


Bankfull Flow and Ordinary High Water Mark (OHWM): What's the Difference and Why Does it Matter for Off-Channel Habitat?

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*Slide from DNR field trip on OCH (2015)

Off-Channel Habitat



Jeffres et al. 2008

Highly productive habitat for fish

- Low velocity refuge (resting)
- Food resources + thermal benefits = ↑ Growth

 WASHINGTON STATE DEPARTMENT OF
Natural Resources
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Off-channel habitat (OCH) defined by WAC (222-16-010) and DNR Board Manual Guidance (Sections 2 and 8).

WAC 222-16-010 General Definitions

Bankfull width:

- a) For streams
- b) For lakes, ponds, and impoundments – line of mean high water
- c) For tidal water – line of mean high tide.
- d) For periodically inundated areas of associated wetlands – line of periodic inundation, which will be found by examining the edge of inundation to ascertain where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland.

WAC 222-16-010 General Definitions

Ordinary high-water mark:

“means the mark on the shores of all waters, which shall be found by examining the bed and banks and ascertaining where the presence and actions of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation:”

Provided, That in any area where the OHWM cannot be found...the OHWM adjoining freshwater shall be the line of mean high water.*

*mean high water: the average high water over 19 years.

Board Manual Section 2

Bankfull width and depth (derived from bankfull elevation) should only be used for channel dimensions and should not be used when identifying off-channel habitat:

“If a CMZ is not present, measurement of the riparian management zone (RMZ) begins at the outer edge of the bankfull width.”

“Guidance for measuring bankfull width and depth in this manual refers to a measurement of channel dimensions at bankfull flow and not for other parts of the bankfull width definition: b) lakes, ponds, and impoundments; c) tidal water (tidally influenced channels); or d) periodically inundated areas of associated wetlands. See Board Manual Section 8 for guidance.” (wetland delineation)

Board Manual section 8 defines wetland delineation

PART 2. TECHNICAL CRITERIA THAT IDENTIFY WETLANDS

“The criteria for wetland hydrology is as follows:

The area is inundated either permanently or periodically to a depth at which emergent vegetation interfaces with open water, or the soil has a frequently occurring high water table that remains within 12 inches of the surface for more than 14 consecutive days during the growing season of the prevalent vegetation.”

“Section 8 – establishing the wetland edge is used for associated wetland delineations (indicators for identifying full extent of water lines)”

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OCH Guidance in the Board Manual

Board Manual Section 2, Part 1

- Describes the process for measuring BFW as it is calculated from determining the bankfull edge. BFW is extrapolated to include areas at or below the bankfull depth
- The bankfull flow typically represents a discharge that is reached in most years
- Drainages of swales, backwater eddies or **regularly flooded adjacent wetlands** need to be considered in the evaluation when connectivity is present

