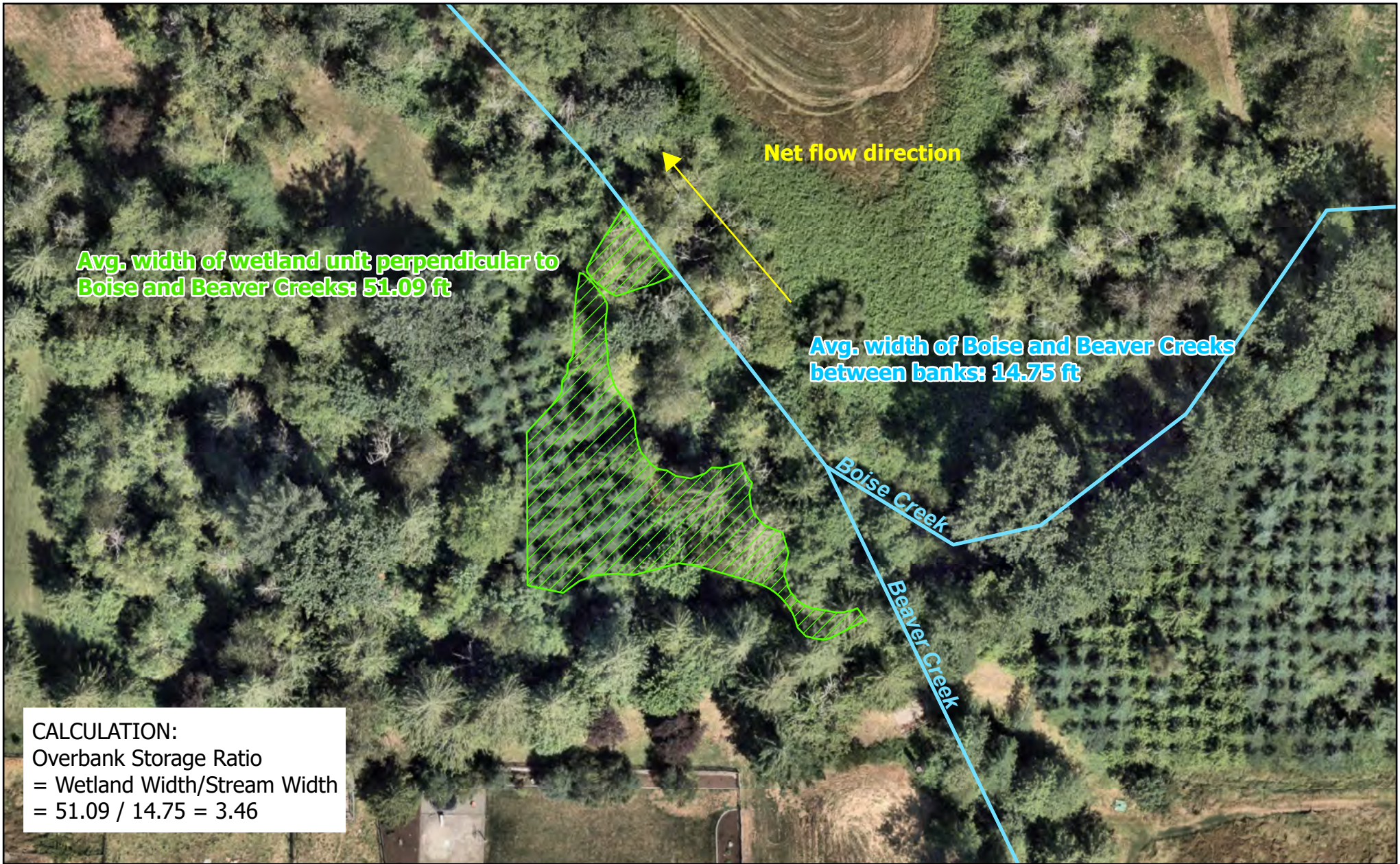
The BC Mitigation Project design is intended to preserve and protect as many large trees as possible without compromising the project design. Tree retention is an intentional design element that may help combat temperature issues within Boise Creek that have contributed to its status as “Waters of Concern” (Category 2) for having evidence of water quality problem associated with temperature and dissolved oxygen (Ecology, 2023). The grading plan for the BC Mitigation Project site preserves large areas of mature trees along the southern riparian buffer of Boise Creek, which is the northern extent of the BC Mitigation Project site. Large trees are also preserved in the forested western portions of the site and the planted Douglas-fir trees in the center of the site. These preserved forested uplands will stabilize the stream banks and serve as seed sources, shade for newly formed wetlands, and as sources for large wood over time. Furthermore, mature trees in the riparian buffer, upland or otherwise, would all contribute towards water quality improvement.

Improving Water Quality Rating of Site Potential



The west wetland, as designed, scores 10 (M) for water quality functions rating of site potential. The east wetland, as designed, scores 12 (H) for water quality functions rating of site potential. If the two wetlands were rated as one, together they would score 12 (H) for water quality functions rating of site potential.

