



**Flood Development Permit, FLD 16-66
SHX2016-00080**

DATE: July 19, 2016
TO: Lindsie Fratus, Nooksack Tribe
FROM: Ben Floyd, River & Flood Engineer 
RE: Flood Review for Proposed Farmhouse Reach Phase 2B Restoration Project

We have reviewed the documents submitted for the proposed Farmhouse Reach Phase 2B Restoration Project. The submitted documents include the following:

- Final Stamped Plan Set dated June 23, 2016
- Hydraulic Modeling Memorandum from Herrera Environmental Consultants dated July 13, 2016
- Geomorphology Memorandum from Herrera Environmental Consultants dated June 22, 2016
- Email Correspondence with Lindsie Fratus of the Nooksack Tribe dated June 29, 2016 through July 18, 2016
- US Army Corps of Engineers Nationwide Permit 27, NWS-2014-326

The proposed Phase 2B of the Farmhouse Reach Restoration Project is located on the North Fork Nooksack River at River Mile 48.5 near the Glen at Maple Falls development predominantly within Township 39 North, Range 5 East, Section 01. Phase 2B proposes constructing 20 engineered log jams (ELJs) and is located within Flood Zone A with an undetermined base flood elevation on the 2004 Official FEMA Flood Insurance Rate Map Panel 0790. Previous phases of work included the construction of 27 ELJs in Phase 1 and 7 ELJs in Phase 2 located immediately upstream and adjacent to the proposed Phase 2B project.

Whatcom County Code Title 17, Flood Damage Prevention 17.12.030, Section A.3. states that the department shall: "Review all development permits to determine if the proposed development adversely affects the flood-carrying capacity of the area of special flood hazard. For purposes of this chapter, "adversely affects" means that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point".

The hydraulic analysis completed for Phase 2B included updating the proposed model with as-built of ELJs locations for Phase I and Phase 2A work in order to addresses the

cumulative impacts of the Farmhouse Reach Restoration Project. As shown and stated in the hydraulic modeling memorandum from Herrera dated July 13, 2016, the 2D model results indicate water surface elevations in the active channel will generally increase on the order of 0.1 to 0.5 feet with maximum localized increases of up to 2.0 feet locally around the ELJs. The maximum increase in the 100-year water surface profile resulting from the proposed Phase 2B project, when the 2D results are averaged across a cross-section, is 0.32 feet. The hydraulic modeling memorandum also states that the model results show that no inhabited structures or structures protected by Whatcom County's floodplain management regulations will be impacted by the Phase 2B project.

Future phases of the Farmhouse Reach Project are being planned by the applicant, but at this time have only been developed as concepts that may change considerably as the river responds to previous phases of work and based on landowner feedback. The applicant is proposing to evaluate future phases of the project as the designs are developed beyond the conceptual level, and will model and assess the cumulative impacts for all phases of the project, considering the response of the river to previous phases, and ensuring that the total rise does not exceed one foot when averaged across a cross-section. Based on guidance provided by FEMA related to 2D modeling for past restoration projects, this project complies with Whatcom County Code 17.12.030, Section A.3.

Endangered Species Act Compliance - This project has received a Nation Wide Permit No. 27 from the Army Corps of Engineers demonstrating compliance with the Endangered Species Act. A copy of this Nation Wide Permit, NWS-2014-326 dated July 14, 2016 has been provided by the Nooksack Tribe.

Based on our review of the submitted information we have determined that the project complies with the requirements of Title 17, provided that the project is constructed in accordance with the above-referenced plans. Any changes to the scope, hydraulic memo, or plans will require additional review to ensure compliance with Title 17.

Should you have any questions please don't hesitate to give me a call at (360) 778-6288.