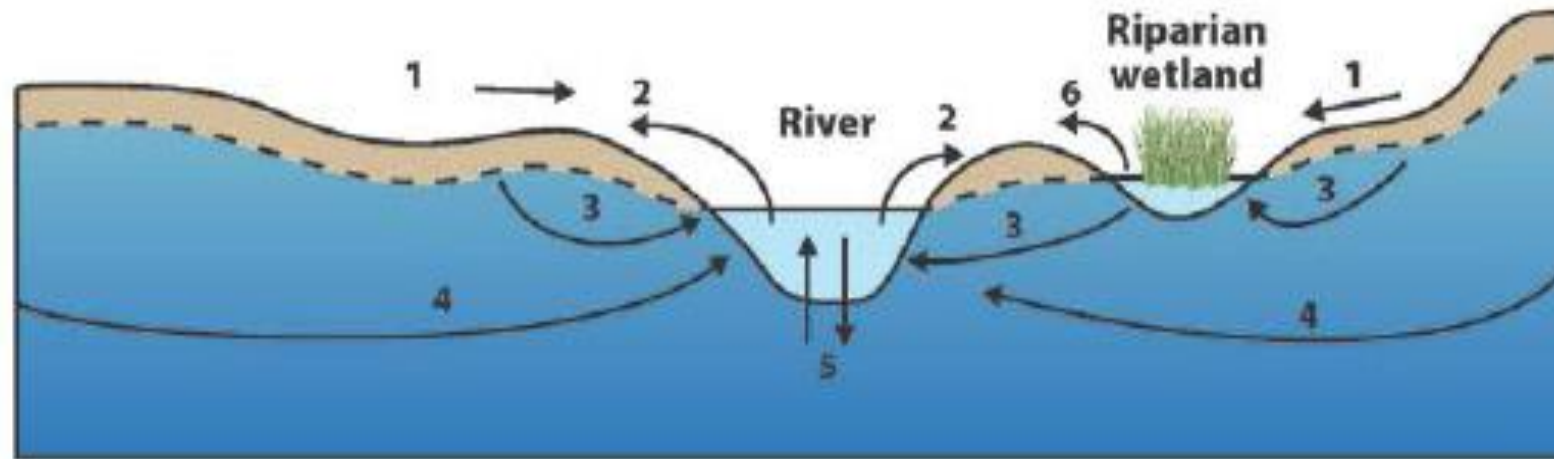
Board Manual Section 8

- **Guidance for identifying and establishing the wetland edge (periodically inundated areas of associated wetlands)**

Hydrologic Overland and Subsurface Flowpaths

* 2015 - Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. EPA /600/R-14/475F

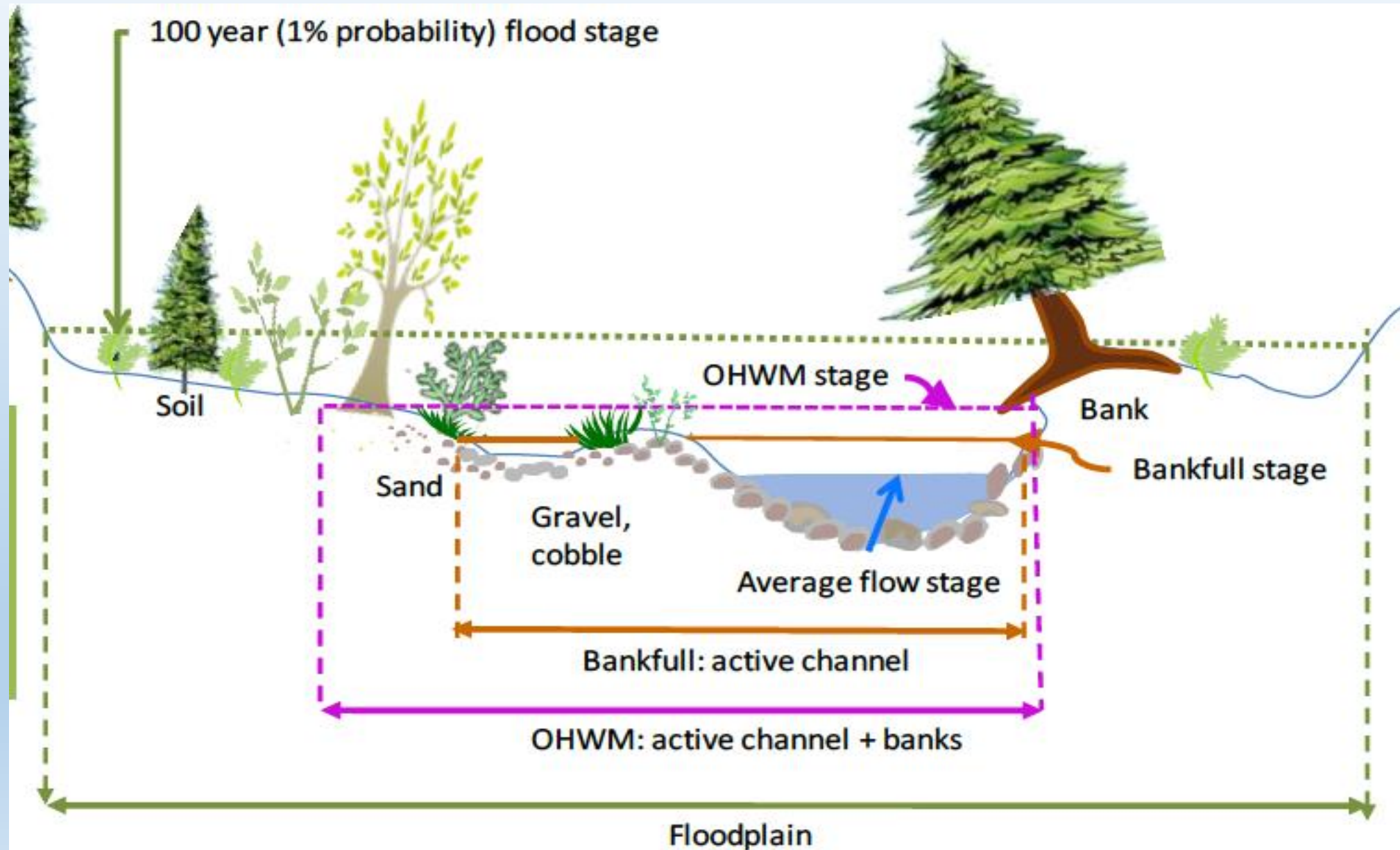
A. Common River-Floodplain Hydrologic Flowpaths



