

Lower Satsop Restoration & Protection Program (LSRPP)

Background:

Lower Satsop River is a dynamic system where riverbank erosion, extreme channel migration, and flooding are seriously impacting public and private property, economic, community and personal livelihoods, and the very stability of the river system itself. Projects have been proposed and evaluated in recent years without real success. Inaction and frustration characterize the feelings of community members. The Lower Satsop Restoration & Protection Program was forged out of a profound urgency for timely, doable and balanced solutions.

Phase I:

The Lower Satsop River avulsed 11/27/2018 cutting across the neck of a large meander bend. Within hours approximately 239K cu/yards (23,917 dump trucks) of high-quality farm soil was lost and 538K cu/yards (53,833 dump trucks) of farm soil and riparian corridor was lost. The avulsion galvanized the need for immediate action and immediate investment.

Phase I is that immediate action and immediate investment. Phase I protects Keys Road in order to support full removal of the revetment along the left bank of WDFW's property and to further reduce erosion of opposite bank agricultural lands by improving floodplain connectivity and helping distribute stream power across the floodplain and reduce main channel velocities. Phase I will be "shovel-ready" in time for 2020 construction season.



Prior to the avulsion the river's primary path was through the large meander bend flowing past the Port's well and adjacent to Keys Road. Since the avulsion the river's primary path is now along the avulsion route. Although the large meander bend is no longer the primary path, it is engaged as a secondary path multiple times a year at relatively low flows.

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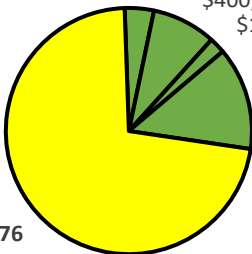
Phase I Options

Flood Threats	Phase I (construct 2020)	Phase I (construct 2021)	Do Nothing
1. Loss of <u>Farmland</u>	✓	✗	✗
2. Threat to <u>Keys Road</u> (Satsop Business Park)	✓	✗	✗
3. Threat to <u>Port well</u> (Satsop Business Park)	✓	◆	?
4. Loss of <u>Community support</u>	✓	✗	✗
5. Lack of <u>Floodplain stability</u>	✓	✗	✗
6. Elevated <u>Sediment discharge</u>	✓	◆	◆
7. Potential for <u>Ecological uplift</u>	✓	✗	✗
Result:	<ul style="list-style-type: none"> ✓ Floodplain, river paths stabilize. ✓ Erosion rates reduce. ✓ Flood threats substantially reduce for next (2020/21) flood season. 	<ul style="list-style-type: none"> ✓ Benefits delayed to 2021/22 flood season. ✓ Designs may require rework (river change). ✓ Emergency protections likely. 	<ul style="list-style-type: none"> ✓ Emergency protections certain. ✓ Problems will continue, exacerbate. ✓ Holistically fixing threats disappears.
Legend:	✓ Improves	◆ No change	✗ Worsens

Frequently Asked Questions

Lower Satsop Restoration & Protection Program (Phase I)

