Comments on the Draft Chehalis Basin Flood Mitigation Alternatives Report

9/10/2012

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Hi; I hope you are having a great day and things are going well for you.

I received an e-mail stating that your organization would like to hear from some flood affected individuals back in 2007.

To start with, I reside at 1358 NW River street (correctly named) , Chehalis WA. 98532. My personal cell is 360-880-8905. and My name is Steve Emrich.

I own roughly 30 acres along the Chehalis River and have lived on or near this street since 1958. Yes, I am an old timer around here at 55 years.

I am a firefighter for the city of Chehalis and also a member of the swiftwater team that is part of the fire department. When the flood started to rise in the early morning hours, I was called back to work with the swiftwater team and did so until 9 pm that night. During that time, my wife and 4 yr. old daughter were at home and watched and prepared for the flood and river rise. The water eventually came over our road, up to our house and eventually 8"in our house. When I got home at 9 pm, I arrived by boat onto our water covered back porch and our 4 yr. old riding her tricycle in the flood water in our house,(why not!) It is an eerie feeling hearing water running by outside your house during a flood, as we have had a few times in the past years, but to have it flowing through your house is another story altogether. Early the next morning, the water was receding and we washed, swept the muddy silt out as best we could. A boat ride around the farm showed 5' of water in my farm shop, 2 other barns where equipment is wintered over under cover, 2 buildings with 3' of water in them which had the farm quads, motorcycles, tools and other personal storage items. It took another day for the water to recede sufficiently to get a look at the devastation in those buildings, barns etc. When we got to them, everything in those structures were in a state of complete devastation and full of mud and debris. All our tractors went 2/3 under, all quads and power tools were submerged, (and we had all these up on high ground, trailers and tables in prior preparation for this event) fuel containers were floating, one farm equipment shed washed away, 7 cords of firewood flowed downstream, all our fences for cattle around our section for cattle were bent, broken, covered with debris or just plain gone. We own the house next door as a rental and it suffered the same devastation as ours did. It was quite a chore hauling out all the insulation from under the house as well. We tore out 4'-9' of walls in our house such as sheetrock, insulation,etc. and re-did all the outlet wiring, tore out floors, sanitized and just plain worked day and nearly all night for 10 weeks to get our house back to livable condition. The farm took 3 more years to get back in shape with equipment repairs, fence and building repairs, tool and equipment cleaning, etc. We had to do some downsizing of buildings and equipment as too costly to rebuild and replace some things that were lost or damaged.

The bummer of it is our flood insurance policy that we had written for the farm and rental as well as our property which was supposed to be the same as our home and farm owners policy was only written for our house! Not even covering our carport and outbuilding where 3 freezers full of home grown vegetables, beef and other items were floating in the flood water. 4 tons of pellets for our winter heat source was a pile of soggy sawdust. We used 2 kerosene heaters to dry out our house and to try to keep warm with for 10 weeks. Thank goodness we have a multi-level house where we lived upstairs with a shower, sink, bathroom and microwave and bedrooms for that 10 week time we did the downstairs repairs. Doing all the work ourselves in the repairs, we had just enough house insurance coverage for the new walls, flooring, appliances and electrical needs. The outbuildings, rental, and the farm were all out of pocket for all the needed repairs to farm equipment and buildings, etc.

All in all, we got stronger from it, rolled up our sleeves and just did what was needed to get back on our feet.

I sure do wish the folks at the Army Corps of Engineers would have listened to my dad's recommendations 40 years ago as well as my time talking with them 10 years ago about flood protection. 1 dam on the upper Chehalis and re-do the Scheuber road by-pass drainage ditch under highway 6 and along the Scheuber road to alleviate early rises of flood water. It is so easy to see and would protect I-5 as well as the people living in the valley. In regards to the diking projects suggested, I was told by a rep. of the Army Corps that I toured with that I lived close to the river, on the wrong side of the dikes and to keep paying my property taxes , but the flood waters would be worse than ever before and that it was just too bad for me and the good of the majority!

Well, Thanks for your time and I hope a lot of folks take the time to write you their side of the flood story and their suggestions for prevention ideas. The 1 dam makes sense to me, keeps one tributary clear and provides better flows in the summer months, and hey, why not try to get the reservoir to be a campground area for campers and tourists to stimulate some growth and business out in the PeEll area!

Thanks again for listening;

Sincerely, Steve Emrich

Greetings,

I have lived in Centralia for 38 years. During those years I have been through 3 major flooding events and sustained significant losses to property and equipment. With a hanger and an aircraft at the Chehalis airport I have repeatedly had major repairs to the hanger structure. In 2007 my aircraft was damaged to the tune of 70.000 dollars.

But more importantly I have seen first hand scores of friends, family and neighbors been virtually devastated by these flooding events. My brother in law, a dentist had a loss of $600.000 to his dental office and loss of income for many months of repair. Due to the flooding history, he is unable to get tenants to occupy the building. This area is economically depressed due to the ongoing threat of flooding.

I am strongly in favor of a water retention dam on the Chehalis river west of Pe Ell.

Please consider the welfare of the citizens of this community as you propose your budget for this next biennium. People who do not live here and do not have to experience these horrific events, should not be allowed to hold us hostage via their ideological opinions.

Respectfully

Helgi Heidar MD

Melissa,

None of the five points listed below even mentions dredging. Levees, flood walls and dams are not serious solutions. They always have and always will fail. They are a waste of major waste of money in Washington State. Dredge the rivers and be done with it. No serious discussion on this topic can be accomplished while ignoring this important fact.

Daniel Thorson

Are you concerned about flooding issues in the Chehalis Basin and potential solutions? If so then your input is needed by Friday, August 10, 2012.

At the direction of the Governor and Washington State Legislature, the William D. Ruckelshaus Center has prepared a draft report on alternative flood damage reduction projects for the Chehalis Basin. The purpose of the report is to provide decision-makers with key information on projects to reduce flood damage in the Basin. Projects covered in the draft report include:

- Water retention project (multi-purpose dam) on the mainstem Chehalis River upstream of Pe Ell.
- Improvements to the levee around the Chehalis-Centralia Airport.
- Flood walls to protect Interstate 5 in the Chehalis / Centralia Area.
- Raising/improving the US Army Corps of Engineers levee system around Centralia and Chehalis (the “Twin Cities Project”).
- Other potential construction projects and programmatic approaches, such as land use planning, flood proofing, home elevations and buyouts, and livestock evacuation and sanctuary areas.

The final report is intended to be available in late August/early September.

Written comments are due Friday August 10, 2012 and should be sent to Melissa Kuehne at eithermelissa.kuehne@wsu.edu or by U.S. mail to Melissa Kuehne, Ruckelshaus Center (WSU West), 520 Pike Street (Suite 1101), Seattle, WA 98101.

Melissa, I wrote this last evening after I had walked around the yard enjoying the beauty. The roses are gorgeous this year. It's a beautiful place to be. But, not much longer for me. I'll move within the year. Will I stay in Lewis County. At this time, I have to say, "no." Though I've friends here, I'm afraid. Afraid of another flood and facing another loss. No. I'll move somewhere else. Jim was 71 and I was 64 when we rebuilt after the flood. We lost our home, completely.

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It's so bitter sweet. I look around at what Jim and I fought so hard to rebuild after the December 3, 2007 flood. He's gone. Lost to cancer.

We moved to Lewis County in 2006, after Jim had been diagnosed with and had undergone treatment for cancer We sold everything to buy our "home" free and clear. Then came the Dec. 2007 flood. We lost everything. We had one half hour to leave our home. We didn't know it at that time, but as we spent 12 hours on higher ground, waiting to be evacuated by the Coast Guard, we knew. We knew the river would take everything. And it did. The house, the car, the motorcycle, the RV, everything we had worked for was gone. Gone in 12 hours. A lifetime of hopes, dreams all gone in 12 short hours.

Why? Why did it happen? Why did what we had worked so hard for been lost so quickly? Was it clear cutting? Was it the "perfect storm" or was it because all these many years nobody had really addressed the "problem?" Not the "problem" of flooding I-5 and shutting off commerce but, the problem of saving homes and lives. Aren't those truly more important?

Jim's gone now. So is mom. Mom, who was 95 when she was air lifted out by the Coast Guard. Mom, who had to go live with relatives in Oregon while we tried to rebuild our lives. How can this be? We worked so hard to achieve some sort of life after retirement – and it's gone. Gone up in muddy river sediment. Jim died this last month from cancer. Mom died the prior year. Now I'm alone. What can I do? Declare bankruptcy and go into foreclosure. We took an SBA loan after the flood to rebuild. We owned the land. It seemed the right thing to do. After all, it had never flooded there before. Now the real estate market has bottomed out. I can't sell our home for what we owe and Jim is gone. I can't maintain it, either financially of physically. I have MS. We've lost everything to this damn flood. Am I bitter? Yes! Is there something that could have been done long ago to prevent this flood. YES!!! But it was ignored. The Corps of Engineers was handling everything with it's proposed levy solution – that's gone on for over 30 years!!! Why wasn't something done before 2007 – after the 1996 flood!! Am I mad? Yes! And what are you, the State of Washington, going to do about it? Just protect the commerce on I-5 – or maybe, just maybe protect the CITIZENS OF THE STATE OF WASHINGTON, instead of just the REVENUE for the State of Washington.

The retention dam needs building NOW! Lives need to be saved, not fish, not commerce, but people's lives. Now is the time to act – not 30 years from now.

To: The Citizens of Grays Harbor County

This letter comes in response to a recent article entitled, "Study suggests multi-pronged flood solutions," by Steven Friederich, dated 7/25/2012.

First, I applaud Steven Friederich for sitting through, and reporting on, the often times laborious, sometimes tedious, meetings, of the Chehalis Basin Flood Authority.

However, one has to wonder, with the millions of dollars already spent on consultants & studies, why there is still no apparent progress, solution or answer to this group's attempt at preventing flooding on the beautiful, natural Chehalis River. I wonder, has The Flood Authority ever stopped to think that perhaps doing nothing at this time might be the best way to proceed. It would appear to me, and many citizens of Grays Harbor County, that the Flood Authority has been spinning its wheels for years, while spending a great deal of money in the process.

What is the answer?

For those of us who live on the river--especially downstream from the proposed earthen dam and levees--we would say, DO NOTHING! That is correct--DO NOTHING because there are no answers to the questions regarding dangerous effects the "proposed" projects would most likely have on people and properties downstream. It would also be prudent to look at the devastation caused by earthen dams over the years in Washingston State, as well as elsewhere throughout the world. This is an unequivocally dangerous proposal and should not be considered. Period. This stance is validated by the most recent 282 page report presented by the Ruckelshaus Center and certainly questions the policy makers in this county.

Not even the latest "new report" required by the state Office of Financial Management, was effective in offering any kind of quantifiable activity or project that hasn't been considered previously, as well as the mitigation questions. This report is nothing more than a weak attempt to keep the Flood Authority rolling along and justify more millions being spent for what? Honestly, this entire endeavor is absolutely pointless without the completion of mitigation studies--that means "what happens downriver when you start changing upriver" whether it be earthen dams, levees or any number of projects sighted in the "many pronged attack." There are too many variables, tidal flow, high winds, heavy rains and this question cannot effectively be answered--no matter the money spent. Even with these suggestions offered by the Ruckelshaus/Jim Kramer report--the Flood Authority has no more answers than it had several years ago! To many of us, it is beginning to look like an unending lesson in futility!

Why doesn't the Federal Government step up to the plate...build an overpass to eliminate the flooding issues on I-5 in the Centralia/Chehalis area. All of the building there was done with full knowledge that it was in a flood plain. Why doesn't the Chehalis River Authority disband and stop acting like they are accomplishing something? They aren't. Stop spinning your wheels with useless studies, and certainly some amount of bickering reported to the citizens of Grays Harbor over the years. Divert the 5 million dollars you are posed to receive, already alloted--to a fund which would help flood victims in the case of a flood.

Five million dollars would be a start. Then, take a serious look at the logging industry for the large part they have played, and continue to play, in the flooding on the Chehalis and many other rivers in this state. Work with Mr. Peter Goldmark, our Public Lands Commissioner for some answers and hopefully some assistance and solutions. Perhaps DNR would be willing to contribute to my proposed "Flood Victim Fund."