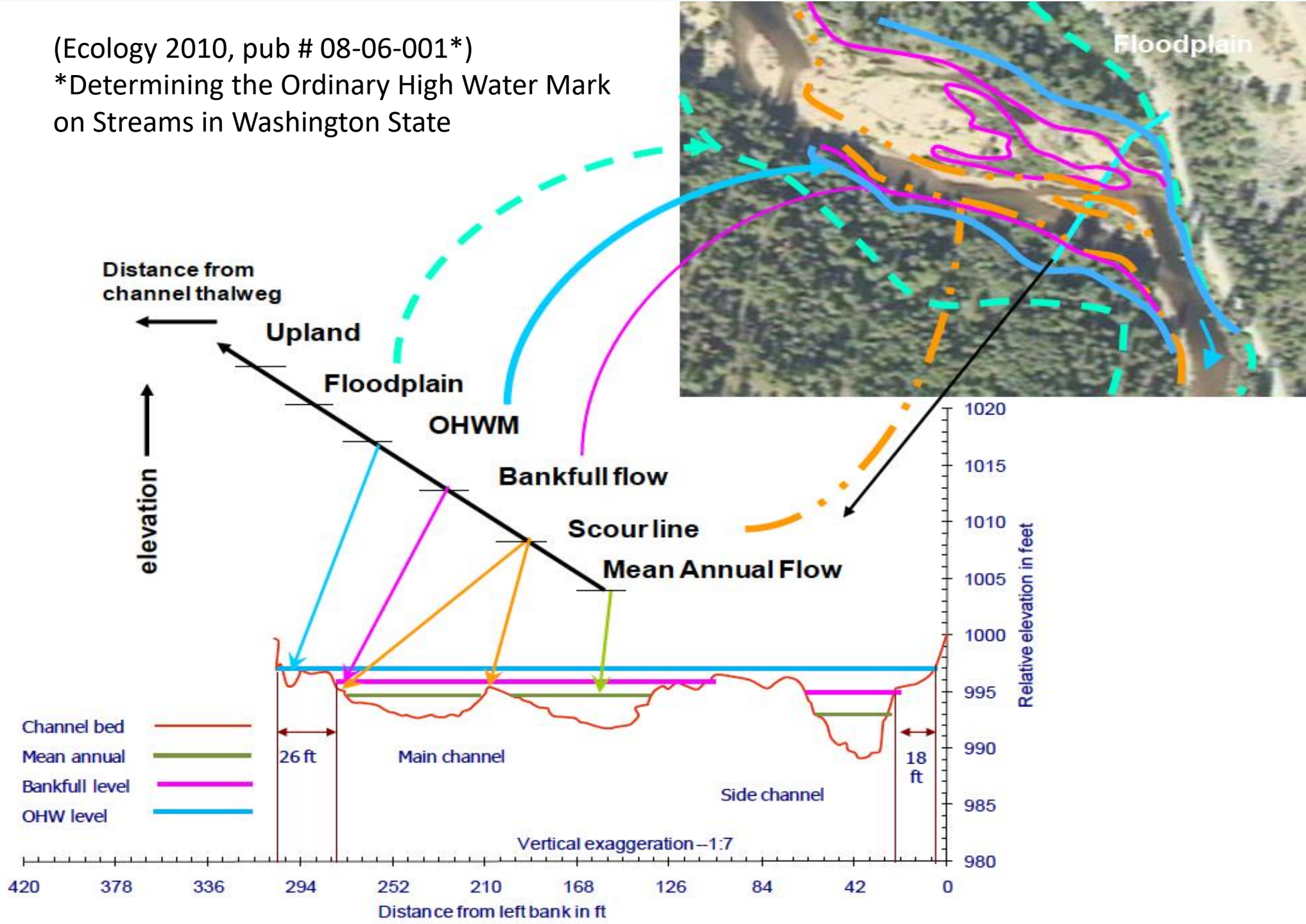
- | | |
|------------------------|---------------------------|
| 1 - overland flow | 4 - regional ground water |
| 2 - overbank flow | 5 - hyporheic flow |
| 3 - local ground water | 6 - wetland overflow |

