



FINAL Steering Committee Meeting Notes

Monday, September 21, 2020 1 pm – 3:30 pm

Zoom videoconference: <https://us02web.zoom.us/j/89518428467>

Meeting ID: 895 1842 8467

More info: tpokorny@co.jefferson.wa.us or 360-379-4498

Welcome/Introductions

Tami Pokorny, Bernard Bormann, Mike Ericsson, Wendy Largent, Julie Ann Koehlinger, Bridget Kaminski Richardson, Roger Oaks, Jessie Huggins, Mike Rohde, John Davis, Pat Crain, Tim Abbe, Luke Kelly

Agenda Changes/Additions

No additions or changes to the agenda

Approval of July 20 and August 17, 2020 Draft Meeting Summary

July 20 and Aug 17 meeting summaries are approved by consensus

Announcements/Comments

No announcements/comments

Old Business

None

New Business

Hoh River Processes Part II – *Tim Abbe, Natural Systems Design*

- Tim continues his presentation explaining channel avulsions and how a river naturally moves around (horizontally and vertically). Generally, rivers are very complicated compared to the models and diagrams.
- Erosion and flooding are separate things (e.g. high ground that never floods is still prone to erosion)
- In general channels migrate outward and down valley. Avulsions (where a river channel abandons one channel for a new one) can be predicted. Avulsions get set up by a steeper gradient. (e.g. neck cut off, the river takes a short cut). Relative elevation maps are valuable in assessing potential avulsion



Hoh River Resiliency Plan PHASE I

- 1% probability of flood (in a given year) dictates FEMA flood maps, and this also affects flood insurance rates. National flood insurance does not include erosion, but it can if declared a disaster.
- Landslides – river migration and erosion are an important factor influencing slides. Slides into the valley margins are often triggered by toe erosion (from stream).
- Channel Migration Zone (CMZ) guidelines – should you be looking at a geotechnical setback? What is your risk exposure?
- Sediment budget - Natural processes are constantly weathering the landscape and driving land and river processes. Difference in sediment input vs output, results in net storage and aggradation of the channel/riverbed. This can lead to flooding. More sediment coming out vs in leads to channel incision (common issue in our region).
- Hoh refers to “fast moving water”
- Snags almost always for upstream (root wad faces upstream)
- Tim presented the Hoh Watershed stats – peak flows to 60,000 cubic feet per second isn't all that uncommon.
- Tectonics – the Olympic mountains are being thrust up. Overall, the Olympics average 1.5 mm of lift per year. Very tectonically active area.
- Continental ice sheet from the last glacial period never got to the west side O.P. However, alpine glaciers significantly advanced during this time, influencing west end rivers. Tim showed a map of alpine glacial terminal moraine locations in river valleys. There have been several glacial advances and retreats.
- Climate change – rapid glacial recessions happening right now worldwide. Glacier surface area and volume are important considerations. This changes the hydrology from snow dominant to rain dominant streams in many places, changing the flow regime year-round.
- Precipitation – Hoh gets a lot of rain, 144” / year. Hoh predictions for climate change are for higher peak flows and lower low flows. UW Climate Center prediction for Hoh River daily winter flows indicates an increase of 46 to 64%.
- Forest cover on the OP is another big factor influencing the landscape. Vegetation and trees are a major factor in OP rivers' natural processes. Forest cover has been impacted by development and timber harvest. (e.g. Hoh Watershed Analysis found that landslide density in the Middle Hoh watershed increased 195% and that 82% of the observed landslides were associated with timber harvest)