As for Mr. Kramer signing a recent $91,200 contract to "provide facilitation services" to the Flood Authority--nonsense. If he is unable to offer opinions or direction to the Flood Authority, it is a complete waste of more money. Put that money also in the fund to help flood victims in the event it is needed! There, now you already have $5,091,200. That's a good start. Leave the river alone--no good comes from trying to control natural habitat. I wonder if the Chehalis Flood Authority knows that a DNR driven, 5000 acre Natural Area Preserve and a one of a kind estuary system, which contributes natural flood control, currently exist at the mouth of our precious Chehalis River? Please, let us not jeopardize what we have with more relentless studies and inept attempts to control yet another natural river!

Sincerely,

Carol Seaman

2001 Mallard Lane

Aberdeen, WA 98520

Hello. On our DNR website was an “Ear to the Ground” article suggesting a request for flood mitigation ideas. I grew up in that area and still live close by and have seen this flooding since the 60’s. I have always wondered if a flood channel could be cut on the west side of the valley along Schuber Rd, west of the hospital, and ending somewhere around the Galvin area where it would rejoin the river. A project of this nature would be Army Corps of Engineers size, and some of what was dug could be used to bolster the levees. Seems that a shallow angled flood channel (like I’ve seen in the Midwest) could still be used for some agriculture and the route would displace a minimum number of residence. That is my 2 cents worth. Have a good day.

Ronald T. Worrell

Aviation Maintenance - Resource Protection

State of Wash. - Dept. of Natural Resources

Voice 360-664-8602 Fax 360-586-5546

Sir,

NC Machinery has had a significant presence in the City of Chehalis at I-5 Exit 79 since the 1960"s as a significant employer and significant local tax payer in support of the construction, logging, and power generation industries. Our company's ownership has financially and materially supported community improvement efforts including, but not limited to, annual Scholarships to Centralia College students, major contributions for the Providence hospital expansion, and donations of equipment to local communities for the construction of youth ball fields.

Logically, floods and the associated losses have moved from the category "possibility of flooding,"' to "in the likely event of flooding". It is our sincere desire that the various governmental agencies responsible for protecting the people and business assets make the necessary physical improvement to mitigate the Chehalis River flood threat.

While the Management of NC Machinery makes no claim to have the answer to which project is the one that will be the "silver bullet," upon review of the many possible options it is our belief that a retention dam/generation dam provides the ability to retain a significant portion of flood waters where the waters begin while offering a method of recapturing some portion of construction through future sale of generated power via a reusable, green, fuel source, that being water.

Using the retention dam in conjunction with the expansion and raising the existing dike system, we believe, provides a significant bulwark against future flood events that would allow our ownership to enjoy an improved outlook of the safety of our significant Chehalis assets.

NC Machinery, Chehalis suffered fairly minor flood damage in 1990, significant damage in 1996, and catastrophic damage in 2007. As has been illustrated in Chehalis Draft Report 7-12-2012, the floods appear to be progressively more damaging with each event and be assured the insurance carriers for NC Machinery have taken note. In those events our company has rebuilt the facility twice, lost inventory, twice, had our business interrupted, and had to retool twice. But what about the other non-monetary costs of our employees?

From November to March, every single year, when it snows, then rains: rains heavily for extended periods: when the Willapa Hills carry a heavy snow load: or a Pineapple Express is forecasted, the personnel in our Chehalis facility become a little more tense because they know "this could be the year we get another flood, and if we get another one ……..?" Then, there are the personal tragedies of lost homes or belongings, friends and co-workers who need a refrigerator, bed, or sofa because theirs "got wet." These are the personal sides of the Flood Control Project and not quantifiable in a cost/benefit analysis, how do you put a value on the knowledge that your home will be where you left it when you return from work or a shelter. Those of us who were only inconvenienced open our wallets, homes, and cupboards all the while giving thanks that it isn't us needing assistance.

Respectfully,

Miles Folks

Branch Manager

NC Machinery Co., Chehalis, WA

Melissa,

Good morning to you, I would like to comment on all the fill material they have been placing in an around all the commercial sites around I-5 & Chehalis area, under Home Depot, and opposite the Wal-Mart store on the south side shopping strip in Chehalis, all that import material came from the Clay deposit on the hillside across the Freeway, it seems to me because of a water issue and flooding problems, they would want to import more of fracture rock and design drain fields and pervious paving which would allow for displacement of water and not effect the buildings and roads above, instead they just fill them with clay dirt period. Seems like they always want to use the cheapest material they can find for there applications, it's like there building dikes all around the freeway and gives the water no place to go. Also on the freeway expansion were there going to raise I-5 down to exit 72 with fill dirt, why don't they just build the freeway like a concrete bridge north and south from I-5 Mellon St in Centralia down to the Wal-Mart I-5 Exit 79, that would allow all the water if it floods just to run under the bridge. They build them in Louisiana and there miles long and still standing over the swamps. Just a thought, makes sense to me. You look at the millions it cost daily when they close down the freeway do to flooding. I think they need to re design that part of the freeway, pretty simple math; you keep filling in these areas with cheap fill dirt you just create more flooding. That's pretty much the end result. You don't have to be an engineer to figure that one out. With all the ideas and plans in motion they all need to fit like a puzzle or this flooding issue will never go away. Just wanted to share my thoughts. Regards Richard Tardiff

Melissa,

One more thought if they built it that way, they could actually leave the existing road under the bridge to use them as feeder roads north and south that would allow traffic to travel from Mellon Street to Chambers Way Exit 79, prevent traffic from getting on an off the freeway which in turns reduces accidents and it also saves on tearing out the sections that need to be raised up with millions of tons of fill dirt. That cost would be applied to the overhead bridge. Have a good day, Richard

I appreciate the opportunity to provide the following comments on the revised Chehalis River Flood Storage Dam Fish Population Impact Study, dated April, 2012. The revised report incorporates some improvements from the draft, primarily the temperature modeling information. However, there are further improvements that are necessary before fish mitigation plans can be developed. Below are my summary comments, followed by more detailed comments specific to each section of the report.

This report describes the effects of a dam on fish in only a small portion of the Chehalis River Basin.

This report only considered the effects of the dam on a portion of the salmon and steelhead populations originating in the upper mainstem of the Chehalis River. The authors should have considered the effects of such a dam on the fish populations in the entire basin and the Evolutionary Significant Unit for each species. The authors should also incorporate estimates of the effects of the dam on other important fish stocks, including fall chinook.

The dams analyzed in the report do not represent the configuration and operation of a project that would most likely be built on the Upper Chehalis River.

The design and operation of the dam should have incorporated the ability to control flows to meet ramping rates; a selective-withdrawal structure to meet water quality goals (e.g., temperature and D.O.); and current fish passage technologies. The seasonal flow regime also needs further refinement to maximize benefits to fish and their habitat during the summer low flow period.

An acceptable mitigation plan cannot be developed until dam configurations and operations are more fully developed.

The report appears adequate for a coarse evaluation of the effects of flood control on the mainstem Chehalis River. However, the actual configuration and operation of the proposed dam, and the fish passage facilities incorporated into the project, will have a direct bearing on the effects of the dam on fish habitat and populations. The authors must accurately define these items before specific mitigation measures can be recommended. There are many similar facilities in the region that can be surveyed to elucidate this information.

Sincerely,
Shane Scott
Principal - S. Scott and Associates LLC

Specific comments on the revised Chehalis River Flood Storage Dam Fish Population Impact Study

Pages 11 - 19: HEC-ResSIM Model Assumptions and Results

The assumptions used in the analysis may be adequate for analyzing the effects of the dams on flooding in the Chehalis River Basin. However, the configuration and operation of both the flood control dam and multi-purpose dam needs further refinement before any conclusions can be made on the effects on fish and their habitat. Again, there are several dams in the region with operational regimes that can be applied to the dams considered in this analysis.

The assumption that maximum rate of change in reservoir outflow would be limited to 200 cfs is likely incorrect. Water outflow regimes from both types of dams would need to meet WDFW ramping rates as described in Hunter (1992). The authors need to identify at what river elevation ramping rates would be initiated. This river elevation is related to the location of potential fish stranding habitat. Then, a flow regime would need to be developed for river elevations above the stranding habitat and that meet WDFW ramping guidelines below the stranding habitat.

The water releases from the dams as modeled do not meet Washington State water quality standards for temperature or dissolved oxygen (D.O.). The simple assumption that cool water will be released from the bottom of the multipurpose dam is not adequate for this analysis. First, the water must be released in a controlled manner at a temperature and D.O. concentration that meets water quality standards. Then, the volume and temperature of cool water below the thermocline needs to be identified to more accurately estimate the amount available to affect

river water temperatures downstream of the dam.
The volume and temperature of water above the thermocline also needs to be better estimated. As the reservoir is operated each season, the volume of cool water below the thermocline is exhausted. If used too quickly, the warm water released from the dam could significantly increase temperatures downstream of the dam, thereby adversely affecting fish and other aquatic organisms.

Page 38: Water Quality

The assumptions used in the analysis may be adequate for analyzing the effects of the dams on flooding in the Chehalis River Basin. However, the configuration and operation of both the flood control dam and multi-purpose dam needs further refinement before any conclusions can be made on the effects on fish and their habitat. To better estimate the actual operation of a multipurpose
the authors could have used water releases from below the thermocline as described in Appendix C of the report. Again, there are several dams in the region where operational regimes can be applied to the dams considered in this analysis.

Page 54: Fish Habitat Availability Downstream of Proposed Dam Site

The actual operation of a dam will likely differ from that modeled in this analysis. This is especially true during periods of low, summertime flows where water flow and temperature are likely a limiting factor for fish downstream of the proposed dam site. To meet the water quality standards of temperature and D.O., the actual flows from the dam will be different that that modeled in the analyses. Again, the report appears to provide a suitable analysis of the effects

of a dam on flood control but further refinement of dam operations is required before a fish mitigation plan can be prepared.

Page 58: Fish Habitat Availability Upstream of Proposed Dam Site

The reservoirs may flood existing blocked areas, thereby opening sites upstream of the dam to access by adult salmon and steelhead. These blockages should be identified and any available habitat above these locations should be included in the analysis.

Page 68: Anticipated Habitat Changes Resulting from the Construction and Operation of a Dam

The analysis appears to only allow a maximum 2,000 cfs to be released from the dam. Is this the properly sized outlet works for this size of project at this location? Any dam built would have to be designed with a spillway to pass the Probable Maximum Flood (PMF). The authors do not identify if the outlet works on the dam will pass the PMF. Flows higher than 2,000 cfs can be expected; therefore the effects on downstream fish habitat should be identified.
As mentioned above, the operation of the dam as proposed in this analysis does not meet State water quality requirements. The actual seasonal water release scenario may not allow the dam to meet the flow objectives modeled in this analysis. This needs to be corrected before the effects of the dam on fish and their habitat, especially during the summertime low flow period, can be properly modeled.

Page 69: Fish Survival Past Dam

The authors should base the range of juvenile fish passage survival rates on actual survival tests. For the “poor” survival rate analysis, the authors reference a very low juvenile fish passage survival at Cowlitz Falls Dam. These numbers are used incorrectly, as they reference survival to a location downstream of the dam. Actual survival numbers are provided in the Normadeau Associates, Inc., report provided to the authors.
The authors also analyze the population effects of zero fish passage survival at the dam. This is an unnecessary analysis, as a dam would not be allowed to continue operating without providing for fish passage survival. Again, the authors should base a range of juvenile fish passage survival rates on actual survival tests.

After the December 2007 flood my wife and our three girls began helping people in the upper basin muck out their flooded homes and farms. Our girls were between 10-16 at the time. We would take one of them with us each day as much for them to understand how destitute the poor families were who were flooded and how lucky they were to have a home that does not flood. The first couple of homes where we helped were owned by friends but by the third or fourth home we were mucking out the homes of strangers. Some people may think that a flooded home just means that things get wet. Its much more significant than that. The flood water was filled with dirt and the dirt went everywhere the water went. What it left was a substance like grainy chocolate pudding in every drawer, every appliance in every wall. It was a horror to see a home hit by the 2007. At every home the drill was the same, the volunteer would be assigned a room and our job was to make two piles, the first pile was things we thought could be saved and the other was things to throw away. The most searing memory for me was at about the fourth home. This was the home of an Hispanic couple with two young kids. They had just built a modest home on land they had purchased that had been part of a very old dairy farm west of Adna. The land had never flooded but in 2007 their new home had 3 feet of water. I was assigned to go through the belongings in the bedroom to make the two piles. Imagine how exhausted and desperate you would have to be to invite a stranger into your bedroom and ask him to go through your belonging to make these two piles. It was at that moment that I dedicated myself to finding a solution so that this kind of terrible event would not occur again.

The floods of 1990, 1996 and especially 2007 were of such enormous magnitude and so devastating to so many families and communities in the Chehalis basin that it is really impossible to fully describe the impact then and still today.

