

2015-17 Small Projects Recruitment Form**Chehalis River Basin Flood Relief**

What are small projects? -- In general, small projects are those projects that provide predominantly localized benefit, are capable of being completed within the funding cycle, are supported by the jurisdiction within which the project is proposed, and are vetted and advanced through the Chehalis River Basin Flood Authority's Chehalis Basin Projects Committee.

**Part I
General**

1. Date:	September 10, 2014
2. Project Name:	Lower Satsop Floodplain Restoration Phase 3
3. Project Location -- Please identify the location of the project as precisely as possible, preferable with latitude/longitude coordinates.	Lower 2.5 miles of Satsop River with 100 year floodplain south of SR 8 to the confluence with the Chehalis River (see attached map)
4. Project Contact -- Please identify who will be responsible for overseeing and managing the project (i.e., name, email, telephone number, etc.).	Michelle Cramer Washington Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501 360.902.2610 michelle.cramer@dfw.wa.gov
5. Lead Organization -- Please identify the lead organization, agency, entity, etc. responsible for this project.	Washington Department of Fish and Wildlife (WDFW)

Part II ()****Project Description, Timing and Cost**

6. **Project Description** -- Please describe the project, what it is intended to accomplish, and the benefits that will accrue and to whom.

Efforts to reduce flooding impacts and improve fish and wildlife habitat have been underway in the Lower Satsop River for over a decade. Initial efforts focused on designing habitat restoration on the Washington Department of Fish and Wildlife (WDFW) property through a Corps of Engineers process in 2002-2004. While the project was habitat focused, flood benefits were also expected from the proposed work. The USACE program lost funding in 2004 such that the project was not completed.

In 2012, the Chehalis River Basin Flood Authority funded the "Satsop River Floodplain Restoration" project to study removing the rip rap revetment on WDFW land and develop 25+ alternatives for

floodplain restoration. Analysis indicated that rip rap removal as a stand-alone project would not meet the project's floodplain restoration goals.

In 2014, the Chehalis River Basin Flood Authority funded the "Lower Satsop River Floodplain Restoration Project, Phase 2" to restore natural fluvial processes and floodplain connectivity along the lower Satsop River to reduce bank erosion, preserve agricultural soils, and improve fish and wildlife habitat (see attached Goals & Objectives). This project builds on the alternatives and modeling work of the Phase 1 (2012 study). After working with the stakeholders and local community, we developed six primary preliminary alternatives and additional variations in alternatives (related to individual project elements) for further review. These alternatives will be presented to the community in a workshop in October 2014. The benefits, impacts, and potential future evolution of the most promising alternatives are being evaluated using the SRH-2D hydraulic model developed for the previous project and by conducting in-depth hydrologic and geomorphic analyses. Together with project stakeholders, we expect to select a preferred alternative before the end of the year. A basis of design report, 60% design plans, and permit documents will be prepared for the selected alternative. A portion of the initial funding for this project was re-allocated to another project

(https://www.ezview.wa.gov/Portals/_1492/images/default/Agenda%20Item%206%20Transfer%20of%20Funds%20to%20Montesano%20Project.pdf). Additional funding will allow continuation of this work to begin implementation of the preferred alternative as Phase 3.

The proposed project (Lower Satsop River Floodplain Restoration Phase 3) will complete the final design of the preferred alternative selected in Phase 2 and implement two key actions that are common to all of the preliminary alternatives. The proposed actions include:

- Complete work on WDFW property on the lower Satsop River to remove spoils piles and dikes, partially fill ponds, and construct pond outlet channels and side channels with associated protection of Keys Road.
- In partnership with the Port of Grays Harbor, remove the water well and associated bank protection along the Satsop River. The water well will be relocated outside of the floodplain of the river.

The proposed project will benefit local residents by removing approximately 160,000 cubic yards of fill from the floodplain, removing dikes, increasing floodplain storage capacity and locally reducing flood water surface elevations. Removal of the water well will move infrastructure out of the floodplain, eliminate the need for bank protection and associated maintenance at the well site, and will allow for future floodplain improvements to reduce impacts to other residents.

7. **Project Timeline** -- Please describe the overall timeline for completion of the project as well as any interim stages or phases.