Conclusion

The west wetland could be designed to incorporate more area of depressions to potentially capture polluted sediment, but this addition would result in more loss of mature trees and potentially increased water temperatures. Given the listing of Boise Creek as “Waters of Concern” (Category 2) for having evidence of water quality problem associated with temperature and the balance in sediment supply and transport capacity, we feel the wetland has the potential to provide greater benefit in this specific location with more trees within and surrounding the wetland and less depressions. Additionally, together the east and west wetlands meet the criteria to score 12 (H) for water quality functions rating of site potential. For these reasons, we propose adding 2 points to the west wetland score for R1.1 for a total score of 12 (H) for water quality functions rating of site potential. This 12 (H) score mirrors the score for the east wetland.



R 4.1 Overbank Flood Storage

-  Wetland Unit
-  Rivers and Streams

2024 Aerial Image



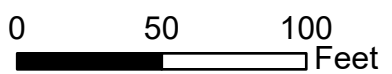
0 50 100 Feet

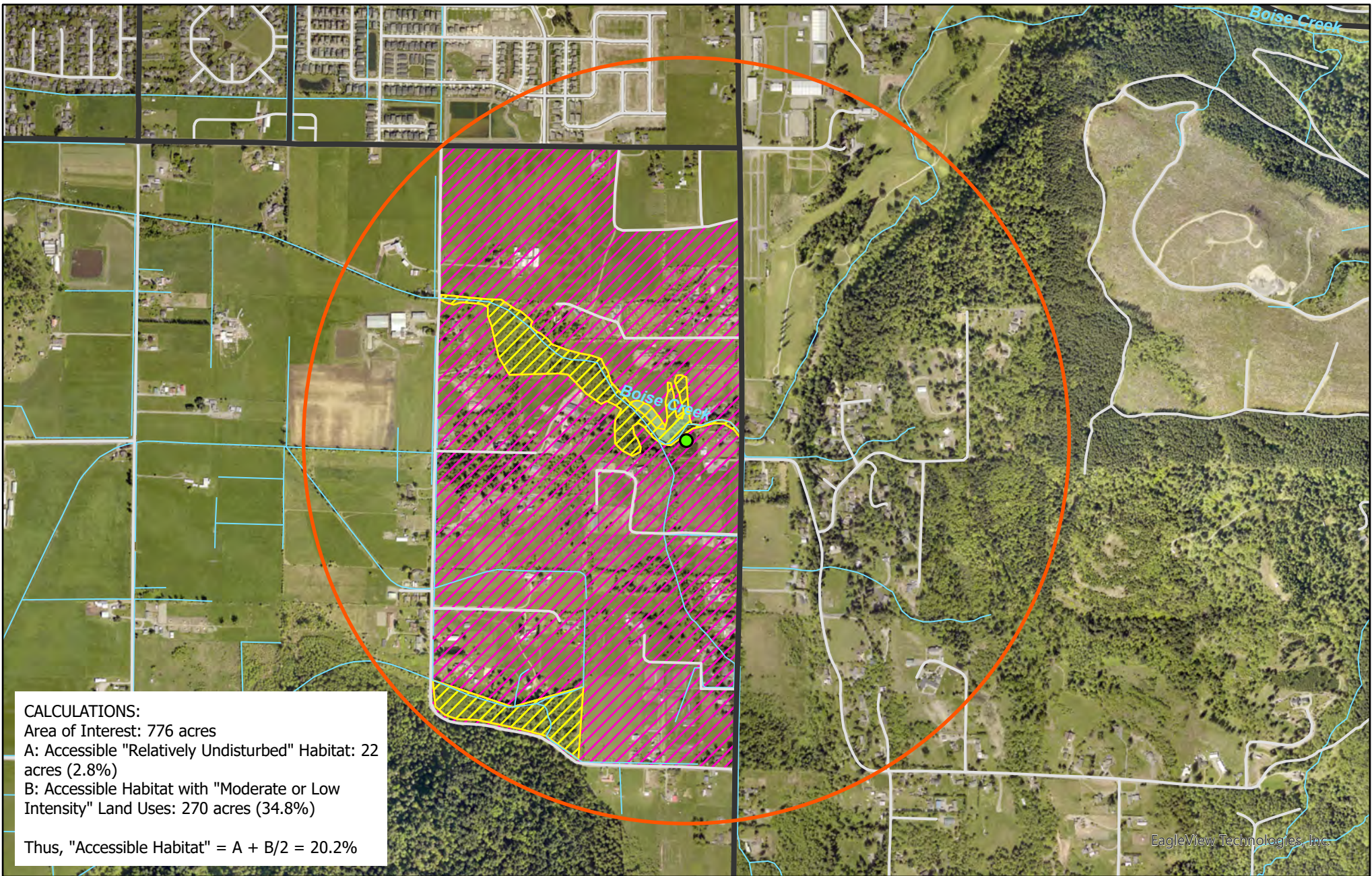


2024 Aerial Image

H 1.2 Hydroperiods

- Wetland Unit
- OHWM
- Seasonally Flooded
- Saturated Only
- Occasionally Flooded
- Permanently Flowing Stream





H 2.1 Accessible Habitat

- Wetland Unit (Centerpoint)
- Area of Interest (1 km radius around Wetland Unit)
- Accessible "Moderate or Low Intensity" Land Uses (270 acres)
- Accessible "Relatively Undisturbed" Habitat (22 acres)
- Arterial Streets
- Local Streets and Roads
- Rivers and Streams