I am grateful to the Ruckelshaus foundation for the time and effort spent putting together its report on the Chehalis basin flooding. It is a very valuable contribution to understanding the issue. My comments on the report principally focus on page 4 in the description of the impact of the dam on the fishery. The Anchor report did not, as the report suggests, predict a 22-44% increase in Chinook spawners in the upper basin. Anchor predicted a 120-140% increase from a current number of approximately 300 upper basin spawners to almost 800 with an optimized multi-purpose dam. The Anchor report opines that with increases in Chinook and decreases in Steelhead and coho in the main river channel, taken together, there will be an increase in spawning salmon of 50 fish. Anchor estimates that late summer flows in the upper basin would increase from 30 cfs to 170 cfs. State and federal fishery and environmental agencies have, for decades, been concerned with the negative impact on fish from low flows in the upper Chehalis. I believe that the report should include some of this context and explain how flows can be improved and temperatures can be lowered by a multi purpose dam.

Also, the report gives data from WSDOT estimating the number of homes and businesses that would be protected and those that would be further harmed by building the I-5 flood wall. If that is worthy of note then an estimate as to the numbers of homes and businesses that would be subject to less flooding with upper basin water retention should also be included – and that number will be in the thousands. – J. Vander Stoep

Instead of being short sighted and putting a bandaid on the flooding problem down here, I am in favor of solution 3 (Combination 3) is made up of a dam on the Chehalis Mainstem, the Airport levee improvements, and flood walls and berms to provide additional certainty about protection of Interstate 5. As with the other example project combinations, improvements to the Skookumchuck Levees, and modification of the Sickman-Ford and Wakefield Road (South Elma) bridges are also included. Combination 3 would provide the most robust flood mitigation of any of the project combinations – providing flood mitigation throughout the mainstem Chehalis including in the Twin Cities from the dam and protecting Interstate 5 with floodwalls and berms. It also is expected to be one of the most costly of the project combinations if the bypasses cost less than the $245 million estimate for the dam. Outside of the Twin Cities area Combinations 2 and 3 would have very similar benefits to each other, with substantial water surface elevation reductions in most locations. Within the Twin Cities there would be some differences as the I-5 flood walls and levees would cut off some flow paths leaving areas downstream of these protected and areas upstream with slightly higher water levels then if the flood walls were not present. This increases the certainty of protection for I-5 and likely would provide some additional flood mitigation benefits in the Twin Cities areas. These benefits have not yet been quantified. As in project combinations 1 and 2, targeted bridge modifications and Skookumchuck levee work would provide additional localized flood mitigation benefits in those areas. Which promises to give the most protection to the most people, infrastructure and businesses in this area. This problem has been studied to death and it is way past time for concrete action to be taken.

Pamela Hopwood

2565 Kristine Ct.

Centralia, WA 98531

Pam@CompPrime.com

360-520-2980

9 August 2012

Our Story for your Draft Report dated 16 July 2012

What is special about the Newaukum River?

Our section of the Newaukum River is close to I-5 and Chehalis but still rural in nature.

What would I highlight to an out-of-town visitor?

This is the place to be if you like a rural setting. It is complete with a dairy farm, a beef cow ranch and a meandering river with fish in it. Bald Eagles nest in the area while Blue Heron, doves, killdeer, rabbits, coyotes, songbirds, and other wildlife honor us with their presence. Hay fields dot the roadsides. It is peaceful and quiet at night. Vegetables and fruit trees are easily grown. It is a natural country setting.

What do I see as the future of the area?

The major commercial development will continue to be along I-5. We should be left alone since we are not in the UGA but are in the floodplain.

What are the strongest memories of the major floods over the past two decades?

Being prepared every year for a flood lessens the consequences. Seeing a 20 foot long 2 foot diameter log float along Hamilton Rd 20 feet from our house. Using water to clean out the silt left from the flood waters from all the out buildings. Keeping the two submersible pumps in our basement running continuously for 35 hours to keep the water level to 1 foot in our daylight basement when the flood waters outside were at eye level on the basement windows. We have never lost electrical power or telephone service. Using our rowboat to take tons of grass and weed debris off the New Zealand fencing around the pasture. Having to journey to the carport to feed horses standing knee deep in flood waters for two days. Discovering that the fast flowing flood water current picked up part of the asphalt roadway by our house and deposited it ten feet inside our pasture. Being able to share the experience with each other.

Tell us more

My wife and I have lived here for 26 years. We have had a flood on the Newaukum River by our location every year. Some are minor Phase I and Phase II while 1990, 1996, 2007, and 2009 were major. All are still minor inconveniences when compared to the beauty and peacefulness of the area at other times. Come by in the spring, summer, or fall and see what the area looks like and everything that is growing. We are prepared every year for flooding. This minimizes the effects. We are able to have farm animals and tend to our vegetable garden and fruit trees. It is still country living. I would like to make some observations:

As I have stated at meetings and in writing before, I feel a dam on the Upper Chehalis River is not the correct choice because it would be stationary on the Upper Chehalis River. You own draft lists 3 examples and Larry Karpack's presentation at your meeting on 14-15 June 2012 showed 10 examples of major rain events. They show that major rain events are scattered all over the Chehalis River Basin. Dam proponents have not addressed this issue. Even if the majority of the rain event occurred behind the dam site, the dam would be less effective the higher the retained water level was at the beginning of the rain event. The dam would be useless if the rain event was below the location. This is my major objection. The cost is very high with or without hydro and as stated above; it may or may not have any effect on flooding downstream. You must also add to the cost any mitigation projects that would have to be accomplished such as for fish habitat as a dam would permanently alter the land and river

downstream. Now add the fact that the town of PeEll is only 2 miles downriver which means any breach on the dam would give the town no time to evacuate. The Chehalis River Basin Flood Authority has over a hundred varied projects on their list that are scattered throughout the Basin. I would rather see ALL of them completed FIRST. Natural projects like the Horseshoe Bend (Oxbow) that the Chehalis Tribe funded on the Newaukum River in 2000 to temporarily store flood water would be my first choice. Another natural project not even listed but that used to be the pet project for the Lewis County Government when the COE Twin Cities Project was proposed is the Hamilton Meadows Project. Unlike the Scheuber Road Bypass, this project would temporarily store flood water next to State Route 6 and then release it after the river level went back down. I would like to see any project that works with Nature instead of trying to conquer it. Anyone can look at our land at 470 Hamilton Rd, Chehalis, WA to see natural ways to temporarily store flood waters. I also hope that more wetlands will be established throughout the Basin as another natural way to absorb the flood waters.

-Glenda Smell

Alternatives Draft Report.

So now what do we do about this flooding problem. Sounds to us like this problem has been getting worse and worse. Should we continue with practices that contribute to the problem or start fixing some of them???

After reading your report we have come to some conclusions.

First a “Basin Wide” solution does not nor will ever mean focusing on the twin cities area. Though this area has its fair share of problems they are only part of the solution.

Second, a dam, really??? We are in an era of dam removal not dam creation. Plus in “potential concerns associated with the water retention facility” you don’t list certain problems such as:

- Large amounts of mass wasting deposits from the 2007 floods still exist upstream and the sediment and gravels associated with those deposits are slowly being carried down stream. Eventually, a facility will fill up with sediments (like Mt. St. Helens first diversion dam).

- Dams prevent sediment transport which can have dire effects on downstream habitat (see first bullet).

- Dams reduce flows and limit downstream transport of sediments, which effects a rivers carrying capacity for flood waters. For example, the North Fork Cushman dams effect on the Skokomish River contributed to the build up of gravels downstream, gravel bars are higher than the river’s flood plain and aggradations of sediment and gravels cause the river to go sub-surface during summer low flows which reduces fishery potential. The Skokomish River is the most flooded river in the state (dams where the problem—not the solution).

- What about an earthquake? A recent report suggests that we are overdue for a 8.0-9.0 magnitude earthquake by about 500 years. A dam is defiantly not worth the benefits of flood relief if it bursts and a 30ft wall of water heads down the valley. Does your cost/benefit analysis factor that in???

You state, a large amount of mitigation will be required for a dam. Why not mitigate without making the dam! Why don’t you get rid of fish barriers that restrict the flood plain and increase the potential of flooding. Set back levees allowing a large flood plain in the twin-cities area might help!

Still, why build more levees at all? There are plenty of examples that show how levees fail in their initial purpose, flood control. Often, gravel will fill the stream or river channel between the levees. So, many times a river will be dredged causing additional sediment to fill the channel after dredging (a continual process which ultimately cost thousands upon thousand’s of dollars). Or conversely—no dredging occurs and the river elevates itself above the flood plain which causes the need for a higher levee to keep the river within it’s channel. We have seen how well that works in the massive flooding in the Dakotas where levees elevated above agricultural land and cities broke causing massive damage to crops and entire cities. In our area, the Skokomish River has had flooding problems for many years. The Skokomish Tribe

believed the best way to reduce flooding was to remove existing dikes in the estuary, removing confining bridges and connecting wetlands which would allow flood waters to spread out and move faster out of the system. It seems to be working! So, how about letting the flood plain be a flood plain, move the people out the best you can and remove blockages and other impediments to the river, like the Skokomish Tribe has done, except they didn't have a Flood Authority. The Skokomish River has a committed Skokomish Watershed Action Team made up from the local community, Tribal, and county members, working on programmatic solutions for the whole basin (without taxes).

Basically what we are saying is "Local Projects and Programmatic Approaches: Another Way" is the way to go for the whole basin. It adds up,! Doing the right thing for the watershed is not constricting and damming.

Last, but not least, we need better forest practices. Remember what caused the massive landslides in the upper Chehalis? Rain of course--but specifically in the Chehalis headwaters, 1,614 landslides were considered to initiate off of managed forest lands: 547 in clear-cut's (0–5 years), 104 in young stands (5–15 years), 403 in sub-mature timber (15–50 years), 0 in mature timber (50+ years), and 560 near forest roads (DNR OPEN FILE REPORT 2008-5).

Thank you for the opportunity to comment. Please include this in the final Basin Flood Mitigation Alternatives Report.

Sincerely,

-Jarred, Kim and Ron Figlar-Barnes

I write to you today regarding the flooding that affected my family in December 2007. We were woken up very early in the morning from a friend of ours that lived on Ceres Hill in Boistfort asking if they could come to our home with their children to escape the water approaching their house. It was quite a startling phone call but it did nothing to prepare us for the nightmare that would descend upon our life approximately 6 hours later. In between that phone call and 2:00 p.m., we managed to evacuate our dairy calves from their hutches (they would have all perished), disconnect and move milk pumps to "higher ground" (not high enough), chain our propane tank to concrete posts, and evacuate our 3 children to a different location. We watched as the water entered our home at about 4:00 p.m. and the water leave our home at 7:45 p.m. My husband, hired hand, and myself slept in the attic of our residence, listening to the evacuation helicopters fly the valley all night. We woke up to a nightmare, a nightmare I never want to repeat. Through the generosity of family, friends, and strangers we were able to rebuild our home and dairy.

I share this story because flood mitigation is crucial to the survival our our dairy, our family, and our community. We need action now and we need to look at all options. We live in the Upper Chehalis River Basin. The most logical flood mitigation solution for our area in Adna is the water retention project above Pe Ell. Any of the other levy solutions proposed so far will do nothing to help our area. In fact, it will probably make our flooding worse. I understand this will not help in the lower part of the basin, that is why I ask the Governor to embrace the plans that includes several different components. I come from an area that has used several different options together to solve flooding (Napa, California). I know by now the Governor must understand there is not a "Silver" Bullet that will solve every issue and area of flooding in the Chehalis Valley. Please include the Water Retention Project above Pe Ell as a critical component of the flood mitigation project. My family, my 3 children, my dairy, and my community can not live through another catastrophic flood like December 2007. I thank you for your time and look forward to hearing from you. If you have any questions, please do not hesitate to contact me. I can be reached at 360-748-7011.

Michelle Schilter

Sun-Ton Farms

Adna, Washington

Chehalis Basin Flood Mitigation Alternatives Report, draft July 16, 2012

Ecology comments 8/14/12

Priority flood hazard mitigation projects

The Chehalis basin will continue to flood on the mainstem and tributaries and, as the report states, it appears that frequency and magnitude of floods are increasing. Current floodplain management science prioritizes methods that are generally non-structural and have multiple benefits to the watershed. Ecology favors this approach along with small capital projects targeted at localized problem areas.

