Attachment G. Technical Oversite Group Written Comments Restoration Alternatives

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Oct. 5, 2020
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Paul and Keith:

Thanks for inviting Clark-Skamania Flyfishers to participate in the Ridgefield Pits Technical Oversite Group. Clark-Skamania Flyfishers enthusiastically supports Scenario 3, Full Floodplain and Pit Re-grade. In general, the 250-members of Clark-Skamania urge designers to focus outcomes of the design, not the difficulty of the effort. It will no doubt be costly to move infrastructure, fill mine pits, address flow, install complexity and replant revegetation, but this is the scenario that will offer the highest return for the dollar over the long term. We agree with comments by the Columbia Land Trust: "We should not let initial costs limit our thinking or the preferred option."

What follows is a detailed discussion of the restoration plan and endorsement of Scenario 3 in light of details the working group gathered over the past 2 years.

First, Clark-Skamania members believe that to be effective, the restoration needs to be ambitious and address both the immediate pits area and the reach from Day Break Park to the Powerline Hole. Addressing problems with bank erosion, and channel avulsion in that stretch of river isn't possible until problems at the pits are addressed. But for the pits to become a healthy part of the river again the work plan needs to look ahead to fixing problems such as erosion downstream of Daybreak Park, degradation of cold-water tributaries such as Manley Creek and mass wasting of where Mill Creek flows into the East Fork and the dramatic water removals from Mill Creek, especially late in the summer. In the three decades since the East Fork channel avulsed into the vacant gravel pits, the river has come to pieces. Restoring the pits is the first of many pieces that need to be put back together.

Second: Clark-Skamania believes the design should rely on natural processes to accomplish the objectives. This is particularly true when factoring in climate change. Clark-Skamania does not support use of pipe infrastructure to capture and deliver cold water to support salmonid habitat. Natural flows of springs and tributaries need to be preserved and enhanced. Relocation of the channel to capture natural sources of cold water should be a leading objective as the group enters the design phase. Preserving all sources of cold water, such as the springs at the source of Manley and Mill creeks, should be part of the planning. Cold water is essential for returning the area to viable salmonoid habitat and removing invasive species. Consolidating historic sources of cold water back into the channel needs to be a design priority.

Clark-Skamania supports Scenario 3 – Filling and re-conturing the channel is reasonable and perhaps the only alternative that holds hope of restoring the area for the long term. During a 2019 working group meeting we reviewed photos and maps of the area. In that presentation we learned operators, including Clark County, used drag line dredges to haul gravel into heaps for loading and hauling. The process raised islands while lowering the floodplain. Post WW II that gave way to deep-pit excavation. The methods combined over nearly a century of mining lowered the ELEVATION of the channel and floodplain. To try and restore the East Fork by perching a new channel on the edge of a withering floodplain would be bound to fail. The filling and re-counturing proposed in Scenario 3 is the long-term solution.

Clark-Skamania does not support Scenario 3A. It proposes to retain pits 8 and 9 and their cold water as thermal refuges, which means less cold water for the main channel and the network of braided channels to the southwest. One of the goals of Scenario 3 is to create braided channels that can support a variety of species. Coho and chum in lower velocity channels, chinook and steelhead in faster water. Juveniles would utilize all areas, especially those with woody debris and deep holes. But all four species need cold water, so isolating the cold water inputs to pits 8 and 9 from the broader floodplain restoration works against the diversity of habitat that the plan is aimed at achieving. Also, the work group heard from WDFW, Ecology and others that the number of pools per river mile is one measure of a properly functioning alluvial river. Leaving pits 8 and 9 out of the re-design would remove two of the best performing pools on the floodplain outside the re-contoured river channel. That doesn't make sense. For those reasons, Clark-Skamania opposes Scenario 3A. It might save money, but it doesn't deliver the best long-term outcome.

Clark-Skamania views Scenarios 4, 5 and 6 as compliments to Scenario 3, not alternatives. Reconstructing side channels as proposed in Scenario 4 would create habitat upriver and around the pits. It would offer benefits to juveniles moving downriver, but do nothing for upriver spawning populations.

Installing wood jams and excavating where Manley and Mill creeks flow into the East Fork as proposed in Scenario 5 might create scouring flows that would carry away silt that is diminishing the contribution of those vital tributaries. But it wouldn't stop the wasting away of the high bank downriver. Only moving the channel would accomplish that. Widening the river at the confluence of Manley and Mill creeks as proposed in Scenario 6 might reduce the wasting of the downstream river bank and create scouring flows to improve the contribution of both tributaries. But the scenario doesn't address the pits themselves. It's a small-bore solution for an area with such large problems.

Relocating the channel to the pre-1996 location in Scenario 2 isn't supported by any of the evidence the work group reviewed. Without significant re-conturing it's not a lasting solution.
Leaving the river as is and waiting until 2080 for natural processes to fill the pits as proposed in Scenario 1 is basically the path we've been on for two decades. Additional insults to the river like silting at the confluence of Manley and Mill creeks, increase in invasive species and warming flows throughout the area that make it a desert for migrating smolt will diminish the salmon and steelhead recovery that we're all working on. If we choose Scenario 1, we've wasted two years of study and have no way forward.

Specific comments:

- Clark-Skamania believes design should focus on the pits while the plan should extend from the Powerline Crossing upriver to the Daybreak Park area. Anyone who fishes this area knows the reach from the Powerline Hole to Daybreak is prime holding water. It's pre-spawn holding water for coho, Chinook and chum. It is a thermal refuge for upriver steelhead and rearing habitat for all downriver smolt.
- The goal of 50% vegetation cover (Goal 2, objective 2c, page 10) is too low. Clark-Skamania believes the design needs to achieve much higher cover. During the April 2019 work group meeting, the Washington Department of Ecology explained it was working to address high water temperatures and fecal coliform bacteria problems in the East Fork, both above and below the project area. Ecology assessments showed poor riparian conditions and little shade in the lower river including the project reach. Given Ecology's focus on that problem, this work plan needs to reach for more than 50% vegetation cover and could turn to Ecology for funding to achieve that.
- Clark-Skamania disagrees with comments about reducing costs by allowing vegetation to recover naturally before planting. That's risky. Difficult species such as knotweed, blackberry, canary ryegrass, butterfly bush and others may cost more to remove than if all habitat was planted. There is an army of volunteer workers, Clark-Skamania members included, that could help plant 100% of the area.
- The design should make control of the wasting hillside downstream of the confluence of Manley and Mill creeks a primary concern after pit re-conturing. The working group heard often that erosion of that cliff was the major source of sediment that was compromising downstream holding pools and thermal refuges. In 2008, residents led by Bruce Wiseman lobbied for and were granted state funds for in-stream structures to halt the erosion and save their homes at the top of that hill. It failed. If the Estuary Partnership launches a multi-million rehab of the area that doesn't include and explain how the restoration will help address that hillside erosion it risks political backlash and only partial success for restoring the pits.

