



## Northwest Ecological Services, LLC

# MEMORANDUM

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To: Mark Johnson, ESA Adolfson  
Dannon C. Traxler, Langabeer & Tull, P.S.  
Susan Meyer, Washington DOE  
Kim Weil, City of Bellingham  
James Luce, City of Bellingham  
Jim Barborinas, Urban Forestry Services, Inc

From: Vikki Jackson, PWS, Northwest Ecological Services, LLC

Date: August 17, 2009

RE: Fairhaven Highlands – Wetland Categorization Wetlands BB, FF and KK

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This memo addresses a requested assessment of Wetlands BB, FF and KK on the Fairhaven Highlands site to determine if they meet the criteria to be defined as a “Mature Forested Wetland” as defined by the Department of Ecology’s (DOE) Wetland Rating System for Western Washington (DOE 2004) and the City of Bellingham’s (COB) 1991 Critical Areas Ordinance (CAO). Guidance on the definition of a “Mature Forested Wetland” followed the most recent update of the DOE’s Wetland Rating System for Western Washington with further clarifications from Susan Meyer of DOE. Specific protocols followed for this assessment are defined in the June 15, 2009 memo from Mark Johnson of ESA Adolfson.

A site visit was conducted on July 7, 2009 to collect data on tree size, age and frequency within Wetlands BB, FF and KK on the Fairhaven Highlands site. These data were used to determine if these wetlands meet the criteria of a “Mature Forested Wetland” as defined within the Washington State Wetland Rating System for Western Washington (DOE 2004) and subsequently the COB 1991 Critical Areas Ordinance.

The review team included Vikki Jackson, Northwest Ecological Services, LLC, Jim Barborinas, Urban Forestry Services, Inc., James Luce, City of Bellingham Parks Department, Dannon Traxler, Langabeer & Tull, Susan Meyer and Richard Robohm both from Washington State Department of Ecology and Mark Johnson, ASA Adolfson. Wetlands BB, FF and KK were assessed during the site as requested by the City of Bellingham and ASA Adolfson for inclusion in the Fairhaven Highlands EIS. The remaining wetlands on the site either did not have sufficient forested class or size to be assessed as a mature forested wetland or were previously established to be Category I wetlands.

During the July 7 site visit trees were measured with a DBH (diameter at breast height) tape at approximately four feet off the ground. The eight largest trees within each wetland were located; tree size and species was recorded. Reviewed trees were individually marked in the field with survey tape.

Each tree was provided with a unique identification number. Tree locations were surveyed by Jepson and Associates. This exhibit is included as Figure 1.

The wetland boundary was identified by Vikki Jackson and confirmed by DOE staff. Many of the trees were rooted on upland hummocks within the wetland or along the boundary of the wetland. The arborists reviewed these trees to determine if they met the criteria of having a minimum of 50 percent of their root zone within the wetland.

**Results**

All reviewed wetlands met or exceeded the required minimum of eight trees per acre, with an average diameter exceeding 21 inches DBH. Table 1 provides a summary of the teams findings.

**Table 1. Summary of Tree sizes and species per wetland**

Wetland	Tree ID	Size (DBH in inches)	Species
BB	1	23.5	Douglas fir
	2	19	big-leave maple
	3	17	big-leave maple
	4	36	Douglas fir
	5	23	Douglas fir
	6	32	Douglas fir
	7	22	Western red cedar
	8	17	red alder
<b>Average DBH</b>		<b>23.7</b>	
FF	1	43	Western red cedar
	2	21	red alder
	3	31	Western red cedar
	4	31	Western red cedar
	5	44	Western red cedar
	6	52	Western red cedar
	7	22	Western red cedar
	8	39	Western red cedar
<b>Average DBH</b>		<b>35.4</b>	
KK	1	34	Western red cedar
	2	29	Western red cedar
	3	21	Western red cedar
	4	21	Western red cedar
	5	26	Western red cedar
	6	21	Western red cedar
	7	39	Western red cedar
	8	38	Western red cedar
	9	27	paper birch
	10	41	Western red cedar
<b>Average DBH</b>		<b>31.9</b>	

### **Wetland BB**

Wetland BB met the minimum requirements of having at least 8 trees per acre that exceeded 21 inches DBH. The average diameter from the eight largest trees in Wetland BB was 23.7 inches. Trees meeting or exceeding the size criteria in this wetland were typically located on upland hummocks within the wetland or at the edge of the wetland. Arborists reviewed each tree and determined that it met the criteria of having a minimum of 50 percent of its root zone within the wetland. The trees meeting the 21 inches DBH limit within Wetland BB were mostly species typically associated with upland habitats. The most common species were Douglas fir (*Pseudotsuga menziesii*) and big-leaf maple (*Acer macrophyllum*). Both these species have a FACU indicator status. One red alder (*Alnus rubra*) met the size criteria within Wetland BB. This species has a FAC indicator status. Larger trees were mostly located on the Fairhaven Highlands site. Younger trees dominated the adjacent City of Bellingham property. It appears the off-site portion of this forested wetland was logged about 20 to 30 years ago. No trees met the 21 inches DBH limit in the very northwest corner of the site, but since the two portions of Wetland BB are hydrologically connected they are rated together. The reviewing team found this wetland had fewer characteristics of a mature forested wetland due to overall smaller trees, more recent logging and soil disturbance history. Wetland BB appears to exceed one acre in total size and therefore would meet the criteria to be considered a DOE and COB Category I wetland.

### **Wetland FF**

Wetland FF contains eight trees exceeding 21 inches DBH per acre. The average diameter from the eight largest trees in Wetland FF was 35.4 inches. Trees with recorded sizes meeting or exceeding 21 inches DBH were rooted within the wetland and on hummocks and at the wetland boundary. Many had multiple stems, but were counted as one if they merged above four feet. Identified large trees in Wetland FF were species typically associated with hydric habitats. The most frequent species was Western red cedar (*Thuja plicata*) which has a FAC indicator. One red alder was included in the data. Wetland FF has been redelineated and the total size of this wetland exceeds one acre. Wetland FF appears to meet the criteria to be considered a DOE and COB Category I wetland.

### **Wetland KK**

Wetland KK exceeded eight trees per acre there were 21 inches DBH or larger. The average diameter from the eight largest trees in Wetland KK was 31.9 inches. Data on more than eight trees was collected, but data from the two smallest trees were dropped when the average was calculated for this wetland. Most trees meeting the 21 inches threshold were rooted directly in the wetland or on woody material within the wetland. All of the identified trees were western red cedar, except for one paper birch (*Betula papyrifera*). Paper birch has a FAC indicator status. Wetland KK exceeds one acre in size. Wetland KK appears to meet the criteria to be considered a DOE and COB Category I wetland.

### **Summary**

Wetlands BB, FF and KK all meet the criteria to be considered a "mature forested wetland" as defined in the DOE Wetland Rating System for Western Washington and the City of Bellingham 1991 Ordinance. All wetlands exceed one acre in size and have at least eight trees per acre that exceed an average diameter of 21 inches or larger. These wetlands meet the criteria as both a DOE Category I wetland and COB Category I wetland based on their mature forested status. Based on the COB 1991 Ordinance a minimum buffer of 100 feet is required around Category I wetlands.