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- Stream channel evolution – Tim presented a diagram that showed the different stages of how a stream channel changes and responds to disturbance.
- Channel incision is common in stream channels out of equilibrium. Generally, in Western WA a stream will reach bankfull and connect to floodplain every ~1.1 years. An incised Western WA channel will only connect once every 5 years. Incision can happen quickly once it gets started.
- Forest and Bank Erosion examples – Central Sacramento River channel migration rates – example of channel migration and erosion rates double for agricultural banks compared to riparian forested banks.
- Tim showed diagram how smooth banks allow much more shear stress and stream flow velocity to get close to the bank. A rougher bank will partition more shear stress (slowing water down along the bank) and is generally more natural in healthy rivers.
- Hoh historic channel migration zone (HCMZ) - Data since 1939 shows that Hoh erosion is almost 4 times higher outside of ONP. Due to changes in vegetation / forest stands
- Analyzing erosion as a function of forest condition - older trees/forests show a significant difference in erosion rates compared to younger forests.
- Tim showed an impressive photo of a 9' diameter spruce with root wad 30' wide from the Queets River, 2003. Studies have shown that tree size matters (for natural stream processes). Root cohesion provide by living trees stabilize banks. Larger trees coincide with higher surfaces which erode more slowly. Larger trees generally grow on substrate more resistant to erosion. Larger trees more likely form stable snags in channel, thereby increasing bank roughness and deflection erosive flows away from bank.

Questions?

- Luke asked what are signs of aggradation?
 - Tree trunks buried in coarse material... trees growing in active channel. Some trees can handle some burying, but generally conifers cannot.
 - Fining in bed material can be a sign (transitioning to smaller streambed material)
 - Lack of armoring (your feet may sink in when walking), no cobble armoring on streambed.

Middle Hoh project reach

- Tim showed a map from 1943 that showed anabranching channels. Queets research showed that logjams were the primary element creating channel splits and anabranching channels. Tim showed maps of different Hoh river sections in the project reach. Highlighted the Upper Hoh Rd location and challenges, old channels and logjams in floodplain.
- Tim shows some NSD work previews, channel migration mapping, valley width crossing sections, identifying landslide areas, examples of challenges/issues (flooding, erosion, road washout, etc.)



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- Example of road management response to natural channel migration – showed the Upper Hoh Rd at the park boundary and how the river responded to bank revetment / road protection actions.
- Tim showed the Upper Sandy River corridor plan map – indicated major risks to infrastructure due to channel migration and flooding.

Project background data review and data gaps update & Field data collection plan update – *Mike Ericsson, Natural Systems Design*

- NSD Field work Sept 30 – Oct 2.
- Landowner meetings will be targeted for early 2021
- Data gaps memo was sent to Tami/ County
- LiDAR and Bathymetry – was able to acquire bathymetry from 2014. Also received ~2013 LiDAR data. Will merge these two data sets together and begin building a 2D hydraulic model – early results expected next month.
- CMZ is being updated from the BOR CMZ mapping. New mapping adding more detail/ accuracy. Mike showed a map how the CMZ is being updated. Channel migration impacts from geotechnical hazards - Working on erosion and avulsion hazard areas. In general, it appears the CMZ will be expanded to a larger area than the BOR mapping
- Relative Elevation Map (REM) – floodplain elevations vs the channel elevations (using LiDAR). Indicates what get inundated at what elevation. Helps identify side channels, avulsion hazard areas, opportunities for restoration. Field work will help confirm some of these elevations on the landscape.
- Vegetation height mapping - when flying LiDAR, the ‘first return’ of the laser is used to estimate vegetation heights. Helps identify stands of large trees and old growth. This will also help inform the revised CMZ.
- The full suite of LiDAR data (LAS file) is a lot of information and can be processed to learn a lot of different things about the landscape.

The Landry Family’s Hoh River Story – *Roger Oakes, Volunteer Historian*

- Roger shared a summary of his work about the Fisher family homestead and the Landry family. Roger has been gathering information by reviewing the family information came from the Landry family. Milepost 6 is the location if the Fisher Homestead (German immigrants). This is a story about early (settler) life on the Hoh River.

Announcements/Comments



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Luke suggested revising the 8/17/20 meeting minutes by removing the last three bullets items from Tim's Part 1 presentations. No objections from any attendees

Next Agenda

Monday, October 19, 1pm – 3:00pm Remote Only

Adjourn

Notes by Luke Kelly