Phase 1: Provide analysis of removal of rip rap revetment for effectiveness in floodplain restoration and prepare preliminary alternatives.	Completed 2013
Phase 2: Analysis of project alternatives to reduce flood and erosion impacts to agricultural lands and preliminary design and permitting of preferred alternative.	<u>Milestones:</u> Kickoff meeting: March 2014 Development of preliminary alternatives and analysis: September 2014 Community meeting to discuss preliminary alternatives: October 2014 Selection of preferred alternative: November 2014 Community meeting to discuss preferred alternative: December 2014 Development of preliminary design and initial permitting work: June 2015
Port of Grays Harbor study of transfer of water rights and engineering analysis (funded by the Port of Grays Harbor).	2015
Phase 3: Final design of preferred alternative.	Completion by December 2015
Phase 3: Early action construction on the WDFW property to increase floodplain storage (i.e. removal of dikes and spoil piles and placement in the ponds)	Completion by June 2017
Phase 3: Decommission and removal of Port of Grays Harbor water well. Relocation of water well to outside of floodplain	Completion by June 2017
<i>**Future actions associated with this project will be determined after a preferred alternative is selected with involvement of the project stakeholders. We expect to seek funding to implement the suite of actions of the preferred alternative in 2015. Some of the future actions may be completed shortly after funding is obtained (e.g. installation of large wood structures), while other actions may include significant planning and fund raising and may take longer (e.g. protection or relocation of Keys Road).</i>	

8. **Project Cost and Funding** -- What is the cost of this project? What are the on-going maintenance and operation requirements? Is it clear who will be responsible for on-going maintenance and operations costs?

Requested funding: \$3.3M

Final design:	\$200,000
Decommission and removal of water well from the floodplain:	\$500,000
Total cost to transfer and relocate the water rights is approximately \$1.65M; additional funding from the Port or other sources will be necessary to complete. The Port is committed to remove and relocate the well.	
Project elements on WDFW property:	\$2,600,000
See attachment (Lower Satsop Phase III Restoration Elements figure) for more detail	

The proposed actions in this phase of the project include moving infrastructure out of the floodplain (water well) and restore floodplain storage and function on the WDFW property. The actions are unlikely to require on-going maintenance directly, but some on-going maintenance may be needed for protection actions along Keys Road, particularly after major flood events. Design will take maintenance requirements into consideration to make this need as minor and infrequent as possible. Responsibility for on-going maintenance will be determined throughout stakeholder discussions as the actions are developed.

9. **Other Funding** -- Please explain the extent to which other funding sources or funding partners are available.

Following determination of the preferred alternative with stakeholders, we will seek additional funding to complete the actions of the entire project. This phase will complete actions that are common to all of the preliminary alternatives.

Port of Grays Harbor will fund a study to determine process and engineering to transfer water rights for the water well on the lower river. The Port intends to use the results of the study to determine the next steps for transfer of the water rights to a new well or to modify existing wells to replace the function of the water well along the Satsop River. This will allow the water well and associated bank protection on the Satsop River to be removed from the floodplain using the requested funds.

<p style="text-align: center;">Part III (**) Completion and Doability by June 30, 2017</p>
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10. **Project Completion** -- Does the funding requested complete (or substantially complete) a project that has already been started? If so, please explain.

This project will need to be completed in phases due to the complexity of the overall project and sequencing needs. With current funding, the project will be completed through feasibility, alternatives analysis and selection of a preferred alternative with stakeholders, permitting and 60% design. Requested funding will allow completion of the initial elements of the project construction and move other elements toward implementation by completing community outreach and final design. Future phases will focus on implementation of additional construction elements.

11. **Project Doable** -- Can this project or the stage/phase for which funding is sought be completed by June 30, 2017?

Phase 3 of the Lower Satsop Floodplain Restoration will build off of the current Phase 2 work. Final design will be completed prior to December 2015. Community outreach and stakeholder coordination will continue throughout the project. With final design and permitting complete in late 2015, construction of the project actions on the WDFW property can be expected to be complete by June 2017.