Steve Jones, Conservation Director

Feedback on Ridgefield Pits Technical Memo
Brice Crayne
Lower Columbia Fish Enhancement Group

Alternative 1: No Action/Passive Recovery of Pits

The no action alternative is obviously the least expensive and this is the only reason to choose this alternative.
I was surprised to see so few predatory fish in the pits while snorkeling. In fact, I was surprised to see so few fish period using the pits that the EFL currently runs through. It appears that the overall lack of forage fish also diminishes the use by predatory fish. There is a huge volume of open water that is providing virtually zero benefits to any fish, native or non-native. I have not snorkeled the isolated pits.
The primary reason that the no action alternative is a poor choice is due to the fact that there is so much potential for chum and Chinook spawning and coho and steelhead rearing that is currently not used due to the unnatural state of the river. This includes the area within the immediate vicinity of the pits as well as downstream of the pits where the EFL becomes channelized. Some of the channelized nature must be due to the disconnected sediment transport associated with the pits.
Further, the models suggest that the pits will take decades or more to fill the currently active pits. At this time, the EFL will like avulse into one of the other pits at which time it will take decades more to fill those pits and so on and so forth until the entire area is brought back to grade and can start to function more naturally. If we have the know-how, means, and funding to do so, there is no reason to wait for the river to fix itself.

Alternative 2 & 2A: Relocate Main Channel Back Into/near Pre-1996 Avulsion Channel

I agree that some channel re-alignment is necessary but as stated in the memo, attempting to create a single-thread channel in this reach would be fighting natural processes. This is really evident by the current channel network directly upstream of the pits where abundant wood is creating a dynamic, multi-thread channel network more representative of the 1854 river valley. In the case of the EFL where Clark County is purchasing large amounts of the lower floodplain and there is an opportunity to allow the river to spread out and function in a manner that resembles historic conditions, we must take advantage of this opportunity. So many of our rivers have been diked, ditched, and relocated for the convenience of development that to try and restrict flow into a single-thread channel would be a terrible missed opportunity and would not seize the maximum ecological opportunity associated with floodplain-wide restoration.

Alternative 3: Full Floodplain & Pits Re-Grade

This alternative has the greatest certainty of success which outweighs the increased cost associated with the amount of woody material required to accomplish this task. Critics of this alternative will likely say that if you spread the water out too much, there won't be enough water in any one channel for fish to survive. What we have seen in systems like the SF Toutle which has a high sediment load, wide floodplain, and merely lacks the structure shown in the Alternative 3 map, is that the river will choose a dominant path or two each summer depending on where the sediment builds up over the winter and that the amount of hyporheic flow supplements the multi-thread channel network with cool, fresh water, even in isolated pools. The result may be an overall reduction in large pool area (which isn't currently functional) but an overall increase in preferred habitat associated with smaller pools with woody cover and cool water. The floodplain will become saturated over the wet months and then will be slower to release the water during dry months simple because the conveyance through the reach

has been reduced.

There is a strong argument that can be made for strategically recommending that the river occupy areas of cooler water with the expectation that these are the areas where there will be cool upwelling post construction. I'm not opposed to slight filling of the cooler ponds as long as flows are encouraged to occupy these areas. I don't think that these areas should be left as off-channel habitat that will fill in over time because that doesn't maximize their benefits. I would like to see one of the dominant channels flowing through these cooler pits because the upwelling associated with the cool water is preferred spawning habitat for chum and Chinook. These fish won't spawn if there isn't adequate flow, depth, and sediment size. These fish also may not spawn in an area that has adequate flow, depth, and sediment size but is in an area of downwelling instead of upwelling. Last, a fine-sediment bottom, off-channel pond may provide some warmer winter rearing habitat or cooler summer rearing habitat but those are not the limiting factors for Chinook or chum.

Last, this alternative is inherently unpredictable as are natural rivers. While my recommendations are to initially nudge the river into these cooler ponds, restoring natural processes means restoring a river's ability to be dynamic. Thus, I would not consider it a failure if the EFL migrated away from the intended alignment in the first few years. In fact, I would be disappointed if it did not migrate some following the first bank full event.

I would like to see more discussion on the pre-construction of side channels versus allowing the river to create them itself. Are you proposing to remove all of the fish, divert the water, regrade the entire floodplain, spread wood out, and then let the river do what it does? Or are you proposing to strategically pick log jam locations, install piling to assist meeting the stability associated with key pieces, pre-grading side channels, etc.? Or are you even at this stage of design yet?

Side-channel Reconnections

I would like to see both the upper and lower side channels activated during winter base flow elevations. I would not be disappointed if the entire EFL abandoned the left bank downstream of the Mill Creek confluence to occupy the right bank where there is some hyporheic flows, more shade, and there would be less pressure on the high, sandy bank on river left.

I have some concerns about the lower side channel getting stuck against rip-rap used along the NE Storedahl Pit Rd. If the entire river migrates to the right bank, it would have a difficult time leaving a rip-rap wall and may abandon the entire left side of the floodplain.

Mill and Manley Creek Confluence

I understand this is a difficult location to work due to the current bar migration through the center of the floodplain and the risk associated with working near a sandy bank with a private landowners deck hanging over the side. Thus, any concerted effort to maximize cold water refugia that is completed in a strategic manner is supported.

