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First name: Bruce
Last name: Barnbaum
Organization:
Title:
Comments: The goal of the project is noble. The means to accomplish it seem unattainable, and likely to be highly destructive. Five basic unanswered concerns jump out from the EA, which requires an EIS to answer:

#1. The project is an attempt to stop an inevitable and inexorable geological process of erosion of a thick layer of exposed glacial till from entering the South Fork of the Stillaguamish River. This is at the site of a well-known, long-time feature that has the name of [ldquo]Gold Basin Landslide[rdquo] (GBL). Whatever is constructed to control small amounts of glacial till from entering the river[mdash]i.e., the fine sediments that inhibit salmon and salmonid spawning and early growth[mdash]is immediately vulnerable to be swept away by either moderate or larger landslides within the exposed glacial till cliffs or from a serious flooding event on the Stillaguamish River, itself. Thus, the success of this project is dependent on nature fully cooperating with the desires of man; specifically, nature must not produce moderate or large landslides in the GBL (that would sweep away all made-made constructs) and nature must not produce a major river flooding event on the river (also likely to sweep away all man-made constructs). Nature is not always cooperative. Hence, this project is akin to tilting at windmills.

Beyond this, even in the unlikely event that nature fully cooperates, and all projected construction time schedules are met (see item 3 below) it appears that the useful life of the project is 15 years. Beyond that time, it appears that current sedimentation resumes from the GBL. This appears to be heavy work for very limited benefits in time. And, of course, if nature unleashes a moderate or heavy landslide during those 15 years, all construction can be swept away instantly.

The improbable cooperation of nature throughout the construction, and the 15-year lifetime of the project, must be addressed in an EIS.

#2. The degree of damage that will inevitably accompany construction in and around a riverbed must be addressed fully in an EIS. To bring large logs and other necessary project materials in for construction, logging trucks must enter the campground via the existing entrance and transport the materials to the river. How much damage will be done to the Gold Basin forest just to transport logs to the river? (Or will the near old-growth forest of the Gold Basin campground[mdash]a forest that deserves protection[mdash]serve as sources of the logs? If so, the sacrifice of this magnificent forest for a pie-in-the-sky fish support plan would be indefensible.) How will the heavy vehicles needed for construction on the right bank be transported across the river (even at low summer water flow rates)? What pollution can those vehicles unleash during normal construction procedure, and worse yet, if an accident causes one to capsize in the river? Has the USFS undertaken a thorough probing of the river bottom to determine where hidden holes may exist (which could cause a vehicle to capsize); where hard bedrock will be encountered (which could make it difficult or impossible to anchor a crib or retention dam); where any other unexpected problem may exist that could throw the entire project off schedule? It appears that the cure for the fine sedimentation problem is worse than the disease.

#3. The timeline for construction, and ability to stay on schedule, is critical. On page 22 the EA states that construction would take place over a three month period, a necessity due to the short window of low water flow

from July through September. Beyond that window, high water can take partially-completed construction out in a matter of minutes.  Construction rarely proceeds as smoothly as planned. A recent example was construction of a culvert under the Mountain Loop Highway for Cranberry Creek (approximately 2 miles west of the Verlot Ranger Station), which was initially projected to last from May to September, but was completed in late December. Another noteworthy one was the tunnel-boring machine, [ldquo]Big Bertha,[rdquo] in Seattle, that encountered delays of more than a year due to unexpected obstacles encountered during the tunneling operation. Can all the heavy construction required for this project take place within that limited 3-month time frame or will the project have to start anew the following year after high water destroys all that has been partially-constructed?  It seems unrealistic to expect a construction project such as this to go according to any projected schedule that incorporates no unexpected problems. An EIS is required to detail unexpected problems that could be encountered during construction and beyond.

#4. A  key question is whether the GBL is the true cause of low salmon numbers today. According to the EA geological discussion on Page 48 the GBL deposits were deposited 14,000 years ago. As the glaciers melted and receded, and the river diminished in volume tremendously, those sediments were entering the river continuously. The sedimentation regime today is probably little different from that of the past two thousand years, or more.

[bull] Is it true that the GBL is a geological condition that has existed for centuries?

[bull] Is this project to improve fish habitat expecting to alter and improve conditions that have existed for centuries?