OHWM compared to Bankfull flow (Ecology 2010, pub # 08-06-001*)

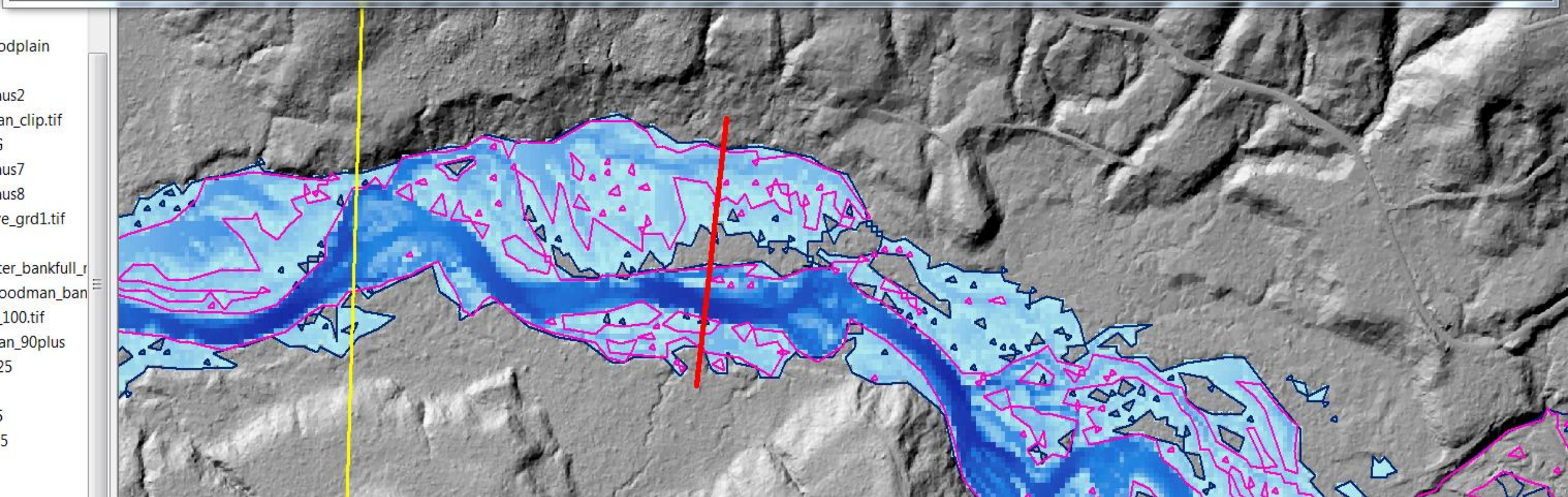
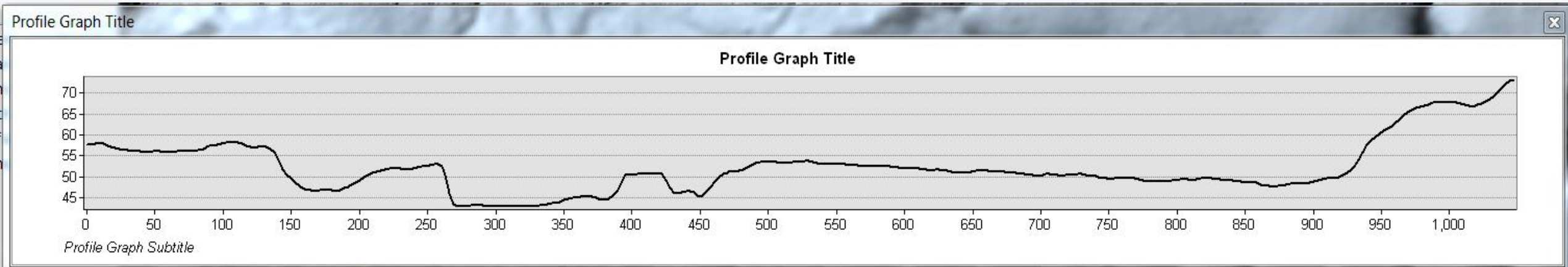
*Determining the Ordinary High Water Mark on Streams in Washington State