Mill and Manley Area CMZ Expansion

If the county is willing, do it!

Friends of the East Fork Comments to the Lower Columbia Estuary Partnership East Fork Technical Oversite Overview & Alternatives July 8, 2020 Memorandum
Oct. 04, 2020

We appreciate the past and present opportunity to collaborate on these efforts. The Memorandum contains more data & information than reports done in the past and includes much more comprehensive substantive content to address the challenges of today and future. **Our comments are in two parts, an Overview and then a Discussion of the 6 Alternatives.**

OVERVIEW:
That said, the memorandum has not adequately focused on the core problem in the East Fork**. It is the interrelated issue of (1) LOW FLOWS & HIGH SUMMER STREAM TEMPERATURES COUPLED WITH (2) HIGH BEDLOAD SEDIMENTATION that result in the current disastrous stream channel conditions.** These conclusion are supported by earlier work done by river geomorphologists Dr. Barry Sutherland & Dr. Frank Reckendorf and others. **Almost every other issue is fundamentally a sub-set, or primarily a result of these two watershed and stream conditions and is basically a hydrologic and fluvial-geomorphic situation with strongly related biological water quality effects.** And, much of the problem is of anthropogenic (man-made) origin. The impacts show up in in early 1900s historical data and continue with greater intensity on into current data, and information. Stereoscopic review and analysis of aerial photos of all reaches of the East Fork dating back to the 1930s and on to present time document locations and types of activities that have caused these impacts.

The fluvial-geomorphic **COMPETENCE AND ENTRAINMENT** capability to maintain stream channel balance in the river, particularly the lower one-third is very poor. The physical result over time is that many pools have been filled in, and the Channel Width to Channel Depth W/D Ratio "**HYDROLOGIC BANKFUL FLOODED STREAM CHANNEL WIDTH TO THE STREAM CHANNEL FLOOD DEPTH RATIO"** of the stream channel cross-sections have become very high (60 to 120 and more) because the river flow cannot handle the bedload level and consequently makes adjustments that result in the eroding out the stream banks, degradation of spawning riffles, large sediment islands in the middle of the channel that also are involved in the increase of the W/D ratios as well as causing at least four major channel avulsions in the last 20 years.

The history of past gravel mining between Heission Bridge and La Center included mines that in some cases worked both stream banks and the river itself, with little or no restoration afterward. This alone added large amounts of bedload sediment to the river channels downstream. In addition, dikes were added to other areas related to mining and in one case a dike was built out at right angle into the river, which drove the river into the high bank on the opposite side. A more recent avulsion between Daybreak Bridge and Lewisville Park Bridge was associated with a large boulder dike installed several years earlier to protect development on the major floodplain (which the County management allowed to happen years earlier under very questionable circumstances) on the south side of the river. This effectively cut all flood flow relief in that reach of the river and resulted in excessive sediment buildup which forced a large avulsion. This was the second more recent avulsion in the East Fork above Daybreak Bridge.

The results of these conditions show up in an extreme way when flows began to diminish later in the

year, the water depth is both very shallow and subject to faster and higher heating levels as well as less capability of the river to effectively handle various kinds of sources of water pollution (chemical, biological, and temperature). In simpler terms, it is somewhat similar to putting a given amount of water in a tall glass which ends up being relatively deep, versus putting the same amount into a large dishpan with the result that the water level in the pan is very low. In addition, in various areas of the watershed, infiltration rates have been reduced which also lower groundwater and surface water yields as well as affecting storm and snowmelt runoff characteristics. **The lower one third of the East Fork, in most of the channel reaches, is now in that dishpan condition, making it subject to a wide range of undesirable conditions and cumulative effects ---both biological and physical/geomorphic.**
With these existing conditions, **PLANTING TREES ALONE WILL NOT ADEQUATELY ADDRESS THE TEMPERATURE PROBLEM** and could result in future restoration and improvement programs and project funding being out of balance with this aspect of the critical problems in the East Fork ---this has not been adequately addressed in the Draft Ecology 2020 East Fork Cleanup Plan or in the Ridgefield Pits Restoration Design Project Draft Alternatives.

Currently there are at least five (5) major sediment source located in reaches within the lower East Fork, starting above Lewisville Park just below the outlet of Rock Creek North. These large bank erosion/sediment sources should be given treatment priority. Their very high on-site and downstream bank and channel negative impacts on the river are biological as well as fluvial-geomorphic.
It is well known that low flow volumes in the East Fork have direct effects on water quality, particularly in summer time. Groundwater inflow is also affected by poor channel and watershed conditions as well as the floodplain and tributary stream disturbances from anthropogenic activities that are on the increase in some areas of Clark County. Illegal water diversions, building along streambanks and in designated wetlands-recharge areas, heavier and new well drawdown, as well as building of rural ponds (past & present) all during a period of decline of infiltration into the Troutdale Aquifer are adding to the water related problems. Weak and limited compliance by Clark County with the WA State Growth Management Act, and Shorelines Act is also having an impact on water runoff, groundwater and streams.

TO DATE, HISTORY SHOWS THAT EXISTING AND NEW RULES AND REGULATIONS WILL DO LITTLE GOOD AS LONG AS COMPLIANCE IS VOLUNTARY AND NOT MANDATORY IN CLARK COUNTY. CURRENT MONITORING IS INADEQUATE AND ENFORCEMENT/COMPLIANCE IS "COMPLAINT BASED" WHICH ALSO IS INADEQUATE AND NEEDS A MAJOR IMPROVEMENT IN MONITIORING TO DISCOVER IMPENDING PROBLEMS AND ADDRESS THEM WITH SUBSTANTIVE SOLUTIONS.