The report uses the terms "flood mitigation" and "flood hazard mitigation" but the distinction and meanings need clarification. "Flood mitigation" may suggest that we could make flooding "go away." However, there are no projects that exempt areas from flooding. For example, some proposed projects focused on the mainstem may reduce impacts to some areas, in some situations, while providing no or minimal benefits to other areas of the basin - notably tributaries, including most of the South Fork, Newaukum, and major rivers in the lower basin.

"Flood hazard mitigation" recognizes natural watershed processes; it is based on the premise that it is most beneficial in some situations to move the water away from people, in others to move people away from water.

To move water away from people, current floodplain and watershed management science prioritizes methods that enhance natural functions such as:

- programmatic and regulatory measures
- restoring watershed functions, including wetlands and upland tributaries
- restoration of riparian zones and reconnecting flood plains
- improved forest management, especially forest road restoration.

To move people away from water, it may be most cost-effective to use early warning systems, buy-outs, flood easements, and raising houses.

The modern floodplain management, watershed-wide methods we prefer:

- offer a reduction of flood impacts to critical areas on the mainstem and on tributaries
- are more sustainable, providing a better cost/benefit ratio up-front as well as in long-term maintenance costs
- are adaptable to changing needs and conditions
- can be funded over time and distributed throughout the basin

- have multiple benefits to overall watershed function including improved groundwater recharge, more stable and predictable geomorphologic processes (e.g., erosion, aggradation, and impacts to Grays Harbor) and proven benefits to fish and aquatic ecosystems.

Information contained in the report

General comments:

1. Characterization of the 2007 flood and storm: The report should note that there is disagreement about the 100-year design flood used in the analysis. Ecology's analysis shows that floods at Grand Mound are associated with high flows both at Doty and from the Newaukum River. The methodology used for the current 100-year flood biases flow to the mainstem above Doty. The report should clearly explain the differences between calibration storm events and the design storms, and limitations and biases of each.

Ecology recommends that a second design flood should be developed for a storm focused predominantly on the Cascade foothills rather than the Coast Range. Otherwise designs of downstream projects could be missing the potential impacts of a storm that is not consistent with the current design storm.

2. Retention project compliance with the Clean Water Act and State Water Quality Standards: The report makes no mention of these requirements. There are separate concerns for upstream impacts (the reservoir) and downstream impacts (below the dam).

Above the reservoir are areas that have been designated for salmon spawning in the State Water Quality Standards. From a regulatory perspective, how to remove existing uses (including salmon spawning) from a waterbody is unclear and a regulatory pathway may not exist. Normally, to meet Clean Water Act requirements a project would have to show that it would not impact the current designated uses of the waterbody. Off-site fishery enhancements cannot be used as mitigation for loss of an existing use. How the proposed Chehalis River dam project would address this issue is uncertain.

Below the dam, Ecology's analysis shows that water quality standards for dissolved oxygen and temperature are likely not to be met. The timing and severity of the impacts would depend on the final design of the reservoir, especially the depth of the outlet, and how the dam was operated. The design and operation of the dam will have to ensure that standards are met downstream. How this would be accomplished has not been determined, although it will likely add to the costs of the dam.

One key limitation is the need for a numeric model of basin hydrology to support the hydraulic model,

identify gaps in the understanding of basin hydrology, and aid in future decision-making.

3. Cost/benefit of the dam: The disparity of opinions and need for better information regarding the projected cost of the dam is not adequately characterized in the report. A number of potentially significant cost considerations have been raised in response to the Phase 2B report (Economic Feasibility), in subsequent studies, and in public comments. These considerations regarding the existing, conceptual cost estimates for the dam should be acknowledged in the report:

    - Water quality and Clean Water Act compliance
    - Additional construction and operation costs for dam hazard mitigation due to proximity of Pe Ell
    - Lack of detailed assessment of the dam site including key factors such as stability and haul distance to suitable construction material
    - The "life cycle costs" of a dam including refined operation and maintenance (with fish mitigation and sediment management), as well as decommissioning of the structure at the end of its useful life. (This life-cycle consideration should be factored into cost analyses of all capital projects.)
    - Updated fish mitigation construction and operating costs.

In general, the report seems to overemphasize the possible benefits of the proposed dam and underestimate the possible costs in dollars as well as impacts to watershed functions. There remains a great deal of uncertainty about both.

4. Limitations to the modeling approaches: During review of the hydraulic modeling, Ecology identified a variety of limitations and concerns with the modeling. We recognize that this hydraulic model is a definite improvement over past efforts. However, the report should recognize that the model still has large areas of uncertainty and inaccuracy and that additional improvements should be considered for the future.

5. The report could better acknowledge the fact that the problems in the lower basin are less well defined than in the upper basin. Without this, the need for a solution doesn't seem well supported.

Specific comments:

(*underlined language is suggested add)

1. Page 4: In introducing the Fish Impact Study, take a more even-handed approach. Along the lines of: "According to (the study),* a dam may have mixed results for salmon species in the

basin. A dam could provide..."

2. Page 4: Add available cost information, to make the section on the water retention project parallel with the others in this section – such as: "Conceptual cost estimate for construction of a multi-purpose dam is $245 million. This estimate is based on preliminary information. Potentially significant cost considerations have been raised during studies conducted after the preliminary cost estimates, and in public comment."

   On page 49, please include a summary of factors that could increase cost of the dam project as we have outlined above under "cost/benefit of the dam" in General Comments above.

3. Page 5, bottom of page: Bullet list of Corps options uses a set of terms that are meaningless to the average reader. It would be helpful to briefly describe what these are (i.e. General Investigation, General Reevaluation Report, etc.)

4. Page 7 Combo 2: "Because of the dam, Combination 2 would provide significant flood mitigation benefits in the *lower South Fork Chehalis and throughout the mainstem Chehalis….." There is emphasis in the report on the importance of the Boistfort Valley as an agricultural area – for example, page 32 – but our understanding is that the dam does not protect all these areas.

5. Page 7 Combo 3: Suggest this be revised to ensure clarity: "Outside of the Twin Cities area Combinations 2 and 3 would have very similar benefits to each other, with substantial water surface elevation reductions in most locations *in the upper and middle mainstem."

6. Page 8 and page 60 "Local Programs and Programmatic Approaches: There seems to be an erroneous distinction being made between structural options and programmatic approaches: "This kind of approach would be the less expensive to implement; *however the risk of flood damage to existing development in the floodplain would remain*." No project can eliminate the "risk of flood damage to existing development in the floodplain." And programmatic actions such as elevating houses and building critter pads can directly reduce the risk of flood damage to existing development. A more accurate statement would be, "This kind of approach would be implemented and funded over time throughout the basin. The scope of such an approach, as well as the associated flood hazard reduction benefits and costs, have not been evaluated."

7. The summary of hydrology on page 21 creates a somewhat inaccurate impression about how floods can occur in the basin. A large flow at Grand Mound can be predominantly from the Cascade foothills (Skookumchuck and Newaukum) or from the Coast Range (above Doty and S. Fork). Flood events have occurred that were predominantly from either of these two areas. (The percent of flow from Doty for all Grand Mound floods ranges from 17% to 40%, with 2007 as an outlier at 88%.) To focus solely on flood events focused on the headwaters above Doty

introduces a bias that may neglect the impact of the significant flood events that focus on the Cascade foothills. The basin is large and complex enough to need multiple design storm events.

Here is some suggested revised language:

a. Flood events at Grand Mound are generally a combination of high flows from the Coast Range (mainstem above Doty and the South Fork) and the Cascade Foothills (Newaukum and Skookumchuck Rivers). Floods generally vary from being roughly two-thirds from the Coast Range to two-thirds from the Cascade Foothills, including any proportion in between.

b. The 2007 flood event was an extremely unusual event with unprecedented flows concentrated to an extreme amount over the Coast Range.

c. A large flow at Doty or a large flow in the Newaukum River are reliable (although not perfect) indicators of a large flow downstream at Grand Mound.

8. Pages 42 and 89 conflict in reference to which communities are considering applying for the FIRM Community Rating System. Page 42 says Grays Harbor is considering applying, 89 says Grays Harbor and Napavine. Napavine does not participate in the NFIP at this time so cannot apply for the CRS.

9. The "Potential Programmatic actions" on page 47 and the discussion of Riparian restroration on pages 93-94 should also refer to the restoration of wetlands and floodplain storage and connectivity that can provide floodwater storage and habitat benefits.

10. The analysis of the dam on pages 48-49 should also mention uncertainty regarding Clean Water Act compliance and the adequacy of the design to protect Pe Ell.

11. Figure 5 on page 59 - Are combination A and combination 1 the same thing? It would be useful to understand the difference between 'significant' flood mitigation, 'some' flood mitigation and 'generally' protected, etc.

12. The summary on page 72 is misleading.

a. The last sentence of the first paragraph under "Water Retention Project On The Mainstem Chehalis River" states:

"A single-purpose flood storage structure has also been examined, but does not have the added benefit to fish and wildlife of providing additional water flow and cooler instream temperatures from water pulled from deeper parts of the reservoir during the summer months, to mitigate environmental impacts."

We suggest:

"A single-purpose flood storage structure has also been examined. While a single-purpose structure may not have the potential environmental benefits of the proposed multipurpose structure, it may help reduce some of the potential impact."

b. Under the fourth bullet, releases from the dam can result in lower oxygen levels. Therefore this statement should say: "The Anchor QEA model predicts flow augmentation in the summer months can enable higher concentrations of dissolved oxygen at times, depending on how the dam is constructed and operated."

c. Under the fifth bullet also is inaccurate. This statement should say: "The Anchor QEA model predicts the additional 65,000 acre-feet of storage can be used for controlled release in the summer, which may reduce water temperatures at times, depending on how the dam is constructed and operated."

13. The "potential concerns" on page 73 are incomplete. The following should be included:

    a. The inundated area of the reservoir will eliminate salmonid spawning areas, which creates challenges both directly on the fishery and also for Clean Water Act Compliance.

    b. The Anchor QEA model predicts that dam releases at times may reduce concentrations of dissolved oxygen, depending on how the dam is constructed and operated. These reduced oxygen levels may not be incompliance with the State's Water Quality Standards.

    c. The Anchor QEA model predicts higher water temperatures at times, depending on how the dam is constructed and operated. These elevated temperatures may not be incompliance with the State's Water Quality Standards.

    d. Construction and operation of the dam to protect high hazard conditions because of the downstream proximity of Pe Ell may significantly increase the costs of the dam.

14. The last sentence on page 73 is unclear. Should the reference to the airport area be to I-5? In other words, would additional localized improvements be needed along I-5 to protect I-5, not to protect the airport area?

15. Page 96 - third sentence in the first paragraph. It is the Chehalis River, not the Mary River, that will cut through the oxbow and head directly at Mary's River Lumber in Montesano. In the fourth sentence (1st paragraph), it is unclear and counterintuitive how removing levees could <u>prevent</u> a river from moving. Should it state that removal of the levee would <u>allow</u> the river to meander? In the last sentence of the second paragraph, the Department of Ecology also needs to be involved in bank stabilization proposals.

Page	Line, paragraph #, and/or other reference	Checker / Reviewer Comment
5	fourth bullet bottom of page 5	Replace with "Conduct a limited Post Authorization Change Report as in bullet three, and concurrently proceed forward with a basin wide flood risk management study under the Chehalis Basin GI."
	References to "Corps levee project"	The "Corps levee" project is an inaccurate description. The project authorized in 2007 also included improvements to the Skookumchuck Dam. Suggest replacing this phrase with "the Corps of Engineers Centralia Flood Damage Reduction Project (aka the "Twin Cities Project")" initially, and as the "Corps Twin Cities Project" in succeeding occurances.
52	Other Alternatives that Could Provide Flood Relief and Protection in the Basin, first sentence	Same comment as page 6.
47	fourth bullet from the top	Replace "Raising/improving the" with "Constructing new levees and raising and improving the existing"
49	First paragraph in the section titled " The Current Alignment and Design . . . "	The timeline from 1980 up to now is complex. The plan referred to in the text presented in 1980 was indeed a levee plan, but that was revised following further study at the request of the city. The revised plan presented in 1982 and authorized by Congress in 1986 was only to add flood control to the Skookumchuck Dam. That plan was was later found to be uneconomic following further study, and terminated in 1992. See chronology Table 1-1 and Section 1.6 in the Corps of Engineers General Re-Evaluation (2003): http://www.nws.usace.army.mil/Portals/27/docs/civilworks/projects/Centralia%20GRR%202003.pdf

26	Second paragraph, second sentence.	change ". . . total cost of the delays . . . " to "total cost of freight delays".
26	Second paragraph, third sentence.	change to "This figure includes estimates of freight-related business losses and associated reductions in economic output, as well as an estimate of statewide economic impact, such as employment, personal income, sales tax receipts. It does not include local economic impacts, impacts due to passenger vehicle delay, or roadway maintenance and repair.
77	Same comment as Page 49.	
78	Bullet 2 at the top of the page	Suggest deleting reference to 100 year level of protection. That was true at the time, but the 100 year level has changed since then, so the reference is ambiguous.
78	Bullet 4 at the top of the page, first sentence	Add "with an option to increase capacity to 20,000 acre-feet upon further investigation and at the sponsor's option."
78	Bullet 5 at the top of the page	Suggest adding date of the estimate (January 2012).
78	First bullet under "What are the potential benefits of the Corps levees project?", last sentence	Suggest removing or clarifying this sentence. It seems the benefits of a flood protection measure would normally be stated in the case in which its assumed to not fail. Otherwise, you would have to add this kind of disclaimer to the statement of benefits for other project too. In the case where we know the analysis is showing the levees are operating outside design limits, which may be the case here, then suggest stating that the protection is contigent on this condition.