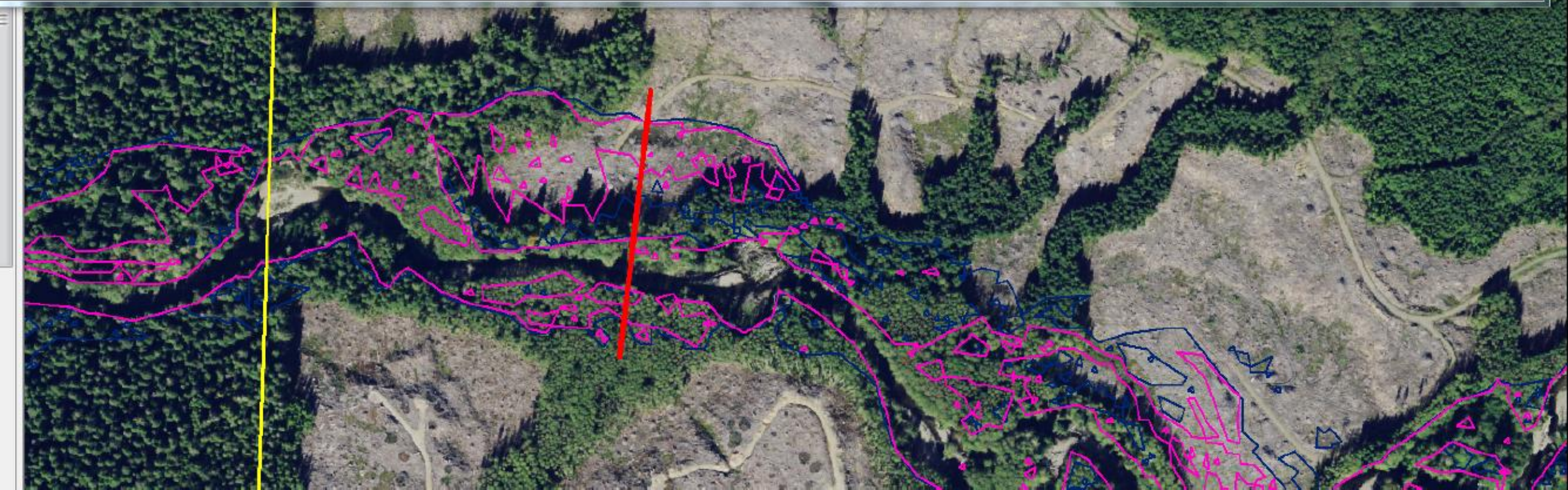
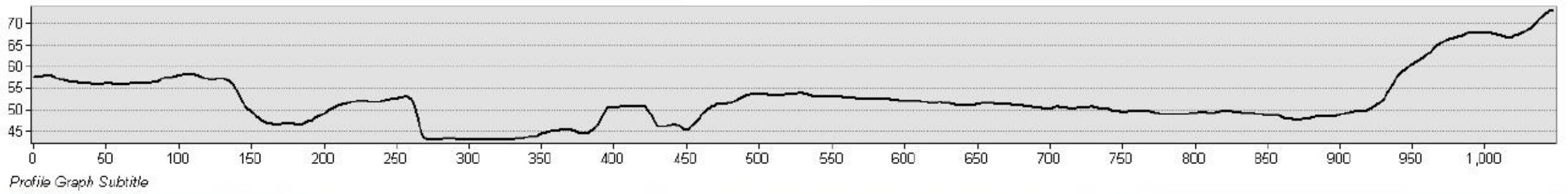
(Ecology 2010, pub # 08-06-001*)
 *Determining the Ordinary High Water Mark
 on Streams in Washington State



Light Blue Shaded Areas Outlined in Red Indicate a 2 year Flood Frequency



Areas Outlined in Red Indicate a 2 year Flood Frequency





2014/09/10



Common Misunderstandings in Establishing the OHWM on Streams Include: (Ecology 2010, pub # 08-06-001*)

*Determining the Ordinary High Water Mark on Streams in Washington State

- Ignoring side channels in multiple channel systems. Secondary channels may be within the OHWM
- Not including contiguous or associated wetlands within the stream OHWM
- Using the waterward edge or the beginning of the vegetation as the OHWM. Vegetation below or at the OHWM should be considered distinct from that of the abutting upland, not the abutting riparian plant community.

Conclusion

- Limiting Off-Channel Habitat to Bankfull Elevation instead of OHWM, when the later is greater, will significantly reduce the amount of OCH available to fish seeking refuge from inhospitable, high flow/velocity in-channel conditions.
- Doing so goes against both the WAC (222-16-010) and Board Manual guidance (Sections 2 and 8) for protecting periodically inundated areas of associated wetlands that serve as OCH.