Side-channel improvement and expansion has been mentioned in the draft documents as a source of both cooler and more groundwater inflow to the river. It appears that although both have value, flood overflow channels are being mixed in with and attributed with the same characteristics and effects of true side-channels. They are not the same both physically and in attributes. Side-channels are not connected to the main river at their upper end, and often they have springs and upwelling areas that provide both rearing for salmonid fry as well as cooler water inflow to the river. Overflow channels are subject to high sedimentation from flood flows and do not function as well biologically or have the higher water quality and quantity attributes. However, both may suffer from the effects of beavers building large dams along their channels and creating temperature and fish use issues. Beaver effects in broad valleys and meadows with limited forest vegetation are often quite different from that in a forested stream channel that is confined or part of a narrow valley. Such is the case on the East Fork and a number of tributary salmonid streams in the East Fork have beaver problems that result in significant drying up of critical pools and loss of salmon and steelhead fry.

GOALS & OBJECTIVES:
The Goals & Objectives appear to cover the most critical and basic needs related to lower river restoration. A few need some additional work to provide more substantive information.

DISCUSSION OF THE SIX (6) DRAFT ALTERNATIVE TREATMENTS FOR REACHES IN THE LOWER EAST FORK:
Alt.-1 This alternative is the standard "continue the path of the present programs into the future strategy" and is used to measure net changes with other proposed alternatives.
ALT-2 This alternative would recover a significant reach of upwelling cooler water, restore some highly valuable salmon (including Chum) spawning habitat. There is also a flood overflow channel connected to it along the Storedahl West Daybreak Pit access road. Sediment from that channel has not been a major problem in the past largely because of the old mining ponds in flows thru. The original channel was relatively stable before the 1996 flood. Note that the ponds were not breached during the flood but were allowed to breach based on discussions with WA Dept. F&W and the new owner of the Ridgefield Pits. The results covered in the information in the LCEP-Technical Oversite discussions identifies the severe down cutting that occurred at the entrance to the pit and also upstream. Restoring the flow level to allow reactivation of the lost channel reach and adjusting or creating a controlled flow level into the Ridgefield Pits is not an unusual application of technology and has been done elsewhere. The pits would receive minimum treatment. The option of proposing creating multi-thread channels in the area is a challenging technique and poses major long-term problems in stream with high bedload such as the lower East Fork.
Alt.-3 This alternative is very ambitious but with the high bedload sedimentation of the river, it is doubtful if it would be geomorphically balanced and would likely end up being an unstable "hot zone" rather than a cool water recharge reach.
Alt.-4 There is total of about 6 true Side-Channels and Flood Overflow Channels combined. As stated earlier in this comment document ---they are not the same and have different attributes, but can be used to improve the river in terms of temperature, water inflow, and fisheries (particularly fry & juveniles). In some cases, their performance is reduced due to the construction on beaver dams.
Alt.-5 Restoration and enhancement of the pool at the outlet of Mill Creek North into the East Fork has some challenging fluvial-geomorphic river reach conditions as well as some related ongoing fish pool salmon and steelhead fish rearing operations in two pools located nearby in the lower part of Manly Road Creek. The outlet of Mill Creek is located in the transition zone of an inside bend and an outside bend as illustrated in the Alternate 5 illustration labeled Figure 4. Gaining adequate velocity to sweep out the filled in pool is unlikely. Installing some kind of drop structure system that would keep the pool clean once it was physically emptied, might be possible. Also, diverting the river into a new channel, using the current flood overflow channel on the north bank could be considered but would require a separate channel for Mill Creek.

The site is further complicated by the extreme bedload coming from the severely eroding high cliff just below the pool. There are proven new methods to effectively deal with this kind of cliff erosion situation and should be considered. Diverting water into the lower fish rearing pool would be met with opposition from Friends of the East Fork, Fish First, Clark-Skamania Flyfishers, and Healing Waters Veterans – Vancouver Group because of potential impact on the two rearing pools in lower Manly Road Creek and potential loss or degradation of substantial investments since 2006.
Alt.-6 Moving the channel location northward from the confluence of Mill Creek North and Manly

Road Creek would require a complete re-location and building of a whole new section of channel thru the existing flood overflow channel, as just changing the curvature of the outside bend would lead to a greater impact on the high cliff to the south. A wide variety of treatments would be needed, including log cribbing, to achieve and maintain the desired results.

SUMMARY:
There is much more that needs to be discussed in our mutual/collaborative search for solutions on the lower East Fork, but we need to put more focus on the main problems that almost everything else derives from---**low water flows and high stream temperatures and their historical & current causes**. Also, in the modeling that is being done, I would like to see the results of "sensitivity tests on key input parameters to see how critical each is to the results of a given solution and how much variance and validity is associated with them in a given model.

In addition there is a people problem that hinders effective support of river restoration. Many people of the younger generation or new to the Portland/Vancouver area are under the impression that the river has always been in the current condition or slightly better. We need to give them an accurate valid "yard-stick along with the benefits" if we expect to get their long-term support for these and related kinds of Conservation & Good Land & Water Stewardship programs and projects. And lastly, a variety of instream treatments need to be used because the nature of a particular problem(s) in a given river reach varies and a mix of treatments, not just wood ELJs is needed to be successful. There are plenty of proven new as well as old treatments being used effectively thru out the USA that must be considered if we are really serious about succeeding in this effort.

Respectfully,
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Friends of the East Fork

Jim Byrne
WDFW Fish Biologist (retired)

Draft Restoration Alternatives

1. No Action/Passive Recovery of Pits.	No, something must be done.
2. Relocate Main Channel Back Into/near Pre-1996 Avulsion Channel	No, too expensive.
3. Full Floodplain & Pits Re-Grade	Some, Need to concentrate as much hyporheic flow into mainstem as much as possible. Cut costs by only focusing on re-establishing groundwater inputs.
4. Side-Channel Re-Connections into side channels.	No, Water needs to remain in main stem, not diverted
5. Mill and Manley Creek Confluence	No, Mill Creek gravel issues mut be addressed first.
6. Mill and Manley Area CMZ Expansion	No, Mill Creek gravel issues mut be addressed first.