78	Second bullet under "What are the potential benefits of the Corps levees project?", last sentence	This statement is imprecise - no project protects all storm events. Suggest adding more context like "but not in all storm events examined."
79	third bullet under "What are some of the major implementation issues of the Corps Levee project?"	Suggest adding another sentence: "Eventually, the dam would need to be in public ownership to allow for the Corps to invest in flood control improvements, so a public agency would have to be identified who would be willing to own and operate the dam."
231	Corps Twin Citiy Levee Project section	Title should be consistent - "Corps Twin Cities Project" is the most accurate. See other comments about improving the project description elsewhere.

Mr. Kramer.

As you're aware, Wild Game Fish Conservation International (WGFCI) is the only non-governmental organization to actively participate in the ongoing efforts of the Chehalis River Basin Flood Authority.

As such, we've expressed several concerns and clarifications during flood authority meetings, flood authority-sponsored public meetings, meeting with our elected representatives, and via local press. In 2010, WGFCI submitted two resolutions to the Flood Authority:

1. Immediate and permanent moratorium of steep slope, clear cut logging and an immediate and permanent moratorium on floodplain development

2. Flood Authority-sponsored studies to be peer-reviewed by University of Washington/Washington State University

After considerable participation with the Flood Authority and review of countless Flood Authority-sponsored studies and reports, it is our opinion that the proposed multi-purpose dam (water retention and hydropower) to be sited in the headwaters of the Chehalis River near Pe Ell would not provide basin-wide flood damage reduction, nor would it keep interstate 5 passable. This multi-purpose dam would be extremely expensive, would require decades to construct given the need for additional studies, lengthy permitting processes, expected litigation, would irresponsibly place residents and businesses in harm's way and would devastate many Chehalis River basin fish and wildlife populations and their habitats.

Our concerns regarding the proposed multi-purpose dam in the headwaters of the Chehalis River are reinforced in the recently completed "Chehalis Basin Flood Mitigation Alternatives Report":

- **"Major flood events can be isolated on a single tributary or set of tributaries, and not affect the whole Basin"** - Throughout the Flood Authority meetings and processes it's been documented that the proposed multi-purpose dam would capture approximately five percent of the basin's stormwater thus leaving ninety five percent in a 2007 type storm to impact downstream residents and businesses.

- **"A dam on the Chehalis Mainstem provides the most flood mitigation throughout the mainstem Chehalis; it also presents the most uncertainty and potential risk to natural resources particularly salmon and steelhead and has the highest cost of those projects that have been estimated."** – Residents and businesses in the Chehalis River basin deserve and expect flood damage protection via one or more effective projects that also protect the region's highly-prized natural resources not a project that is the least likely to protect them while risking natural resources.

- **"A very different approach than reliance on major construction projects such as in the three project combinations described above would be to leverage local projects to remove key obstructions in the floodplain and use programmatic changes to address the flood damage. Such an approach could include widening of culverts, bridges, and dikes and levees that cause localized flooding, prohibiting any new development in the flood plain, raising or buying out structures already**

in the flood plain, improving other land use management practices, and improving forest practices to incentivize longer logging rotations, completing smaller construction projects in localized areas such as the Bucoda levee, and the Centralia-Chehalis airport levee, protecting livestock and farm investment with farm/critter pads, and ensuring effective detour routes around Interstate 5 to accommodate periodic closures during flooding."

Sincerely,

Bruce Treichler
James Wilcox

Wild Game Fish Conservation International

My wife and I responded to the call for firewood for flood victims of the 2007 Chehalis River flood. We hauled two trailer loads of alder donated by a local mill, Cascade Hardwood to the Adna high school. Then we decided to drive with the trailer over the hill to Boistfort to see if we could help somebody there. What we saw was sobering. Flood water had receded by then but most houses were filled by two to three feet of mud. There were tractors inside houses hauling out mud and we asked if we could help haul it away. House after house was filled with mud from Boistfort to State Highway 6. But they were also filled with volunteers shoveling, hauling and cleaning.

The one sight that still sticks with me was that of a man who must have been in his eighties walking through his field pulling fence posts upright and removing debris by hand. He looked so helpless which all the people in that valley wee against the force of the flood.

We need to minimize the damage before the next big flood. Levees along I-5 won't do anything to protect those people we helped that day. Water retention will do that and It needs to happen soon.

Ben M. Kostick, CPA
176 N.E. School St.
P.O. Box 721
Chehalis, WA 98532
360 748-7101 Phone
360 748-7861 Fax

I am submitting this story for my 85 year old Mother (Gladys Oravetz) who has lived in the same house since 1971. This is the first and only home she and my Dad ever owned. When the water started rising I called and told her I thought she needed to leave and her feisty response was that she would put her boots on and she would be fine. Needless to say, the fire chief evacuated her from her home and the water rose way above grandma's boots.

Mom lost everything in her home that was under four feet. Her house, was ripped apart all the way down to the studs, all the sheet rock, insulation, carpet, furniture, her appliances, bed, heating system, everything was gone. In addition, family pictures, books, music albums. The sewing machine my Dad bought for her, gone. The scrapbook of their life together all the way back to WWII, gone. Her car also was gone. But the worst thing that was taken from her was her sense of her own history, and her feeling of security. She still lives in fear when it rains hard.

I had only seen my mother cry one other time in my life, when my Dad passed. This was so traumatic for someone of her age to come back from. She has very limited income, and her physical ability to do things to put her home back together was limited as well. This resulted in some pretty traumatic times for all of us.

Kind neighbors loaned her a 5th wheel to live in while her home was repaired, it took three and a half months, but we moved her back in March.

The flood took a lot of things from my Mom, but it took part of her from me as she has never been the same since.

It is my hope that no one ever has to go through anything like this again. People should be able to feel secure in their homes and not be afraid when they hear the rain on their roof.

Sincerely,

Bobbi Fenn
1366 Wildwood Road
Curtis, WA 98538

Comments on the Chehalis Flood Mitigation Alternatives Report

1. On page 3 is the statement that a dam would lower flood elevations by " almost 2 feet at Montesano." This statement is unclear as different modeling assumptions produce different estimates of the flood elevations throughout the basin. In reviewing Appendix F, we could find only one instance where the flood elevation would be reduced by this amount. This is in Table 8 in which a comparison is made between a 100-year flood and the 2007 flood. Given the challenges of understanding the 2007 flood, i.e. gages disappearing and the impact of down timber, we suggest that this estimate may well have a large error factor. We suggest that this statement needs to be highly qualified.

2. On page 3, reference is made to the Anchor QEA fish study. This study is problematic. There is barely a year's worth of data. Based on conversations with fish biologists our conclusion that this amount of data is not nearly sufficient. It does not take into account different water quality, water quantity, different return rates for salmon and other anadromous species over several years, nor does it include the wide range of salmon and other species that are in the Chehalis. The juvenile fish assessment project in Grays Harbor demonstrates the need for several years worth of data. This study, done by the Wild Fish Conservancy, is beginning its third year. When asked how many years worth of data were essential to reaching reasonable conclusions, the answer was a minimum of three years with the possibility that a fourth or even a fifth year was necessary.

3. During the workshop, three options were presented to the Flood Authority. It is not clear where these came from and we have heard Flood Authority members make the same comment.

4. On page 7 the reference to the cost of a dam states there is a $245 dollar estimate for the dam. This significantly underestimates the cost of a dam given the need for additional studies, lengthy permitting processes, likely litigation, and features such as fish ladders that are not included in the design to this point.

5. Again, on page 7, the statement is made that a dam would provide significant mitigation benefits in the South Ford Chehalis. There maybe some benefits to those living and farming on the south fork, but some specificity about those benefits would be beneficial.

6. On Page 8, there is a section entitled "Local Projects & Programmatic approaches: Another Way". At the end of this section this statement is made "This kind of approach would be less expensive to implement; however the risk of flood damage to existing development in the floodplain would remain." This statement, to a greater or lessor extent, can be made about any single project or any combination of projects that have been or could be proposed. It seems to us that this point should be made clear at the beginning of the report; there is no silver bullet.

7. On page 9, there is a bullet list that defines a Basin-wide solution to flooding. The first two bullets are the same. For comparison, on page 52, where they are part of the same paragraph.

8. On page 23, the 2007 flood is characterized. We suggest something that is sometimes glossed over. Namely, this is the amount of debris and logged timber that came down from both the main stem and the south fork of the Chehalis. This should be discussed. From our perspective, this is one aspect of the 2007 flood that is difficult to estimate and model.

9. On page 52, at the end of the second to the bottom paragraph, you say the following "some participants, while understanding and supportive of the need to find effective solutions to the

damage flood causes to human communities, were very skeptical of a dam and concerned about the potential for it to adversely affect fish and other natural resources."

We are aware, that some refer to us as being more concerned about fish than people. This is exactly what this statement implies, thereby simplifying our (and others) motives and concerns. We do not pretend that we are not concerned about ecological damage, including to fish. However, we have stated any number of times that we are indeed concerned first about the residents of this Basin. There are a number of reasons to be skeptical about a dam. These range from the cost to the length of time it would take to build it and have it operational to the degree of effectiveness it would have in protecting people and reducing flood damage.

Thank you for the opportunity to comment on this report.

To Whom It May Concern:

Our names are Joe and Sue Rosbach and we live on my family's farm located at 128 Christin Rd., Chehalis and this is our story. My family purchased this farm in 1902 and have lived and worked here ever since. I am the third generation to live on this farm. We gave our two daughters each some land to build a home, just as my parents did for me and my Dad's parents did for him. This farm has NEVER flooded, some of the fields get standing water in the winter, but NEVER has it EVER flooded the homes or barns. In fact, even with the close proximity to the Chehalis River, this land was never in a Flood Zone. We were on the high bank of the river, so flooding was never a real concern.

The morning of December 3, 2007 about 6 am, my nephew called and asked if he, his wife and 10-month old baby could come over. They live about ¼ mile from us. When I asked why, he stated that the water from the creek was really high, in fact it was at the bottom step of his house. He was worried. We said yes, come over. He then called back and said he could not get his car out of the driveway and could Uncle Joe please come and get them. Joe immediately took off in his pickup to get them; it was still dark outside. To his surprise, he could not get to the end of our road, so he came back and got a tractor – went to their house, picked them up and brought them to our house on the tractor. When the sun came up, we could see how high the water had gotten. At that time, we still were not real worried – it had never flooded before – and in 1996, which was the worst flood to date, the water was close to the river bank but did not overflow and we did not encounter anything more than water in some of the fields, of course many of the surrounding roads closed due to water over the roadway, but that is common during a flooding event. As the day progressed, we knew this was different. By 10 am the stop-sign at the end of the road was covered by water; by 10:30 am my nephew's house was jarred loose and started floating down the road. Do you have any idea how profoundly sad it is to watch a young couple lose everything they own AND watch the home float down the road, breaking apart along the way? It is NOT something I ever want to encounter again – there are no words that can console them, there are not enough hugs that can take away their pain. It was simply awful.

Still, the water wasn't close to our house and I had been calling both daughters, who live closer to the river, and they were watching the river rise but not overflow. We were trapped, as all access to our house was shut off with flooding and the roads were not drivable. I kept in touch with my daughters and brother with cell phones (thank God). As the day progressed, the flood waters creped closer and closer to the house and barns. Joe was busy moving cars, trucks, cattle and as much equipment as possible to higher ground, just in case. I moved things in and around the yard and garage, walking in waist deep water – watching rats and mice float by. You do what you have to do. My brother wanted to come get us by boat, but the water was too swift to attempt it.