The relocation of the Port of Grays Harbor well is dependent on approval of transfer of water rights by permitting authorities. It is our intent to complete the relocation by June 2017, although there is some uncertainty associated with the permitting required to complete this element of the project. We will know much more about timeline and construction implementation when the study is complete in 2015. Our preliminary alternatives include potential actions other than well relocation, should it turn out to be unfeasible to relocate the well.

12. **Project Impacts** -- Please identify how any project impacts will be mitigated and if that mitigation will be accomplished by June 30, 2017?

We expect mitigation requirements to be identified during the permitting phase. We do not expect mitigation requirements that cannot be fulfilled by June 30, 2017.

<p>Part IV (**) Benefits Stated and Quantified</p>
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13. **Emergency Response** -- Please explain how this project enhances our ability to respond in a flood emergency (e.g., does it keep critical access roads, transportation facilities, etc. open and functional.)

The Lower Satsop project will work with project stakeholders and the community to identify the river corridor and treatments to reduce flood impacts outside of this identified corridor. While this may not specifically enhance flood response capacity, the flood reduction work will assist in limiting the need for response in some locations. Actions will be taken to address erosion along Keys Road which will help prevent damage to Keys Road during a flood.

In addition, the alternatives analysis is underway along with hydraulic modeling will predict the reduction in flood levels. Working with stakeholders, an alternative will be selected that will provide flood hazard reduction and bank protection throughout the project area.

Phase 3 of the project will implement actions that are common to all of the preliminary alternatives. We will seek additional funding for all of the elements after the preferred alternative is selected.

14. **Essential Infrastructure Protection** -- Please explain how this project protects essential infrastructure (as well the risks or consequences of not acting this funding cycle).

The Lower Satsop project objectives include protecting essential infrastructure, including property, roads and the Port of Grays Harbor well. The final design may include relocation of infrastructure instead of protection in place (e.g. well) as the most effective way to protect existing infrastructure. Approximately 75 structures (houses, barns, garages, Port well, Keys Road and 5 other roads) are potentially at risk of flooding and impacts from bank erosion. Without action, the erosion risk remains and may result in additional bank hardening without effective results as well as continued loss of essential infrastructure.

15. **Public Health, Safety and Welfare** -- Please explain how this project protects public health, safety and welfare.

The intent of the Lower Satsop project is to reduce flooding impacts by identifying and limiting regular flooding and bank erosion impacts to the river corridor. The early phase implementation projects will increase public health, safety and welfare as follows:

- Alternatives to protect agricultural lands from bank erosion will be evaluated during the alternatives analysis. Protection of lands will help protect public safety and welfare
- The relocation of the well will prevent the bank from eroding and jeopardizing the well infrastructure; potentially impacting groundwater quality and depositing infrastructure debris into the river. It will also reduce the need for heavy armoring of the shoreline and decrease the impacts of continued shoreline erosion at this site.
- Floodplain work on the WDFW property will provide flood storage, as well as improve habitat conditions for fish and wildlife.
- Risk of bank erosion along Keys Road will be evaluated during the hydraulic analysis of the preferred alternative. Actions will be taken as needed to protect Keys Road from bank erosion.

16. **Residential, Commercial and/or Agricultural Protection** -- Please explain how this project protects residential, commercial and/or agricultural interests and communities and the benefits of acting (or consequences of not acting) this funding cycle. Consider factors like number of structures at risk, number of people at risk, historic frequency of flood damage, magnitude of benefit to be gained for the cost, etc.).

The goals of the Lower Satsop project are to reduce flood and bank erosion impacts to agricultural properties along the river. The project alternatives under review at this time are built to meet these goals. The project is intended to develop a coordinated approach to flood reduction and bank protection with effective results rather than addressing bank erosion and flooding impacts on a site by site basis. The initial phases of implementation will address "low hanging fruit" and advance the more challenging project elements to prepare for implementation.

