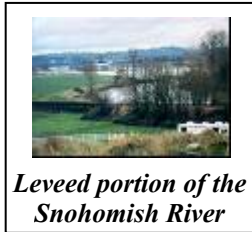




Indefinite Delivery Hydrology and Hydraulics, US Army Corps of Engineers, Seattle District

WEST Consultants is completing an indefinite delivery/indefinite quantity (IDIQ) contract for hydrology and hydraulics with the Seattle District, U.S. Army Corps of Engineers. Task orders have included:

- Conducting a flood insurance study for the Snohomish River using UNET and HEC-RAS
- Providing services to evaluate impacts and support design of the Satsop River floodplain restoration
- A river and floodplain restoration design for the Green River
- Developing a grade control design for a dam removal on Goldsborough Creek on the Olympic Peninsula
- Quality control and a comprehensive review of Skagit River FLO2D modeling
- Developing a new reservoir regulation manual for Hungry Horse Dam on the South Fork Flathead River
- Evaluating sedimentation related to salmonid habitat for the lower Cedar River
- A sedimentation study for Libby reservoir
- Review of UNET models applied to the Chehalis and Stilliguamish Rivers



*Leveed portion of the
Snohomish River*

Snohomish River Flood Insurance Study. WEST conducted a flood insurance study for approximately twenty miles of the Snohomish River, between the City of Everett and Monroe, using both UNET and HEC-RAS. The model consisted of over 200 cross-sections and 17 bridges. It included a downstream tidal boundary, an upstream boundary hydrograph, and inflows from the Pilchuck River. The lower portion of the model contained numerous reaches and split flows including Ebey Slough, Steamboat Slough, and Union Slough. The model was calibrated to both a low flow (1988/89) event and the 1990 flood that caused significant overbank flooding and a levee breach.

Satsop River Floodplain Restoration. WEST provided services that included hydraulic modeling and sediment transport evaluations to characterize existing conditions and assess expected physical changes and risks that may result from alternative restoration efforts. The project involved consideration of removing existing bank armoring and levees, reclaiming of three existing gravel pits, hydraulic connections between existing ponds and the river, removing non-native invasive species, revegetating the riparian and floodplain areas, and mitigation measures for protection of existing infrastructure.

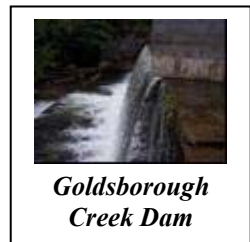


Satsop River

Green River Restoration Project. WEST developed hydraulic design and performance information for various stream restoration elements including levee setbacks, side channels, backwater channels, woody debris placement, and spawning gravel nourishment. WEST used HEC-RAS for much of this work.

Skagit River FLO2D and UNET Modeling. WEST assisted in the development of the “Existing Conditions” FLO2D model by performing quality control checks of the topography, percent coverage of structures, and the elevations of various hydraulic controls such as roads and levees. WEST also conducted a comprehensive review of the model (geometry, hydrology, calibration, application) and the UNET model of the Skagit River.

Goldsborough Creek Dam Removal Hydraulic Design Review. WEST reviewed a hydraulic design for removing the existing dam. This included assessment of hydraulic modeling and sediment transport considerations, field reconnaissance of project site conditions, evaluation and testing of the HEC-RAS model, and recommending improvements.



*Goldsborough
Creek Dam*

Project Owner:

*U.S. Army Corps of Engineers, Seattle District
P.O. Box 3755
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Contact: Wayne Wagner
(206) 764-3542*

Completion Date: *Ongoing*