It was about 3 pm that something significant happened and we surmised this is when the Chandler Bridge broke, sending the water down Leudinghaus Road; the water was coming at us very quickly and starting to come up the steps to the house; it is at least 4 feet above ground. I got as much stuff upstairs that I could before the flood waters entered the house. We got nearly 2 feet inside the house, 6 feet in the garage. Just before this happened, my brother (who also lives on a portion of the farm) stopped by my daughter's house to tell her to evacuate and get to his house (he lives on a hill). Her husband was at work. She went back in the house to get the dog and keys, dropped the keys in the water, so she jumped in the truck with my brother. He then went to my other daughter's house and told them to evacuate. My son-in-law was home and was going to start moving things, so my daughter and 3 kids, and neighbor Nikki and 2 kids went with my brother to his house. Troy, my son-in-law and neighbor Bill started to load stuff into vehicles and drive to my brother's house. On the way, another neighbor was trying to move horses and one was hung-up on barbed wire with the owner slipping under water so they stopped to help. They got the horses and the neighbors to my brother's house, but in the meantime, the floodwaters came

quickly. The boys were lucky they left when they did; their vehicles were flooded. They all knew that their homes were flooded, but they were safe at my brother's house. There was nothing we could do – we were isolated in a flooded house. About 7 pm my nephew, wife and baby were picked up my helicopter and taken to town. We had no provisions for a 10-month old baby and her family wanted her closer to them. It was a sad goodbye; we had just been through something traumatic together. We stayed at the house. The waters then quickly receded; at least it was out of the house, leaving a wet, silt-y mess. We went to bed, not knowing what we would find in the morning, and cried. We heard helicopters all night.

The roads were passable by the next morning and we went directly to my brother's house; at the bottom of his driveway we had to walk in about 2 feet of mud/muck, a residual of the floodwater, to get to the house where not only our girls & families were staying but many of the neighbors too. I can't remember the count, but I think there were 20+ people there. It was a VERY emotional reunion; they were worried about us because we were trapped and we were worried about them, because we knew if we had that much water, they had to have more…..

The adults went to their homes, I stayed with the grandkids. It was HORRIBLE. My oldest daughter's house had about 5 feet of water in it, with about 2 feet of mud. Everything was ruined, everything was lost. My other daughter's house had about 6 feet of water in it, with about 3 feet of mud. Everything was ruined, everything was lost. All of their vehicles were flooded and lost. The neighbor's house (that we lived in for 33 years and sold to them a couple of years before) had 8 feet of water in it, with about 3 feet of mud. Everything was ruined, everything was lost. They all came back to the house in shock – they had lost everything…..and they had no home to go home to. Thinking back, I think all of us were in shock during those first few days – not really comprehending what had happened, but knowing what needed to be done.

We talked with our daughters, husbands and grandkids to figure out what we were going to do; we all had our own problems. Our younger daughter, husband and dog lived with us for the next 6 months. Our older daughter, husband and 3 kids (the baby was only 3 months old) lived with his parent's during the week and with us on the weekends. We got busy tearing out the flooring and sheetrock of our house. They got busy first swamping out the mud, then tearing out virtually everything in their houses and started over. I could not bring myself to go see their houses for about a week; I knew that it would not be good, but I had NO IDEA how bad it was. We have a video that my son-in-law took those first few days, that I still have trouble watching. Their Christmas tree and ornaments were strewn, shoes, clothes and furniture were floating, appliances were tipped over and mud was everywhere. It was a long road to clean up and recovery. Since none of us were in a Flood Zone, none of us had Flood Insurance. FEMA gave each of us a little money, but it wasn't close to what we all had to spend to replace all that was lost. Financially, it was another hardship that none of us needed at that terrible time.

When I think about that terrible day, my first thought is about that 3 month-old baby. She slept in a cradle on the floor – if the flood had happened during the night, she would have surely drown. My next thought is I'm glad that my parents and grandparents did NOT live to see this terrible tragedy – it would have killed them. This farm was their pride and joy, to see it not only flooded, but strewn with garbage and debris; equipment ruined, fences gone, feed/hay lost. Really, for all the damage that this flood did to houses, barns, animals and equipment – we were lucky that no one died. The emotional toll is an unmeasured part of the flood. The kids' homes were completely destroyed – they lost EVERYTHING. I still cry when I think of what my daughters and their young families had to endure – it is not fair; I am so proud of them for the strength they have shown in rebuilding their homes and their lives.

Next, not only did my home, both daughter's homes and neighbor's homes flood, but I am a Vice President at Security State Bank and the Gold Street Branch and Administrative Building also flooded –

but that is another story. The water had no mercy. So, when I finally got back to work after dealing with my home flooding, there was more to deal with at work.

In conclusion, I know the only reason we flooded was because the Chandler Road and Leudinghaus Road bridges were dammed up with logs and mud that come from the hills. They finally broke, sending the water down the road at amazing speed and reckless abandon. The only logical solution to prevent another tragedy like this would be for water retention. It just makes sense to STOP the water BEFORE it comes down to destroy everything in it's path.

Melissa:

It is my understanding that you are seeking comment from people who experienced the 2007 Chehalis River flood.

I was a resident of the Boistfort Valley in a home that was flooded to a height of nine (9) feet. The second floor of the home was okay, but the first floor was entirely under water. With the rising water, I was "trapped" in my bedroom on the second floor with the family dog. The dog and I were rescued by boat, the boat owned by a local resident who, on his own initiative, was getting people out of their flooded homes, with help from emergency personnel.

We were taken to a building on the east side of the Chehalis River south fork bridge, where it was reasonably dry. There we waited until we were again rescued by Navy helicopters and flown to the Chehalis airport, then from there, taken to a Red Cross shelter set up at W. F. West High School in Chehalis.

What is clear from the experience is that nothing quite this devastating had ever happened before and, more to the point, no one who suffered through the experience wants it to happen again, ever.

I have attended Flood Authority meetings and have on occasion registered comment with that group. I have relocated from the Boistfort Valley to Pe Ell, where I am just as concerned about the possibility of another flood – perhaps even more concerned.

But, whatever my personal concerns or insights, the main issue for everyone is that something tangible be done about flooding. The issue does not need to be talked to death – it needs to be dealt with directly and expeditiously.

Unfortunately, there are some who, for political or ideological reasons, have absolutely no interest in solving the problem. We have seen this in the "battles" among Flood Authority members and the comments of un-elected bureaucrats who, because they are accountable to no one, can say whatever they like.

Let me state clearly that, so far as I can determine, the only workable, reasonable plan that has been put forth to deal with flooding is the proposal for water-retention facilities near the headwaters of the Chehalis River. The Corps of Engineers plan initially put forth is essentially useless; other plans to build levies that would only protect I-5 and nothing else are also essentially useless. There has been a great clamor that we need more plans. But, where are they? So far, five years after the flood, THERE ARE NO OTHER PLANS.

William G. P. Hunter
P. O. Box 314
Pe Ell, WA 98572-0314
360/291-3231 home

Comment on WSDOT Report:

Figure 1 on Page 41 depicts 2007 flood water 2-3 feet over I-5 and then depicts the effect of a dam where water is less than a foot over I-5. Page 23 of the draft Ruckelshaus report states that I-5 was covered by over 12 feet of water in places. This depth was consistent with reports in the Chronicle of depths over 10 feet.

If a dam would lower flood water from a future 2007-flood in Chehalis by only 2 feet as shown in Figure 1 on Page 41 in the WSDOT report, that would leave over 10 feet of water over I-5, not the less-than-one-foot shown in Figure 1.

The modeling shows the effect of a dam in a future 2007-flood to lower water approximately 4 feet in Chehalis and 3 feet in Centralia (see Ruckelshaus Report). Therefore, even with a dam, the existing elevation of I-5 would be covered by 8 feet of water in the Chehalis area, not the "less than a foot" shown in Figure 1 on Page 41.

The WSDOT report needs to address the "more than 12 feet of water over I-5," and then explain that if a dam lowered the water 2-3 feet, there would still be 8-9 feet of water over I-5. Figure 1 on Page 41 needs to be modified to be consistent with I-5 covered by 12 feet of water.

Thank you for the opportunity to comment.

Vince Panesko
2132 Harris Ave.
Richland, WA 99354-2021

Phone: (509) 946-1229
e-mail: vince@owt.com

Melissa,
Good morning. It appears comments from the WSDOT report are to be directed to you. After attending the DOT presentation last week discussing proposed options for I-5 flood protection, I have a few comments regarding options 3 and 4 for the express way and temporary bypass as presented by Bart Gernhart. This was the first time I was aware of these two proposed options. As for the creativity of the options we can certainly appreciate the options; however, the District is challenged with the options as they deal with one of our current projects. The District owns the property at Main and Quincy Avenues in Chehalis. The Tacoma rail track borders our property to the east. This is where the route for Options 3 and 4 were proposed. The District is currently is final stages of construction of a substation construction project on our property. This new DOT proposed route would encroach on our project as it is being built and would cost significant dollars likely well into the 100s of thousands of dollars to relocate electric facilities that would be impacted by such an expressway or bypass construction along the rail corridor. This would be a burdensome cost that should be placed on the District's customers.

Regards,

Daniel E. Kay, P.E.
Chief Engineer
Lewis County PUD
360.740.2435

Melissa:
I was told you wanted information as to how the 2007 flood affected the Boistfort Valley and its residents.

At the time of the flood, I was the Fire Chief for Fire Dist. 13. At about 2:30 AM, the morning of the flood, I got a phone call from Central Dispatch saying that PE Ell was getting a lot of water. We had not had that much rain in our valley and I was at a loss as to what to do with that information as it was still dark. I went on line to see what the river gauges were at that time. I was unable to get on line and chose to wait until daylight. Just before 7:00 AM we were toned out for a water rescue. As the Crews left for the call, I called my cousin at the upper end of the valley for a visual check of the river. He stated that they had not had that much rain but would check and call back. We returned to say the river was up higher than he had ever seen it and may loose his bridge. He did. I then called Emergency services and reported and told him to expect at least 2 feet more than they had ever seen. Just happened to be right on. Then I called KITI radio and told a friend there the same information. Since I was not an expert, he could not use my information. Now I am an expert because I have a county sponsored Noa radio. Go figure.

I put things up on the table and bed and left the house to report to the Emergency center. That is the procedure we teach out firemen. Get your family safe first so you can concentrate on the needs of the Department.

My house was built in the early 1930's and had never been flooded. We were 4 inches short of having 8 feet of water in the house. After the flood we removed over 50 yards of mud from in and under the house. It is a two story house of just under 2,000 square feet. We had no flood insurance because it had never flooded before.

We now know how high the river can get and can better prepare. We now have a new Doplar Radar system on the coast that can tell us of impending weather. We hope the river gauges continue to operate but with advanced notice of bad weather and internet viewing of the river gauges, we can get out safely. From my training and knowledge of the valley, I can safely say that if this event had happened in the dark, lives would have been lost. I don't think that is near the issue with current updates.

The problem as I see it on the Chehalis River is too much water in the winter, at times, and not enough in the summer. The only thing that seems to address this is "Water Retention".
That is a Dam on the upper Chehalis.

In past years, I have along with others, followed the crest of the river as it flows to the Pacific. Knowing what and when is not the issue. It is the amount of water and what it does.

The Chehalis has more rock and dirt in it as a result of the floods and is being choked by the invasive grasses. It does not handle as much flow as it use to. They were grasses introduced years ago the grew much faster than native grasses and they grow very well near water. These are facts that must be taken into account if we are to stop erosion and property loss.

I have moves 6 miles, up stream, from where I was before the flood. I am on Stillman/Mill Creek. Any of the Dams proposed will not help me where I live but they are the right thing to do.

My history is as follows: My grandparents (Mothers side) homesteaded on the upper end of the South Fork of the Chehalis. On my father's side, they did the same in the Adna area. My parents purchased the Curtis Store in 1948 when I was one year old. Other than three years in Portland and one in Vietnam, I have been there my entire life.

If you have any questions, please feel free to call.

Barry Panush
PO Box 54
Curtis, Wa. 98531
(360)245-2952 hm
(360)736-2952 wk

Jim Kramer, Chehalis Report Project Manager, Ruckelshaus Center

August 29, 2012

Dear Mr. Kramer:

My wife and I would like to comment on the Flood Mitigation Alternatives Report. We have been residents of Lewis County since 1980 and have lived in the West Side of Chehalis at 675 NW Saint Helens Avenue since 1992. The floods that we have seen have been devastating to our friends, neighbors and the community.