Currently bank armoring and floodplain fill have exacerbated flooding impacts and bank erosion along agricultural properties. In addition, approximately 75 structures (houses, barns, garages, Port well, Keys Road and 5 other roads) are potentially at risk of flooding and impacts from bank

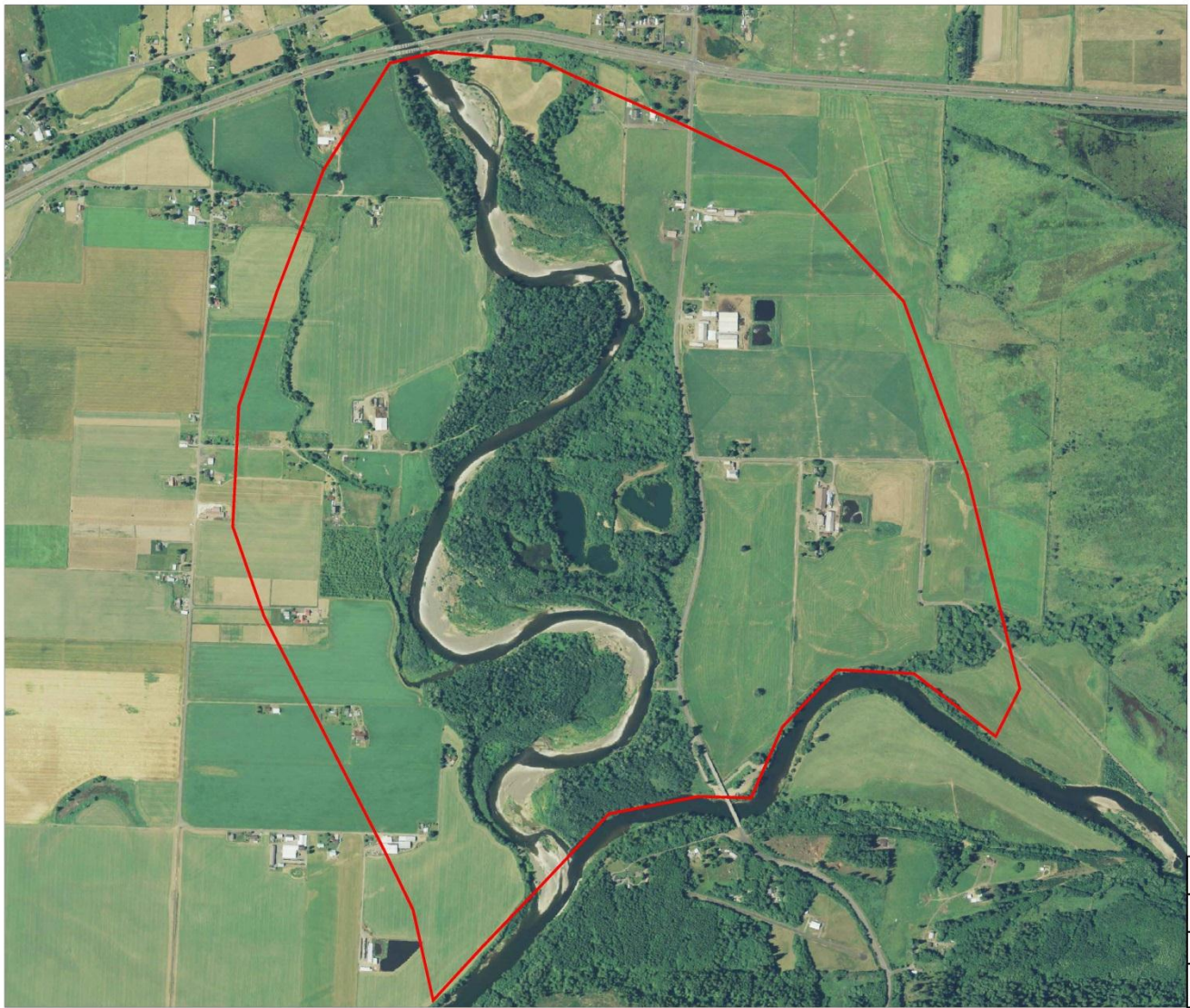
erosion. Without action, additional bank hardening will continue along the river corridor (often resulting in additional erosion to neighboring properties) as well as continued loss of agricultural lands and infrastructure.

17. **Other Project Impacts** -- Please explain how this project impacts or is potentially impacted by another project.