[bull] If the answer to the previous two questions are affirmative, why attempt now to alter a geological condition that has existed for so long? Or, in other words, are we sure that the GBL is the main cause of low salmon numbers? After all, salmon have faced the GBL sedimentation for centuries, so how could it be the cause of low salmon runs today?

[bull] Could it be that the decline of salmon in the South Fork of the Stillaguamish River may be due to conditions other than the GBL? Could it be that the decline is actually related to the adverse effects of past logging practices (i.e., logging over the past century), and the number of salmon could increase as the adverse effects of that overlogging diminish over time if the current forest is allowed to mature, thus reducing sedimentation now flowing into the Stillaguamish River? As larger root systems from more mature trees sequester sediments in place, and as water temperatures decrease due to increased shade from growing trees, could these changing conditions not help reduce sedimentation while also countering some of the effects of global warming? Or, in other words, are we judging the situation on the proper time scale, or fingering the appropriate culprit for the low number of salmon in the river? Is the GBL truly the sole or prime cause of low salmon runs today? Or should we be looking at human activity over the past century, as well, and perhaps the cessation of such human activity in the future to provide the proper medicine needed to correct the existing disease?

A full EIS is required to identify all sources of sedimentation in the South Fork of the Stillaguamish River, and their percentage contribution, not just the sedimentation from the GBL

#5. A key concern associated with this proposed project must be potential damage to the near old-growth forest of the Gold Basin Campground, on the south, or left, river bank of the project area. That forest qualifies as near old-growth forest. It is filled with large moss-covered big-leaf maple trees, plus Douglas fir, Sitka spruce, Western Hemlock and Western red cedar trees measuring 3, 4, and 5 feet diameter, with heights reaching upwards of 150

feet. With roughly 95% of all old-growth forests decimated by logging, the preservation of both old-growth and near old-growth forest must be a prime concern for the USFS. Because the Gold Basin Campground forest fits the description of near old-growth forest, its protection should be paramount in any decision about this proposed project. It appears that Alternative 4, which allegedly prevents the most fine sedimentation into the South Fork river, simultaneously represents the greatest threat to that forest. Since retention and promotion of old-growth forests should be a prime goal of the USFS, Alternative 4 must not be considered.

All portions of the Gold Basin forest, including two magnificent groves of moss-covered big-leaf maples, bear close scrutiny. One grove appears to be threatened by the access road to the project. That grove appears to be directly in the project access path to the river. A cluster of magnificent big leaf maples is located on both sides of the existing campground road between the campground entrance and the river. This project appears to put that grove in extreme jeopardy. Should this project be approved, the access route to the river must be chosen for minimal possible damage to that grove of maples, and to the large cedars, spruce and hemlock trees also standing in the proposed access path. These trees are invaluable resources, and must be protected to the fullest.

Furthermore, re-directing the flow of the river puts all trees west of the access road in jeopardy of severe flooding and uprooting during high river flooding events (unless, of course, the river removes the live crib jutting into the river, which disables the project).

An EIS is required to detail any and all possible damages to the Gold Basin Campground forest.

The portion of the live crib clinging to the right bank of the river appears to create few problems. However, when that crib moves into the river (i.e., [ldquo]100 to 190 feet from the right bank[rdquo] [mdash]EA, page 19) it would force the river toward the left bank, creating massive threats to the western section of the campground, along with trees growing within that portion of the campground (unless, of course, the river removes the crib, which is clearly possible during flooding events). Flooding of portions of the existing campground, and uprooting of trees south of that portion of the live crib, and downstream from it, will become commonplace.

[bull] What is the purpose of building that live crib into the center of the existing river flow?

[bull] Why can it not continue along the right bank, or, if necessary for reasons that require explanation in an EIS, just adjacent to the right bank but not 100 to 190 feet from it? The reason for it to jut half way into the stream channel is elusive. It requires explanation, or better yet, a realignment of that crib closer to the right bank.

[bull] A further enigma is how that crib will be anchored when it is not built along the river bank, itself. It appears that it could be easily swept away by high flows on the river itself, flows that occur annually. This requires a detailed explanation in an EIS.

On page 22, six lines up from the bottom, it states, [ldquo][hellip]the channel thalweg would generally flow[hellip][rdquo]. Please define [ldquo]thalweg.[rdquo] (The undefined term is again found on Page 68.)