NMFS Comments
Ridgefield Pits Restoration Project Memo to Technical Oversite Group

Draft Restoration Goals:

Goal 1: Restore Native Vegetation Communities

- NMFS agrees this is a valuable component to the Ridgefield pits restoration efforts. In addition to providing sources of wood to be recruited, this goal and it subsequent objectives are in alignment with several key priorities identified by the LCFRB within the EFLR sub-basin recovery plan

Goal 2: Enhance Thermal Refuge

- NMFS believes this is a vital component to the restoration efforts. Cold-water refugia is a habitat feature necessary for ESA listed salmonids throughout their life histories, and in the face of climate change protection/enhancement of these areas will be pivotal in recovery efforts. The objectives of this goal will all support the protection/enhancement of cold-water refugia sites. However without grading of avulsed pits, their lentic nature will support warm water and negate any benefits to restoration of cold water refugia sites.

Goal 3: Increase Quality and Quantity of Spawning and Rearing Habitat

- All of these ESA listed species are "Primary" populations with respect to recovery within the Lower Columbia River. NMFS is highly supportive of any habitat restoration/enhancement projects that have the potential to increase the production potential within the EFLR. All of the objectives for this goal meet or exceed minimum design criteria for habitat restoration projects. If implemented there is no doubt the quantity and quality of spawning and rearing habitat would be increased.

Goal 4: Restore Channel Migration Zone and Floodplain Connectivity

- This goal and objectives, while important, and consistent with a key priority within the LCFRB EFLR sub-basin recovery plan, seems to clash with Goal 6. It may be advantageous to combine goals 4 and 6 as they rely so heavily on one another to be successful.

Goal 5: Create A Dynamic Channel Which Supports Adjustments and Sediment Transport

- NMFS agrees with this goal and objectives, and agrees is pivotal in the restoration of the Ridgefield pits.

Goal 6: Develop Restoration Approaches and Actions Consistent With Existing Land Use

- See goal 4 above

Draft Restoration Alternatives:

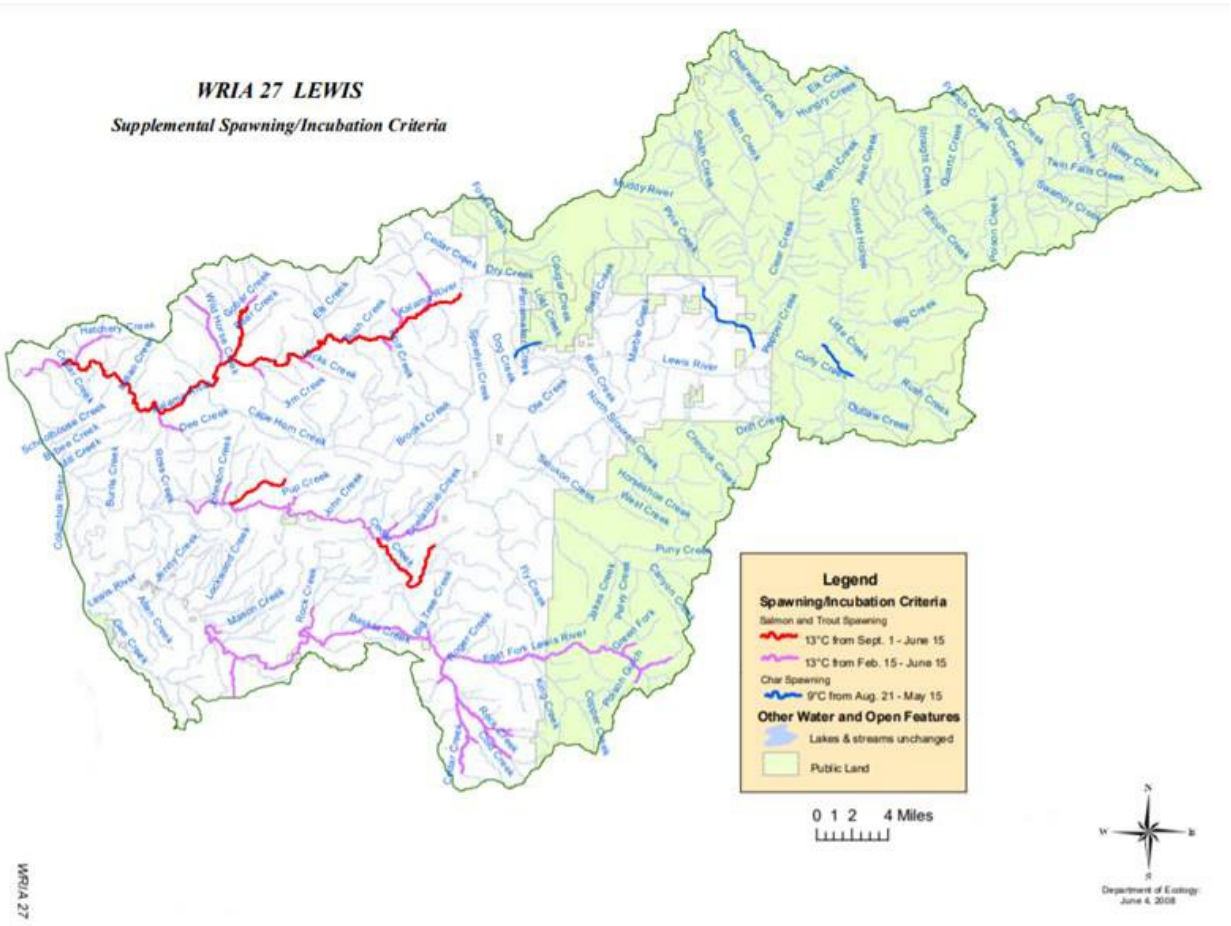
NMFS is most supportive of the Full Floodplain and Pits regrade, and believes this is the best option with respect to contributing to the recovery of the "Primary" ESA populations within the EFLR. It should be noted that NMFS is supportive of any habitat restoration actions, which support the recovery of ESA listed species and their critical habitats. However, we also understand that cost and other outside factors could influence the final restoration designs and future implementation of the Ridgefield Pits Restoration Project. Additionally, NMFS would be least supportive of the No Action/ Passive Recovery alternative, and would need significant evidence that the relocation of the main-channel alternative

would have a very low chance of failure (avulsing back into the pits), before supporting this alternative. Finally, NMFS thanks you for the opportunity to comment on the Ridgefield Pits Restoration Alternatives Memo, and looks forward to future collaboration with the Technical Oversite Group. We are standing by to assist with any pre-consultation requests with respect to ESA take coverage on proposed restoration activities. Please feel free to contact me (Joshua.ashline@noaa.gov) if you have any questions or concerns.