This project builds on the previously funded projects, as identified in the project description (#6). In addition, the Port of Grays Harbor is planning to initiate a study and engineering work to transfer water rights from the existing well along the lower Satsop River. This project will take steps to implement the relocation of the well, complementing the Port's engineering work toward water right transfer process.

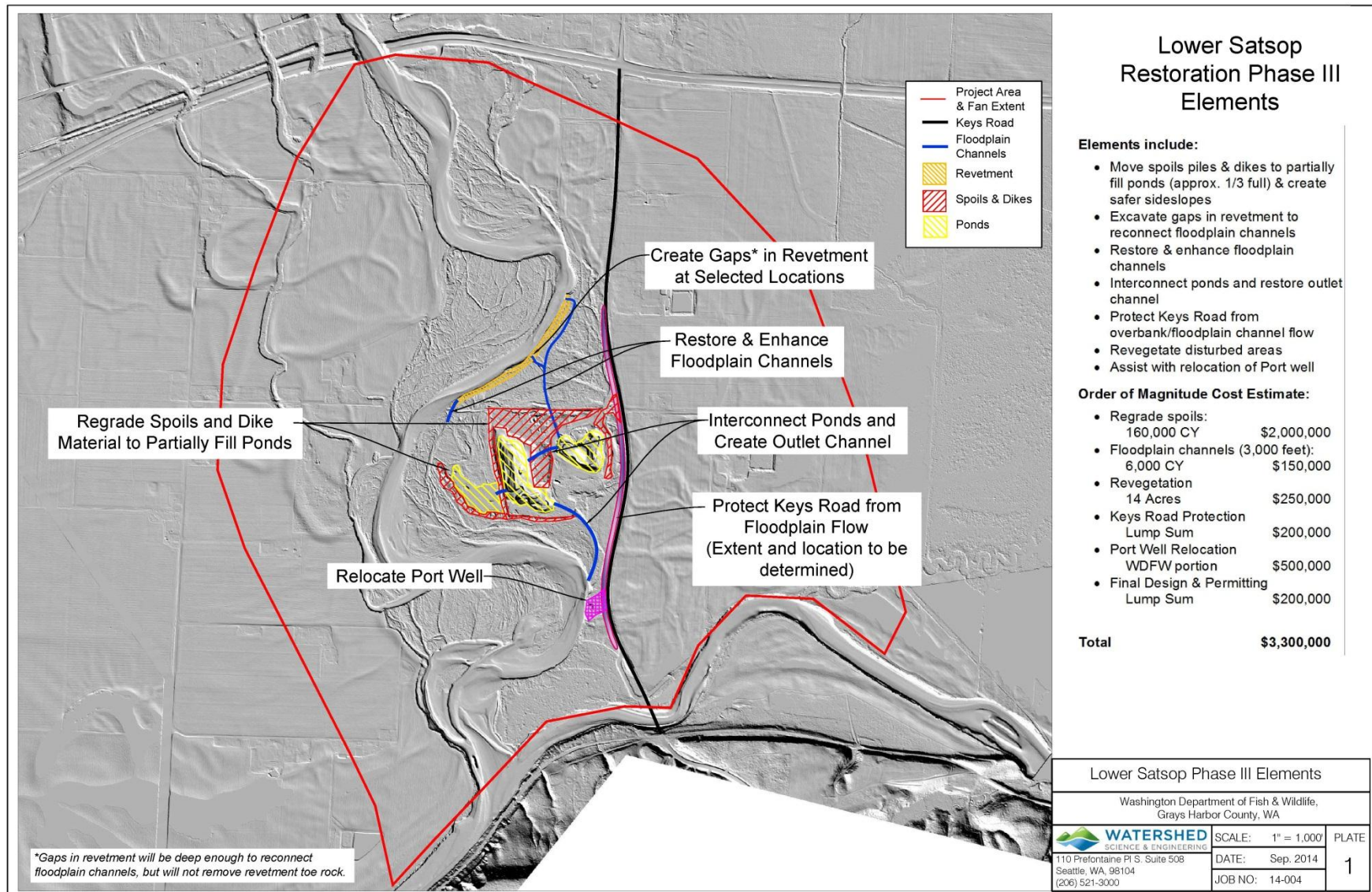
18. **Anything Else** -- Please feel free to offer any additional information (e.g., photos, maps, drawings, etc.) that would be helpful to better understand the scope, timeline and benefits of this project.