In 1996 and 2007 the Dillenbaugh Creek rose above the level of the Chehalis River, and came through the culvert under Main Street and also over Main street to flood the residences on Prindle, our back yard, the residences on Oregon, and then work its way down to the residences and businesses along Saint Helens and Maryland. The water subsequently rose until it could flow over the top of the center barriers of I-5. This was significantly higher than the maximum height that the Chehalis River reached.

The Chehalis River did not flow over the freeway and into this part of town. The water flowed in the other direction.

I believe that our back yard used to be a drainage to the Chehalis River for the local area, but since I-5 was built, that drainage is effectively dammed by I-5.

Obviously, any dikes added to protect I-5 between 13th Street and Chamber of Commerce Way, higher than the existing center barriers, will cause the flooding in this part of town to increase substantially. Our house, which has not been flooded in 128 years, would be susceptible to flooding.

For this part of town, it is imperative that measures to protect us from Dillenbaugh Creek are implemented. The most obvious would be to reduce the restriction of Dillenbaugh where it passes under I-5, and to provide dikes and flood gates to keep it from flowing north across Main Street. If anything could be done to improve the drainage of the West Side area underneath I-5, that could also help.

We would also like to comment on the proposed alternative express lanes or emergency bypass lanes. We highly object to these proposals. They would put a berlin wall through the center of our town. The lanes would not be attractive. They would add noise. We would be living underneath trucks looking down on us. Privacy and enjoyment of our houses and yards would be substantially reduced.

We are in favor of the upper Chehalis Dam proposal. It would be able to moderate the peak flows and reduce damage for the whole basin.

Sincerely,

Gary and Kirsten Klein, 675 NW Saint Helens Ave, Chehalis, WA 9853

I've put a lot of thought into how I want to share my flood story. It's tempting to emphasize only the emotional difficulty we've all faced, but I also think it is important to stress the value of water retention in mitigating future disasters.

I grew up in the Boistfort Valley along the south fork of the Chehalis. I am a landowner in the Valley, with plans to return there to raise my children. At the end of 2007, my husband deployed to the Persian gulf, and I returned to the valley to stay with my family during that time. I flew back to Washington the evening of December 3rd. I woke up early on the4th and looked out the window onto a completely different place from where I grew up. Despite the alien appearance of my childhood home, I soon realized that my parents received only a glancing blow from the flood at their house. That first day was spent restoring the destroyed water supply for the house and farm animals and clearing the "back road". This was necessary because my parents' driveway crosses a bridge, which had been washed out by the flood. (Ironically, mu parents would have been granted FEMA funds to replace the access to their house, but my father is a farmer, and so there is a business at the same address, precluding them from receiving FEMA funding. In case you wondered, bridges aren't cheap.) The next day we headed down the valley to check on my sister's family. Suffice to say, aerial pictures do not do justice to the horrible scene we saw. They simply don't provide enough vertical scale for the destruction. Landslides, ruined homes, wasted fields full of logs, dead animals in power lines, you name it, we saw it. And mud. Mud everywhere. It has taken years to repair the damage done to the land and homes, and we are still pulling sticks out of fields and finding deposits of flood mud.

As bad as the destruction was, over time I've come to realize that the human toll is far worse. I watched as strong, capable people were immobilized by fear and shock. That might have been the greatest gift brought by all the volunteers: action. We're the kind of people who will wake up and pitch in to help those who want to help us. My sister is still scarred, and scared every winter when the rains come. But she is still in the valley, carrying on the family's farming tradition. Perhaps most difficult for me is watching my father tell his flood story. It took me a couple years to realize that for him, the pain was in hindsight. We lost my brother when I was young. For my father, realizing how easy it would have been for him to also lose his oldest daughter and grandchildren still terrifies him.

This brings me back to the most important part of all this: action. While 2007 and 2009 brought unimaginable, record floods, it is conceivable that these events will become more commonplace. With climate change bringing wilder weather and irresponsible logging practices reducing nature's ability to mitigate these events (I have a degree in forestry, don't even get me started on how inappropriately the Willipa Hills are being managed), we have a responsibility to enact basin-wide relief. The only feasible solution is water retention. It is the only option that, quite frankly, has science on its side. It will reduce high water flow, improve fish habitat, and even more importantly, improve things for the entire basin. It is unbelievable to me that any solution that makes flooding worse for half the basin would be considered, which is what the other options would do. That is tantamount to placing a monetary value on human life, and then deciding a road is more valuable. Mind-blowing.

I urge you to remember that while economic impacts are significant, without the amazing, industrious, hardworking people of this state, those impacts are simply numbers. It is our citizens that make Washington worth living in, and water retention facilities will protect those citizens, their livelihoods and the basin.

Thank you for your time.
Kristie Swanson

This is a follow-up comment on the Kramer report. My original comments are included in the report. I saw nothing in the report or the recent WSDOT report to change my original opinion that water retention is the only project that will make a significant difference in flood levels for the entire basin. Those of us upstream from Chehalis will not see any appreciable benefit in terms of flood reduction in any other proposed plan. Retention helps us and everyone else. Retention also has significant other benefits to the area as well, in particular increasing water flow in the summer.

Thank you,
Dave Fenn
Boistfort Valley resident

Comments on the Chehalis Basin Flood Mitigation Alternatives Report, July 16, 2012 Draft.

Page 1: The first sentence states that “Flooding is a common occurrence in the Chehalis River Basin…” This sentence is not accurate. High water and lowland flooding is a common winter occurrence but floods causing major property damage are rare, e.g. the most recent being in 1990, 1996, 2007 and 2009.

It is inaccurate to portray flooding in the Chehalis River Basin as a common occurrence when there was no major flooding in 2011, 2010, 2008, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1995, 1994, 1993, 1992 and 1991.

Page 1: The Executive Summary fails to address the question of increased businesses, houses and farms in the floodplains (something we have political control over) versus those aspects of nature which we have no control over. As a result of ignoring this fundamental question, all of the possible governmental programs aimed at removing structures from floodplains are ignored. The report should have a new section which addresses all of the various government programs available to cities and counties to return floodplains to their fundamental use as floodplains, and to remove businesses, residents and all structures from floodplains.

Page 1. The Executive Summary states that “In 2007 and 2009, the basin suffered two catastrophic floods approximately 18 months apart.” It is inaccurate to characterize both floods as catastrophic,leaving the reader to believe both floods had the same severe property damage. The 2009 flood should be characterized as different from the 2007 flood. The 2007 and 2009 floods are lumped together again on page 11.

Page 2. The first bullet addresses a dam located upstream of Pe Ell. The report fails to mention that the dam is located 2 miles from the center of Pe Ell. Everytime the location of the dam is mentioned in this report, the words should be, “a dam located two miles upstream of Pe Ell.” This wording addition is important because all the State and Federal agencies have been misled by Lewis County and the PUD that the dam was on the upper Chehalis river upstream from PeEll without specifying the distance was only 2 miles. Because of requirements for emergency evacuation, it may be impossible to locate a dam within 2 miles or 5 miles or 10 miles from a town. The permittable distance may be established by the time it takes for a town to evacuate once the dam is breached. For example, Carnation is located 20 miles downstream from the Tolt River dam, and thus has 20 minutes to vacate in the event of a dam collapse. It would take about 20 minutes for the wall of water to wipe out the town and school.

Thus an earthen dam 20 miles upstream from PeEll may have a chance of being permitted whereas a dam 2 miles from the center of PeEll would never have a chance of being permitted. The report needs to discuss the possibility.of no permit due to proximity to a population center.

Page 2: The Executive Summary fails to note that in the history of the State of Washington, no earthen dam 288 feet tall and a half mile wide has ever been built two miles from a town with a population of 700 residents plus 300 school students during the day. This is a fatal flaw of the report, because the report naively treats the dam as a possibility, when there is no assurance it can be permitted. The report should more clearly address the permitting issues of the dam being located so close to PeEll, and the need to resolve those permitting issue before spending any more state or federal money studying the dam. This is where the Ruckelshaus report can be of most use to government officials in that the permitting of the dam must be resolved before spending any more money on geology or fish (because if the dam has to be 20 miles upstream, the geology and fish impacts at the 2 mile location will be meaningless.)

Page 3: The Executive Summary gives credit to the dam as lowering flood elevations without providing context. For example, the flood level at Mellon Street in Centralia would be lowered approximately 3 feet. Those residents near Mellon Street who had 8 feet of water in their houses will now only have 5 feet of water in their houses. That should make them very excited about the PeEll dam project. These residents would question spending almost a billion dollars on a dam that does not eliminate major flood damage. And the Ruckelshaus Center would be misleading government agencies by only communicating how much the dam would lower flood waters, without communicating how much more the flood waters have to be lowered to completely protect residents. Areas near Mellon street need floodwaters reduced 8 feet or more, not a mere 3 feet. The Ruckelshaus report needs to examine complete flood protection and not be satisfied with costly projects that provide only a partial drop in flood levels.

Page 9: The first paragraph talks about policy-level discussions without recognizing that different neighborhoods in Chehalis and Centralia require different solutions. For example, large portions of Centralia's flooded residents could be better protected by levees whereas residential areas west of I-5 in Chehalis may be better suited for buy-out actions. The focus has been on a dam, raising I-5 and a levee here and there without focusing on what is most cost effective on a local basis.

For example, in Centralia the levees have the advantage of protecting neighborhoods regardless of where heavy rains fell south of Centralia. West of I-5 in Chehalis, the least expensive long-term solution may be to buy out the houses and prohibit structures in the floodplain, something that Chehalis has been unwilling to do. The lack of legislation regarding buy-out in floodplains may be another opportunity for the Ruckelshaus Center to take the lead. This report should raise the possibility of new legislative efforts to reduce long-term, re-occurring property damage by moving people out of the floodplain. This report should answer the question: "What legislative action is required to facilitate buying out and relocating residents and businesses in floodplains."

Page 9: There are large areas of Lewis County which the dam and levees will not provide protection from flooding. For example, the Boistfort Valley experienced flood damage which a dam above PeEll or levees in Centralia will not ameliorate. Flooding in the Newaukum Valley will likewise be unaffected by the proposals for a dam and levees. The Ruckelshaus Report gives slight mention to these areas, and offers no solutions for these areas. The Report should be expanded to list those areas which received heavy flood damage in 1990, 1996, 2007 and 2009, and which are not receiving any attention. There should be a policy decision made to spend time to determine the options available to these people, including the option of buyout (maybe buyout of structures only with owners keeping their land for agricultural or recreational use.) One of the positive accomplishments of the Ruckelshaus Report could be to draw governmental attention to the areas of the basin which are not receiving adequate attention for relief from future property damage.

Page 23: One of the bullets on page 23 state that I-5 was covered by over 12 feet of water in some locations. This is consistent with reports in the Chronicle that flood waters in 2007 were greater than 10 feet over I-5. On page 3 of the Ruckelshaus Report, the statement is made that the proposed Pe Ell dam would reduce flood elevations for a 2007-type flood 3 to 4 feet in the Twin Cities which is where I-5 is located. If the dam only reduces flood waters by 3 to 4 feet in the Twin Cities, there still would be 8 feet of water over I-5. One of the fatal flaws of the Ruckelshaus Report is to conclude on Page 48 that because of the dam, there would only be minor flooding (less than a foot of water) over I-5. The facts as presented in the Ruckelshaus Report do not support such a conclusion. The facts presented in the Report show that a PeEll dam would lower the flood elevation over I-5 from 12 feet to 8 feet. The proposed dam does not provide the protection of I-5 as claimed by the Ruckelshaus Report on page 48. Eight feet of water over I-5 is still a huge problem that the Pe Ell dam does not solve. The Ruckelshaus Report needs to

come to grips with the realization that the proposed PeEll dam is far too small to solve the flooding problem in the Twin Cities.

Page 32: The Upper Mainstem usually refers to the Chehalis River above PeEll or the Chehalis River above the junction with the south fork (next to Hiway 6 near Curtis). Therefore, lumping the Boistfort Valley with Pe Ell-Doty-Dryad is not consistent with the usual discussion of the area. The Boistfort Valley should probably have its own separate designation as "The South Fork" with the rest of the Chehalis River westward designated "Upper Mainstem." The discussion of major farm damage on page 34 applies to the Boistfort Valley in 2007.

The Chehalis River through PeEll-Doty-Dryad has minimal farming adjacent to the river. Flood damage was mainly to residents along the river.

The inclusion of Adna as Upper Mainstem is also unusual insomuch as Adna is more connected to the Twin Cities area than Boistfort or Dryad.