Department of Ecology
Devan Rosterfer

Greetings Technical Team for the Ridgefield Pits Restoration Design Project (Paul, Keith,and Gardner) Thank you for providing the Technical Oversite Group with the opportunity to review the Ridgefield Pits Restoration Project Memo from July 8, 2020. I apologize for my delayed review. Ihave been busy publishing the *Draft East Fork Lewis River Water Cleanup Plan* but I hope my comments are helpful. Please let me know if you have any questions or want to discuss.

- The temperature water quality standard for the East Fork Lewis River is 16 degrees Celsius (68 degrees Fahrenheit) to support core summer salmonid habitat. This memo says the standard is 18 degrees. Reference WAC 173-201A-020.
- The watershed also has supplemental spawning and incubation criteria of 13 degrees Celsius applicable from February 15 to June 15 for protection of salmonid species. In the East Fork Watershed, this supplemental spawning criteria overlaps with your project area. Please note there is no "TMDL Limit," as referenced on page 5. The goal or target is to meet the water quality standards inthe watershed (16 degrees year round, 13 degrees February to June).



The *East Fork Lewis River Source Assessment* determined that from river mile 0 to 7, the average tree height potential is around 75 feet, with an estimated overhang potential of approximately 7.5 feet. Above river mile 7 the average 100-year tree height potential is around 150 feet, with an estimated overhang potential of approximately 15 feet. Ecology recommend maximizing site-potentialtree height and overhang potential.

On page 10, goal 2C suggests a shade target of 50% for riparian vegetation. Thesystem potential vegetation target in the watershed is 85%. However, the 50% target seems reasonable for this area. Here is a breakdown of potential shade, current effective shade, and shade deficits by river mile. You may consider matching your targets for reforestation with the potential shade that can be achieved at each river mile.

Table 48. Shade deficit results in the middle watershed.

River Mile	Average Potential Shade (%)	Average Effective Shade (%)	Average Shade Deficit (%)
6-7	47	15	31
7-8	42	5	36
8-9	42	12	30
9-10	54	15	40
10-11	65	21	40
11-12	55	13	45
12-13	67	16	49
13-14	72	39	37
14-15	70	43	29
15-16	69	40	25
16-17	71	36	38
17-18	71	41	28
18-19	74	46	27
19-20	80	47	34
TOTAL	63%	28%	35%

- Please describe how this Ridgefield Pits Restoration Design Project and proposed alternatives are related to the East Fork Lewis River Thermal Assessment and the recent award for the East Fork Lewis River Habitat Improvements project. How will the Thermal Assessment inform restoration at Ridgefield Pits? How will the ThermalAssessment and Ridgefield Pits project influence the new East Fork Lewis River Habitat Improvements project? Are there plans in place for work upstream at Daybreak Park or north of Daybreak Bridge?
- Have you considered quantifying the streamflow restoration / baseflow augmentationbenefits from this restoration effort? Having an understanding of how much CFS would be restored to the river with each restoration alternative could help support decision making and make this project eligible for streamflow restoration funding.
- I appreciate that you include an estimated “level of effort” for each of the restorationefforts. A cost-benefit analysis for each restoration alternative might also help support future decision-making.

- Outlining which restoration alternatives are most feasible from a permitting standpoint could also support decision making. Similarly, understanding the feasibility of each project within the boundaries of the shoreline management act andcritical areas ordinances could be helpful. If critical areas will be impacted, or impactsto fish and wildlife are expected, how will these impacts be avoided, minimized or mitigated for each alternative?

- Attached are two maps showing WSDOT priorities for stormwater retrofits / fish passage barriers in the watershed. Do any of these priorities overlap with Mill Creek?

If you need additional information on Ecology's work in the watershed and the priorities that have been established, the *Draft East Fork Lewis River Water Cleanup Plan* was recently published for public comment. Priorities for riparian restoration are the middle watershed which has average shade deficits of 35%. River miles 9 to 13 have shade deficits over 40% and river miles 6 to 8 have shade deficits over 30%. Priorities for streamflow restoration, based off the *Surface/Groundwater Exchange Along the East Fork Lewis River* include river miles 4.6 to 7.3 and 7.3 to 8. These priorities directly overlap with your project area. If you plan to seek implementation funding from Ecologythrough the Water Quality Combined Funding Program, it will be important for you to communicate in grant applications how this project will make progress towards loweringwater temperature, restoring streamflow, and increasing shade in priority areas.

Table 52. Priority river miles for groundwater inflow.

River miles	Location	CFS of groundwater inflow per mile (cfs/mile)
4.6 to 7.3 Lower and middle watershed	Lower and middle watershed	13.3
7.3 to 8 Middle watershed	Middle watershed	6.3
26.9 to 29 Upper watershed	Upper watershed	6.1
10.1 to 13.2 Middle watershed	Middle watershed	2.0

In addition to augmenting streamflow at priority river miles, the following recommendations were provided in the *Surface Water/Groundwater Exchange Along theEast Fork Lewis River report*.

- Track and analyze water levels over time in the Sand and Gravel Aquifer, which is themain water source for the East Fork Lewis River
- Determine where the river is directly connected with the Sand and Gravel Aquifer tohelp clarify where the river is gaining groundwater.

Will any of the information from the *Surface Water/Groundwater Exchange Along the East ForkLewis River* report be considered in your restoration alternatives or future work?

I hope my thoughts and feedback are helpful. I am excited to see this project to move forwardand get closer to implementation!