The purpose of the retention dams, as described on page 23 of the EA, appears to pre-suppose relatively small landslides (as have often occurred) in the GBL, but not one large enough to sweep away the retention dams, which seems to be distinct possibility. The USFS has closed the Gold Basin Campground due to fears of an

enormous landslide that could cross the river and take out the entire campground, along with everyone in it. Clearly, a far smaller landslide[mdash]one that poses no threat to the campground across the river[mdash]could still be powerful enough to sweep away the retention dams, and perhaps with them, the live crib built into the former river channel. It appears that the entire plan is predicated on relatively small, well-contained GBL landslide events or river flood events, but never the inevitable [ldquo]unexpected events that nobody saw coming.[rdquo] (Hence the statement at the start of this comment that the project appears to be tilting at windmills.)

It appears that the success of the rock outfall to be built below the final retention dam to prevent fish from entering the  retention dam areas may work under specific water flow levels, but may be rendered useless if stream flow is higher or lower than planned.

[bull] Have engineers modeled how well the fish diversions would work under varying amounts of flow in the river, or water flow from below the lowest retention pond? Such modeling would appear to be essential for the success of the project.

On page 25 the EA states: [ldquo]The grading would likely be accomplished using a bulldozer in combination with tracked excavators, wheeled loaders, and off-highway dump trucks.[rdquo] (NOTE: this is for moving an estimated 45,000 to 50,000 cubic yards of existing material, with none hauled off-site, or brought in.)

[bull] How many tracked excavators, wheeled loaders and dump trucks will be involved?

[bull] How will those vehicles get across the river from the left back (campground side) to the work area? [bull] What damage will those vehicles cause to the river?

[bull] Where will they be parked at night, and how much room will have to be graded to create sufficient overnight parking space?

[bull]How many trees will have to be removed to accommodate this fleet of heavy vehicles?

[bull] Can the grading of the lower slopes of the GBL cause a landslide?

[bull]Have geologists assessed this possibility? Which geologists have been brought in to make that assessment? Such geological assessment is surely required. Another geological assessment appears necessary for the dewatering of river soils [ldquo]to improve workability of the soils and provide a safe work site[rdquo] [mdash]page 25 of the EA).

Page 26, in the second sentence under the subtitle Diversion Fencing states, [ldquo]The height of the fence above grade[hellip][rdquo]. What is [ldquo]grade[rdquo] in this sentence? (I.e., is grade the river level? Is it some height above river level?) The term requires explanation.

Page 26 describes large woody debris placement and the purpose of it.

[bull] Where is the source of that large woody debris?

[bull] Can it be existing standing trees cut or bulldozed down from the near old-growth forest of the Gold Basin campground? If so, this project should be shelved as a non-starter. That magnificent forest deserves protection.

[bull] How will large woody debris[mdash]specifically logs 35 feel long with attached root balls[mdash]be transported up to the assigned location?

[bull] The final sentence on Page 26 states that for diversion fencing [ldquo]limited water control is anticipated to be required for this Project component.[rdquo] How extensive will the water control be, and what time frame will be needed to install it? If larger than anticipated, or more difficult to deal with than expected, how will this impact the 3-month project schedule?

2.2.3 Best Management Practices and Minimization Measures (starting Page 32)

It has been my observation over years of experience that BMPs are written by industry for industry, and have no value in protecting the land from industrial/construction damage. Thus the information and tables on pages 32 to 42 are meaningless. Construction will proceed with whatever means the workers find most expedient to complete construction, whether it damages the land to a small or large extent.

2.3 Description of No Action Alternative

The no action alternative is exactly where we are today. Can we say with certainty that allowing forests to mature toward old growth will not be as effective a means of increasing salmon runs as attempting to stop, or diminish, ongoing geological processes?

Chapter 3 Environmental Effects, 3.1 Scope of Analysis, 3.2 Summary of Potential Impacts

Page 60, line 5 states that a study by Snohomish County of the source of fine sediments [ldquo]included the area of the GBL.[rdquo] This tacitly admits that there are other contributors to fine sediments in the river, none of which are considered in this EA. They must be fully discussed in an EIS.