1.	Is this an ASRP project?	The LSRPP is not an ASRP project, at least for now. Phase I focuses on stabilizing the floodplain, stabilizing river flow paths and reducing rates of erosion. Once this is done, the reach could be adopted by the ASRP program. Currently the system is concentrating stream power resulting in increased erosion rates, loss of riparian vegetation, and loss of aquatic habitat. The goals of the LSRPP are to distribute stream power across the floodplain creating a system with dynamic equilibrium that supports riparian vegetation, aquatic habitat, and a restored historic channel migration zone. After Phase I future work could include riparian plantings, backwater habitats, enhanced side-channels, etc. While not specifically conceptualized as an ASRP project, Phase I will use ecologically sensitive solutions consistent with ASRP process.
2.	Are the LSRPP phases definite?	Phase I has been established based on collection and analysis of data, current conditions and effects. Subsequent phases will be based on the system's response to Phase I actions. LSRPP will employ "adaptive management" as the Program moves from phase to phase. Phase II and III are conceptual now, and will be informed further by Phase I results.
3.	Is there a critical minimum necessary to stabilize the system?	Phase I is the minimum required to provide a geomorphic effect which will reduce stream power at eroding banks and distribute it across the floodplain and secondary channels. Future phases will add to this foundational step to provide greater benefit to habitat resulting in ecological uplift and further reduction of bank erosion in the reach. In other words, Phase I is the critical mass necessary to stabilize the system and reduce its erosive power. Phase II and III are conceptual at this time; however, are envisioned as investments that additionally benefit fish, habitat, and provide ecological uplift.
4.	Why are you seeking direct legislative appropriation?	The program seeks extraordinary funding for Phase I so the system can be stabilized. Subsequent funding can be planned and structured based on how the system responds to Phase I. By stabilizing the system now (through Phase I), the ability to synchronize with and participate in traditional, competitive funding programs greatly increases.
5.	Have you considered leaving the river alone?	The current issues with the river are the result of confining the river and concentrating its power in locations where the river hasn't been in thousands of years. Once the system is allowed to return to, and distribute its energy across, its historic floodplain a hands-off approach will be more feasible.
6.	Is this a fish project?	Phase I is a bank stabilization project that will use ecologically sensitive solutions consistent with habitat restoration projects in the basin. By doing so, the system will be set for habitat restoration and fish-specific projects. LSRPP has a list of restoration add-ons following Phase I.

7.	What about the EDT model that has been used to evaluate benefit to aquatic species?	The Ecosystem Diagnostic Tool (EDT) model has been run for this reach as part of the Chehalis Basin Strategy analysis. If this project is adopted as part of ASRP efforts subsequent model runs could be completed.												
8.	What are anticipated, planned future conditions?	<p>Post-Phase I project conditions are anticipated to reduce erosion and channel migration rates in the vicinity of meanders that currently pose a threat to Keys Road and the Port of Grays Harbor well. Additional post-Phase I project conditions will include higher quality habitat for aquatic species around the installed ELJ structures which will create habitat by:</p> <ul style="list-style-type: none">• scouring pools;• sorting sediment for spawning;• providing velocity refuge; and• supporting production of allochthonous organic matter in the ELJs which will support benthic macroinvertebrate productivity.												
9.	How much is Phase I anticipated to cost? How much funding for Phase I has been secured?	<div><p>Phase I -- \$4,750,000</p><div><div><div>Funds Secured -- 2019-21 State Capital Budget (\$182,225)</div><div>Funds Secured -- GHC .09 Local Funds (\$400,000)</div><div>Funds Secured -- GHC Road Fund (\$100,000)</div><div>Funds Secured -- Flood Authority Local Projects Reobligation Funds (\$642,799)</div><div>Funds Needed (\$3,424,976)</div></div><div><table><tr><th>Funding Source</th><th>Amount</th></tr><tr><td>Funds Secured -- 2019-21 State Capital Budget</td><td>\$182,225</td></tr><tr><td>Funds Secured -- GHC .09 Local Funds</td><td>\$400,000</td></tr><tr><td>Funds Secured -- GHC Road Fund</td><td>\$100,000</td></tr><tr><td>Funds Secured -- Flood Authority Local Projects Reobligation Funds</td><td>\$642,799</td></tr><tr><td>Funds Needed</td><td>\$3,424,976</td></tr></table></div></div></div>	Funding Source	Amount	Funds Secured -- 2019-21 State Capital Budget	\$182,225	Funds Secured -- GHC .09 Local Funds	\$400,000	Funds Secured -- GHC Road Fund	\$100,000	Funds Secured -- Flood Authority Local Projects Reobligation Funds	\$642,799	Funds Needed	\$3,424,976
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10.	Does LSRPP have stakeholder and agency support?	The LSRPP vision, plan and proposed actions are consistent with community interests for expedient and effective protection of infrastructure, agricultural, property, and stabilization of the river system (river and its floodplain). Phase I actions are a balanced response to the protection needs of the community on the one hand and the restoration needs of state and federal agencies on the other hand. Agencies and community members alike have been extensively involved in development of the vision and reach-scale plan.												
11.	Is this a project or is this a program?	This is a program in that it will require a multi-phased implementation effort over many years based on a reach-scale plan which includes long-term elements such as relocation of critical infrastructure as that infrastructure reaches the end of its useful life.												