Please let me know if you have additional questions,

Devan Rostorfer - Water Quality Implementation Specialist - TMDL Lead Washington State Department of Ecology **|** Southwest Regional Office **|** Water Quality ProgramVancouver Field Office **-** 12121 NE 99TH Street, Suite 2100, Vancouver,WA. 98682
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East Fork Lewis River Partnership | East Fork Lewis River Partnership Meeting Materials

Howe, David L
WDFW Habitat Program Manager

- Alternative 2 has the additional risk of not being accepted by Storedahl because of a perception of increased flood risk. There may be some political risk with this alternative. Alternative 3 could benefit from the perception of reduced flood risk to the northern berm protecting the Storedahl operation. There would need to be more work here to ensure thisdoesn't happen.
- If cost is a potential constraint for Alternative 3, what about a *partial* re-grade using availablematerials. For example, what if we can decrease the fill timeframe for the ponds from 60 years to 20?
- Alternative 3A involves leaving ponds 8 and 9 to maintain cold water refugia. How does this affect long-term gravel recruitment downstream? While I can see the benefit of maintainingcold water inputs, if it comes at a cost of extending the duration of time for downstream reaches to regain their historic spawning potential due to lack of gravel recruitment, I'm not sure that's an acceptable trade off. Seems like we need more information here.

Uber, Alex
Environmental Engineer WDFW

Mr. Uber made numerous comments and suggestions in the main body of the document using "track changes". These comments can be obtained by contacting WDFW or the Estuary Partnership.

Dave Brown
Northwest Wild Fish Rescue

Paul: To me u have not addressed the water or even attempted to. Know there there are a lot of water permits on the river and guess even more illegal withdrawals. To me we need minimum of at least 200 cfs to make anything u do work. Has anybody cked permits to see how many there are? Seen what has happened on Rock creek where water right of 1.5 cfs was put into the creek? Water runs most of the year now but most important some pools maintain water all year and fish populations are up. If weren't for illegal withdrawals I believe it would run all summer. Seeing more steelhead and they are in 2 years. Still don't believe u are working on a water solution? Are u? If so what?
Been 2 years and not a preliminary plan. Fish are on a uptick since made a gene bank stream according to my informal surveys. We need action now!!! Call me anytime if u wish to talk. Dave. 360 907 7333
Sent from my iPhone

Don Swanson
Landowner

Hello Paul,
I like the idea of a combination of 2&2A. Version 3 is quite extensive and looks like it does not consider the BPA row. It is 287ft wide and has room for a second line on the East side. I do think a 1/3 of the flood should go along the west hill base and reenter the river about where your first project is at the carbody hole. I think the mouth of Mill creek should be excavated and made readily accessible for fish. The river is dynamic enough without enhancing it into chaos. The steepness of the river gages rainfall and rain on snow reaction should be A point of measurement to judge the health of the watershed. Slow up and slow down. Not a flush. This will give the aquifer a chance to fill and give cool water to the streams in the holes. Projects designed to slow storm water runoff should be designed upstream. Also less energy will allow the river to build pools and not get blown out. I believe wood is good in the river system, but it should be near the River for shade and recruitment. We have many species of water fowl that need open grass fields to be safe and to feed.

Thanks for your patience and the chance to comment,

Don Swanson

Ian Sinks

Columbia Land Trust

Overall, I appreciate the quality and quantity of information in the memo - well done! My firstreaction to the overview of the issues and strategies that were identified during the process was that I don't agree with some of the options. But that, of course, was not the point. I appreciate that you captured the options and opportunities discussed to set the framework for the alternatives review. Again, well done.

My primary high-level comment is that if the recovery of the East Fork Lewis River is going tobe a serious effort, which I think it should be, then it needs to be processed based, ambitiousand needs to address both the reach level issues identified in the memo but also some of thewider watershed issues outside the scope of your analysis.

There are ways to accomplish restoration objectives that are not processed based, but I believe, and the scientific literature strongly supports, that to achieve sustainable results thenatural processes must be engaged to accomplish the objectives. This is particularly true when factoring in climate change. To this end I am not supportive of strategies that, for example, use pipe infrastructure to capture and deliver cold water to support salmonid habitat. In my experience, these approaches often fail and almost certainly require regular and costly maintenance while providing a more limited level of functionality.

If we are going to recover the EFLR to a functional condition then I think it is worth the investment to do it comprehensively. We should be ambitious. It might be the costliest option up front to move infrastructure, fill mine pits, address flow, install complexity, and complete revegetation on the whole reach, but this is the option that will return the best, most certain results, and highest return for the dollar over the long term. We should not let initial costs limit our thinking or the preferred option. If the EFLR is worth restoring, and I think it is, then the funding will be there. Partial measures are what has gotten the river to where it is today, and won't help get the river back to where I think the whole group hopes itcan be again. At least in this, you should have group unanimity.

I also feel that the Achilles heel of this effort is the surrounding watershed (Mill Creek, perhaps as a particular example) and water withdrawal that has significant and fundamentalimpacts on late season flow. On this second point, I am not sure that project objectives can be fully realized unless this is addressed in some manner.

I am strongly supportive of Alternative 3 - full floodplain and pits re-grade. I think this is the approach that will be most successful in achieving the vision for the EFLR. It also works with Alternative 4, 5 and 6 project elements, which can be phased in as complementary projects asfunding is available (not sure what the right order is, but I think moving from upstream to downstream makes sense). Relocating the channel to the pre-1996 location (Alternative 2) is a bad idea unless it is supported geomorphically. There is a reason the channel avulsed, and simply moving the channel back likely won't work. Alternative 1 is always an option - the riverwill recover over time (barring additional insults to its function) but I believe there is need for proactive action if the fish populations are to sustain in the watershed.

Some additional, more specific, comments include:

- Defining the CMZ is a critical step. I think it should include the Daybreak pits (currently being protected in the HCP restoration plan), but only if the hydrology and geomorphic processes can support this approach. I dont think it is a good idea to have a portion of the floodplain isolated, but the significant alterations to the historic CMZ and hydrologymay preclude including this area into a long-term design given the HCP and likely landowner willingness to open that process up.
- Is your reference to 50% vegetation cover an objective for the stream channel or thefloodplain as a whole? Seems low if for the floodplain.
- The comment about reducing costs by allowing vegetation to recover naturally before planting is a risky one in that area - the weed presence of particularly difficult species ishigh (knotweed, thistle, knapweed, blackberry, canarygrass, butterfly bush, others). It may cost more in the long run if you let the invasion happen, then implement control, then plant and then continue maintenance control for a number of years.
- I really like the alternatives analysis summary table. It might be worth adding a columnto evaluate the self-sustaining nature of the approach and/or its resilience to changing conditions (climate change, flow, etc).