The next paragraph cites a study for Crown Pacific Property, a timber/logging company. Such studies are notorious for benefitting the company paying for the study. (Examples in the tobacco industry, oil industry, agricultural chemical industry, food industry, abound[hellip]and the same is true in the timber/logging industry.) Hence, this study should have little relevance, if any, in this EA.

Yet the results of that suspect study, made in 1992, conclude that 1/4 of all sediments in the South Fork Stillaguamish River come from the GBL. Where are the remaining 3/4 coming from? Could it be from the already cited logging upriver and downriver that occurred throughout the 20th century, reaching a climax in the 1970s and 1980s? Could it be, as already stated, that that 3/4 component is already being slowly mitigated as recently cut forests are now maturing? Will the USFS allow those maturing forests to mature? Will there be a new siege of clearcutting to rival that of the 1970s and 1980s, which could put vastly more sediment into the river than the GBL?

Furthermore, that study was finished in 1992, fully 25 years ago. It cites results of sediment samples in the years 1954 to 1983[mdash]fully a half century ago[mdash]and much of it prior to the logging peaks in the 1970s and 1980s. Its percentages of fine sediment sourcing could be very different today. That suspect study may be utterly irrelevant to today[rsquo]s conditions. While it may be the most recent study, it[rsquo]s badly out-of-date study.

Recognizing that the GBL is a centuries-old phenomenon, and that it produces only 1/4 of the sedimentation in the river (according to the out-of-date studies), why attempt to stop a geological process that cannot be stopped? Yes, it can be contained for several years if nature cooperates by producing only small landslides following construction, landslides that can be contained by the relatively insignificant and fragile fruits of this project, but one larger landslide takes all the construction away in an instant. It[rsquo]s also possible that one major flooding event on the river can take it all out, just as the river swept away 500 yards of natural riverside slope and all trees upon it on the left bank (i.e., the south bank) of the river immediately below the MLH Blue Bridge (located two miles east of the Verlot Ranger Station) in 2006 (as well as the eastbound MLH roadway at Blue Bridge). Those 500 yards of slope disappeared in one night. The cribs and retention dams are far more vulnerable than that stretch of long-established slope and forest. The relatively puny man-made constructs have no chance of surviving a larger landslide or major river flooding event. Again, the only logical conclusion is that this project is a case of tilting at windmills.

South Fork Turbidity Data [mdash] Page 62

It is false to attribute the turbidity data difference between the two sampling locations solely to the GBL. There are many tributaries to the Stillaguamish River between those two sampling locations that surely contribute fine sediments into the river, largely due to nearby logging activities, recently or within recent decades. There could be reasons other than logging for tributaries to contribute fine sediments, for example, natural erosion of rocks and soil. Furthermore there could be large contributions into the Stillaguamish River directly, not from tributaries. It is unclear how much sedimentation[mdash]other than the GBL[mdash]between the two sampling locations comes from these sources. Thus the comparison of turbidity between the two sampling stations cannot be attributed solely to the GBL.

Hydrology [mdash] Page 63

It appears that global warming is altering all rainfall amounts worldwide. The basin of the South Fork of the Stillaguamish River is not exempted. Thus the rainfall data may be of limited value for future plans, especially

when future plans are along the river, which is already notable for its high and low flow extremes. Higher flooding events, and more frequent flooding events may well be standard in the future[hellip]and that future may be nearer than expected, as warming appears to be proceeding at a faster pace than projected just five or ten years ago. Since all project construction appears vulnerable to the whims of nature, today[rsquo]s plans for the future appear to be especially fragile.

Bottom Line:

This project seems futile. It is, at best, one that may have limited time value, perhaps slowing sedimentation into the river for 15 years[hellip]and only if nature cooperates with everything planned. It[rsquo]s necessary quick construction period is highly vulnerable to delays..in fact, it[rsquo]s almost an inevitability. Partial construction during the three month low water construction period will be torn out when rains begin again in the autumn, and water levels rise. Even full construction is vulnerable to being swept away, as well, from either high water in the river or a larger than prayed for landslide.

The goal of trying to improve salmon runs is noble. The likelihood that this project will have any short term or long term positive effect toward that goal is virtually nil. This proposed project is little more than tilting at windmills.

Under any circumstances, to fully understand this apparently useless project, a full EIS is required.