The partnership with the Port of Grays Harbor is very important to meeting the goals of the overall project. Please contact Marc Horton of the Port of Grays Harbor at 360-533-9513 if you have additional questions about this aspect of the project.



Lower Satsop
Restoration Phase III
Project Area

Lower Satsop Phase III Project Area		
Washington Department of Fish & Wildlife, Grays Harbor County, WA		
 110 Pretontaine Pl S, Suite 508 Seattle, WA, 98104 (206) 521-3000	SCALE: 1" = 1,000'	PLATE
	DATE: Sep. 2014	1
	JOB NO: 14-004	



Lower Satsop River Floodplain Restoration Phase 3: This graphic shows the location of the proposed work and elements of the Phase 3 project. The aerial view uses LIDAR imagery to indicate topographic elevations. With LIDAR, the current and former channels associated with the Satsop River are evident. The red line indicates the channel migration zone of the Satsop River.

Goals & Objectives – Community Meeting Draft March 2014

Lower Satsop Floodplain Restoration Phase 2

Goal #1: Protect public and private infrastructure, and agricultural lands from bank erosion

- ▶ Objective 1a: Identify areas at risk of bank erosion and develop project alternatives to limit the extent of lateral channel migration and bank scour that meets the needs of, and will be supported by, the landowners
- ▶ Objective 1b: Bank erosion reduction techniques will work with natural processes to enhance the ecological values of the reach and provide channel complexity and habitat for fish and wildlife habitats
- ▶ Objective 1c: Existing bank protection will be evaluated and where possible, be modified to be self-sustaining and to improve habitat conditions
- ▶ Objective 1d: New bank protection techniques will not directly cause bank erosion upstream and downstream from the project site
- ▶ Objective 1e: Bank erosion reduction techniques will work with natural processes to enhance the ecological values of the reach and provide channel complexity and habitat for fish and wildlife habitats.

Goal #2: Improve floodplain connectivity to spread flood flows throughout the floodplain and restore side-channel and off-channel habitats for anadromous and resident fish, and wildlife

- ▶ Objective 2a: Restore ingress and egress into side-channel and off-channel habitats for all life stages of anadromous and resident fish
- ▶ Objective 2b: Remove or reduce constructed barriers to floodplain flow to allow a more natural timing and distribution of flood flows on the WDFW property
- ▶ Objective 2c: To the extent practicable remove invasive plant coverage throughout the project site and replant with appropriate native riparian species in concert with watershed-scale invasive plant eradication activities
- ▶ Objective 2d: Work closely with local landowners and stakeholders to develop project alternatives that the landowners will support

Goal #3: Lower flood elevations in the project area

- ▶ Objective 3a: Remove or redistribute fill at WDFW property in a manner that maximizes flood storage capacity and conveyance



Lower Satsop River Floodplain Restoration Project



Washington Department of Fish and Wildlife (WDFW), has been funded by the Chehalis Flood Control Authority to restore natural fluvial processes and floodplain connectivity along the lower Satsop River to

- reduce bank erosion,
- protect agricultural soils, and
- improve fish and wildlife habitat

Phase 2 of this project will build on the recently completed Phase 1 Satsop River Riprap Removal Restoration Project and former work by the Army Corp of Engineers. Previous work developed background information and identified a range of conceptual alternatives for floodplain restoration and infrastructure protection. The benefits and impacts of the most promising alternatives will be further evaluated as part of this project. Together with project stakeholders, a preferred alternative will be selected; this alternative will be developed to a 60% design level.

Please join WDFW and the project team to learn more about this project and your role in its success. We will review the history of the project and the next steps toward development of the project alternatives. Your knowledge of the river and surrounding infrastructure is a key to developing a successful project. Please join us at this kick-off meeting for Phase 2.

SATSOP RIVER KICK-OFF MEETING:

March 25, 2014 6:30 – 830 pm

Brady Fire Hall

For more information, please call 360-895-4756