Thanks Paul. Great tech memo and process. Feel free to call with any questions.Ian

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he | him | his
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Bruce Wiseman
Landowner

Good morning, Paul,

Thanks for your note/reminder. I had looked through the July info when I received it and thenpromptly filed it away and had forgotten you were looking for feedback!

Most, if not all, of my remarks will be directed to the areas immediately upstream of the Ridgefield Pits, as that's where our property is located and naturally what I'm most familiarwith.

This property has been in our family since 1963 when my folks purchased 130 acres along the E. Fork. After my father died in 1979, I was fortunate to have the opportunity to move back into the county in 1982, and I managed the Ridgefield National Wildlife Refuge complex until Iretired in 12/1997. When my family and I moved into my folk's home we also began farming Christmas trees which we continue to do today.

My father had a long 34-year career with the same US Fish and Wildlife Service as I worked forand this farm was also his dream. He worked closely with different agencies in 'managing' the river during 1963-1979, including mining rock, under permit, in the flood plain along our property. I have a very large file of his that documents meetings, phone calls, etc, during those years, documenting the evolosion of differing philosophies on how best to 'manage' the river. The last actual mining that was completed under his permit appears to be in 1971 or 72.

From 1972-1996, as old photos document, a six or seven-acre pond remained from remnants of the gravel operation on our property. In February of 1996 (not 1995 as I believe your document states), the dike protecting the pond was over-topped, swiftly destroying and fillingit with gravels/sediments. I was standing on the dike, filming its demise that evening with an old 8-track camera. (I might add also, that the Ridgefield Refuges also sustained millions of dollars of damage during that flood.) During this 150-year flood event (on the E. Fork) the oldriver channel had aggraded to the extent that the new channel nearly dried it up. Keep this in mind when I visit about reconnecting withhistorical channels.

For lack of time, I'm only going to hit the high points of what I consider as pertinent to theproperties from our property upstream to the Daybreak County maintenance yard.

Lack of redds/egg burial is a huge problem below our property. This is directly in response tothe huge erosion problems along the south bank of the river along not only our property but

also along the high back opposite the county maintenance yard, immediately upstream. You may or may not be aware that in approximately 1966 Clark County constructed a dike that completely destroyed what was then the main channel of the river, moving the entire river into a less-used side channel (that became the main channel). The dike provided protection totheir maintenance yard. In so doing, however, it diverted the full force of the river against the 100-foot cliff on the opposite (south) side of the river. For nearly 60 years that bluff has been depositing huge sediment loads into the river, with resultant consequences. Working with thecounty while trying to put a plan together for protecting our property, post 1996, the County did remove their dike, but that original channel was never restored. I believe part of doing so is noted in one of your Alternatives.

Subsequent to the '96 flood, high flows (and floods) continued to erode further south along out property, and finally reached (1999) the toe of our high bluff where it has, and continuesto, also dump huge loads of sediments into the river. During one such flood event in 1999, there was a 'slump', and uphill movement, setting of what has been determined to be an oldhistorical landslide area. This slide actually made its way to the top of our cliff at one of my neighbor's yards! Numerous slumps continue as the toe of the cliff erodes.

It was subsequent to that slide that I personally began to solicit help to address this serious erosion problem, but also the threat to our properties/homes. There was not one County, State or Federal agency that would lend a hand to even begin looking at the problem/solution. Fish First stepped up and during the next 7-8 years, 'we' worked trying to find a solution and funding to address 'our' problem. I personally was able to cobble together nearly $600,000 and it was only through some political persuasion that permits were finally received to allow the construction - **but** of only 50% of our designed project. The critical upper 50% of the project that would have been completed, out of the river, was not approvedby the permitting agencies. It was actually like they wanted to project to fail. Unfortunately, the river did exactly as we predicted pre-construction; a flood event avulsed across the upper proposed project area, eroding tons of gravels downstream onto our lower project, partially destroying a lower constructed structure. The upper portion of the project actually caught stream gravels and in so doing moved the river further away from our high bluff - but it buriedthe structures, destroying the fish/wildlife enhancements that had been designed into the project. Even though our permit allowed for 'maintenance' of the project, post construction, once again the permitting agencies denied our requests.

So much for background/history.

Point being, short of drying up/diverting the river, working on these two huge eroding cliffs and reducing the severe erosion from them is nearly impossible, but critical to accomplish. The only way to address this then is to open up old historical channels on the north side of theriver to reduce flows against the bluffs. Your alternatives address doing this but there are additional channels that are not identified, both adjacent our property but also below the county's maintenance yard. Opening historic channels will meet/address many of your goals.Many of these channels already have adequate buffer zones, with trees and understory vegetation that would eliminate plantings; there would be

immediate (shade) decreased critical water temperatures when the river is partially diverted/high flows. These projects canbe accomplished out of the river under dry conditions, will therefore be much less expensive than working in the river, and permitting 'should' also be easier?

There's been a wealth of documentation on the East Fork. I don't know if you've seen an evaluation prepared by Dr. Frank Reckendorf in 2010, but you might want to read it for a littlemore recent history. It's titled; East Fork Lewis River (RM13 to RM6) Including West DaybreakPark Project Reach.

Don't hesitate to call if you've questions. Like I said, my comments are very local, along our stretch of the river. At this time, in the scheme of things and knowing what we had to go through trying to get permits 10-12 years ago, I don't see anything being allowed in the riverthat would address the severe sediment loading occurring from these two high cliff areas.
There is just no access from the south. Therefore, opening up the historical channels across (north) are solutions that should seriously be considered. Getting at least the high flows/floodevents away from both cliffs would accomplish many of your stated goals for this once identified 'Blue Ribbon' river. (I've got a picture of my father holding up a 25 # steelhead that he caught right below our house!)

Regards,

Bruce Wiseman
The Tree Wisemans
360-600-5062