Page 48: The last paragraph on page 48 begins by stating the proposed Pe Ell dam would still result in "several inches above the low point on the (I-5) road surface." As stated in an earlier comment, the flood elevation over I-5 was over 12 feet in places, and with only a 3-4 foot drop (caused by the proposed PeEll dam), there would still be over 8 feet of flood water over I-5, not several inches as stated on Page 48. The discussion on Page 48 needs to be re-written.

Page 56: The paragraph under Figure 4 states that summer flow augmentation by the proposed PeEll dam MAY increase spring Chinook salmon. All the proponents of the dam are now running around proclaiming the dam saves fish. This is nonsense. The bigger picture is that augmented flows remove the spawning grounds which are not replaced because the dam stops the movement of replacement sands and gravels. Eventually the spawning grounds disappear and the spring Chinook salmon disappear.

The Chehalis river continuously moves sands and gravels through Pe Ell, replenishing spawning beds downstream. Once a dam is built 2 miles upstream from Pe Ell, the movement of sands and gravels ceases past the dam and spawning beds downstream eventually disappear. This means that if a dam is built, the spring Chinook salmon may benefit from augmented summer flow and for a few years may show increased numbers. But eventually the dam causes the spawning beds to disappear and the spring Chinook salmon disappear. There is nothing to cheer about.

The Ruckelshaus Report on page 56 states (regarding increase of spring Chinook) "however, there is not agreement about the certainty or extent of these potential benefits." The report should then add a sentence about the loss of spawning beds for spring Chinook due to the proposed Pe Ell dam stopping the replacement sands and gravels from moving downstream.

Page 60: The report calls for properly reflecting uncertainty in benefit-cost ratios; however, the report fails to note that the Phase IIb report failed to address uncertainty. The Phase IIb report gave a benefit-cost ratio of 1.2 but did not include numerous costs which would have lowered the ratio to 0.5 to 0.6. For example, there is a large uncertainty over how much soil needs to be removed for the east end of the dam. As the Phase IIa study pointed out, there is a huge ancient landslide on the east end of the proposed dam site known as Charlie's hump. This hill is cast off from a higher hill located to the southeast. Charlie's hump has been sinking for years. Over the past 73 years the hill has had several landslides which blocked Road 1000 which is the main road up the Chehalis River south of the Weyerhaeuser Shop. One landslide back in the 1950s was so large it took several months to remove and reopen Road 1000.

In 2007 a portion of Charlie's hump slid into the river, carrying Road 1000 with it. The point is that the east hill against which the dam is proposed to abutt, is unstable. The uncertainty lies in just how much of that hillside must be removed before solid rock can be found. Another uncertainty is where to put the dirt that is removed, and how far must it be hauled. These are costs which are not in the benefit-cost calculation in Report IIb.

Also not in Report IIb is the cost of transporting dense rock to the dam site. Report IIb made the assumption that rock is available at the dam site; however, that is an unsupported assumption. Discussions with the Corps of Engineers has indicated a high density rock is required so that weathering does not compromise the strength of the dam over time. Discussion with Weyerhaeuser staff has indicated that high density rock can be found at their Vail Operations which would require an immense transportation cost to move high density rock from Thurston County to PeEll. This transportation cost has not been included in the Report IIb benefit-cost ratio.

Therefore, there is an uncertainty in the Report IIb benefit-cost ratio which is so large that it is doubtful the dam will meet the required 1.0 benefit-cost ratio. Unofficial calculations by technical experts show the ratio is below 0.6.

The Ruckelshaus Report points out that using a single point benefit-cost ratio is insufficient "because it does not adequately reflect the full range of potential outcomes." However, the Ruckelshaus Report fails to specifically use the Phase IIb report as an example of an insufficient benefit-cost ratio. It chooses to allow readers to make that connection on their own.

The Ruckelshaus Report would be of greater value to governmental agencies if it pointed out that the Phase IIb report needs to have a range of uncertainty for the benefit-cost ratio which reflects the unknown costs. Without the full range of costs, the Phase IIb benefit-cost ratio of 1.2 is meaningless.

The people sponsoring the dam studies respond by arguing these studies are only preliminary and will be replaced by more detailed studies later on. This is disingenuous because the dam proponents are running to government officials claiming the benefit-cost number of 1.2 is a green light for the dam to be built. The Ruckelshaus Report should help to curtail the rampant speculation that the dam should be built as quickly as possible, ignoring geology reports, ignoring safety of Pe Ell citizens, and ignoring proper benefit-cost ratios.

Thank you for the opportunity to make these comments.

Vince Panesko
2132 Harris Ave.
Richland, WA 99354
Phone: (509) 946-1229
e-mail: vince@owt.com

PS: I have 50 years experience in writing and reviewing technical reports in the nuclear defense industry. Between 2000 and 2003, I authored nearly two dozen benefit-cost studies for the Department of Energy, Tank Focus Area in Washington DC. From 1990-1995 I chaired a technical review team for large construction projects ($4 billion the largest). Our job was to ensure the safety analyses were properly performed, and that all safety issues were properly addressed at USDOE sites across the country. I have worked in technical management at Hanford for 50 years and am currently a member of the Hanford Advisory Board. I also own and operate tree farms in Lewis County including the Panesko Tree Farm south of PeEll. The south footings of the proposed dam would be on my property. I have been familiar with the dam site for 73 years because that is where I played as a small child and camped as boy scout

from Chehalis. The most surprising aspect of the Chehalis river is the large mass of gravel and sand which moves down the river even in years when there is only routine high water. The river banks in that location are constantly changing every year. I have constant bank erosion which is contributing to new spawning grounds downstream.

The 2007 flood left a pile of debris on my property covering the size of a football field, 10 to 20 feet high. It is impossible to climb over that debris which is a jumble of logs, waiting for the next major flood to be carried down stream. This process has repeated itself over the last 73 years. Logs come and go. Gravel comes and goes. Sand comes and goes.

My wife and I were working on my tree farm the weekend of the 2007 storm. Thanks to Dean Dahlin's weather report of impending snow and high winds, we left our property before the Road 1000 bridge blew out. Three campers who were camping on Weyerhaeuser land south of mine were not so fortunate, and were marooned for 3 days until Weyerhaeuser helicopters lifted them out leaving their vehicles behind for months until roads and bridges could be rebuilt.

Melissa,

It is probably difficult for people who have not experienced a devastating flood to understand the enormity of the losses.

While we work in Chehalis and Centralia, we live west of Chehalis on a small farm at Curtis.

All but one of our pigs, two steers and a pet goat drowned in the December 2007 flood. How the one pig survived, we don't know. She not only survived but farrowed three months later.

Our 130 year old home was inundated to the top of the first floor, destroying everything not impervious to water and mud.

Our house guest, who has limited mobility, was alone in the home and feared the home would wash away or he would be trapped and drowned before he was rescued by boat from a porch roof.

We learned later that one of our older neighbors was trapped in her manufactured home. The water pressure sealed her door and she could not get out. She was standing on her kitchen table putting farewell notes on the ceiling when her neighbor came in a boat, broke out a window, and rescued her.

The flood deposited approximately eight inches of clay and wood debris onto our property. Over 500 cubic yards of mud and debris were eventually removed from around our home, garage, and barn.

Within two days our neighbors and friends who were not flooded arrived to push the mud out of the house, haul away all the furnishings and appliances from the first floor and then strip the home to the studs. That work was followed by church groups, a local restaurant delivering soup at noon and the local Grange feeding flood victims and volunteer workers for many months.

After nearly five years the physical signs of the 2007 flood have been largely removed, but the fear of repeated flooding returns during every serious winter storm.

The only solution to catastrophic flooding is water retention. Everything else is either impractical, a half measure, or a means of pushing floodwaters onto someone else.

Immediately following the flood there was little political support for anything other than the Corps proposal to build levees to protect portions of Chehalis and Centralia. Through the concerted effort of flood survivors and a group called One Voice, the legislators of our area and Governor Gregoire have committed themselves to finding a basin wide solution to our recurring problem.

For this we are thankful.

The leaders of the water retention effort recognized from the beginning that the environmental effects and specifically the effects on fish would have to be satisfactorily addressed for this single most effective flood prevention measure to be built.

Of the measures included in the report, some, such as the WSDOT flood walls for I5, should be rejected other than to the extent minor installations are required to supplement the benefit of the upper river dam. The conservation projects likely have marginal benefit during major storm events.

For the Chehalis River valley to be economically productive and physically safe for residents, control of devastating flooding is necessary. Construction of a dam near Pe Ell would provide sufficient storage to reduce flooding within the entire basin. It is the only proposal that removes the source of our problem-too much water.

The 2007 flood cost nearly a billion dollars in damage. The impact on people was incalculable.

Future losses of life, property, and security can be prevented.

The answer is containing flood water in the upper river and then using that water for electric generation and increased water flow in late summer.

Water retention is best answer.

People in the Chehalis River basin should regain their security. Falling rain should not be a terror.

Sincerely,

Susan and Rene Remund

213 Boistfort Road

Chehalis, Washington

30 August 2012 Comments on WSDOT meeting 8/23/12

I thought the presentation by Bart Gernhart was very informative and well done. WSDOT should put the Bullseye back on, however. I think the Governor knew this venture was a no-win situation from the get go. I am afraid all the hard work from the WSDOT crew will go for naught. I cannot believe that there were people at the meeting that actually thought that any of the alternatives but the first one were serious. The maps used do need to be updated since there has been development between Prindle St, Main St, and I-5 in Chehalis in the past few years that was not shown and should be taken into consideration on placement of a levee. Also, the Newaukum is a river not a creek. I thought Alternative One had some very good flood protection parts especially for the precious Airport/Strip Mall area as well as the SW Chehalis area. The 600 "Buildings no longer flooded" would be a good result also. But, because I-5 was involved, the powers that be will always object. Any project that would be accomplished in this 5 mile section of I-5 lessens the emphasis for their "basin-wide solution". It was also not their idea and I have found in Lewis County that that usually means a negative opinion on a subject. Good Luck to WSDOT. Alternative one or two may be acceptable in 20 years or so.

By, on, and in the Newaukum River

Michael L. Smell

Chehalis

Date: August 30, 2012

To Whom it Concerns regarding WSDOT Draft and Flood Mitigation Alternatives report

My husband and I have lived in the Westside Neighborhood for 15 years. We were drawn to this neighborhood and staying in Chehalis because it was family friendly, and peaceful. There is a park nearby and also a very friendly daycare that we were using at the time.

I am concerned about some of the suggestions being made in this process of flood protection in the area. I appreciate the draft report saying on page 8 "The goal for all projects is the full protection of I-5 from 13th Street to Mellen Street, protection of the Chehalis-Centralia Airport, improved access to infrastructure, and optimization of any potential ensuing benefits to people, communities, and the environment. It is only appropriate to spend hundreds of millions of dollars on a project if it will provide full protection." However I am concerned; as I read further it also says " Any modification or new construction of dikes or levees should be built at this level to ensure robust, reliable protection for I-5 and the Chehalis-Centralia Airport." On page 9 it says "WSDOT considered six main alternatives to protect I-5, the airport, and infrastructure in the Centralia and Chehalis area." Only on page 8 does the goal address benefits to the people and communities. Otherwise the concerns seem to be about objects (I-5, airport which could be addressed easily separately, and infrastructure which I take to mean ease of largest portion of Chehalis to get around). I hope in the final deliberations the affect to the people and communities (aka neighborhoods that have not had flood issues) are greatly considered.

Here are my thoughts and concern:

Alternative 1: "I-5 Levees and Walls, Raise Airport Levee, New SW Chehalis Levee" Seems alright. Does not address the issue of needing to expand I-5 which is needed. It also, sadly, creates more of an impact to the wetlands but they all impact the natural habitat of the area so this will not be addressed again.

Alternative 2: "I-5 Raise and Widen Only" Honestly, I already hear I-5 from my house and I'm not interested in hearing more of it. However, that said, I realize it needs to be widened. Regularly, cars are backed up on I-5, especially heading north. If widening improves the transit time for everyone on I-5 AND helps against flooding, then I think this needs serious consideration.

If this alternative is considered, please DO NOT put West Street Bridge back in. As I understand it, in order for cars to cross over the street at West Street once the freeway has been expanded, it will not look anything like the current bridge due to codes. Due to these codes, it will be much larger and will seriously cut into the neighborhood, park and many homes. This in turn will lower the value of homes in this neighborhood and cause immense deterioration. This is the neighborhood where the history of Chehalis is seen by the homes and property that have been lived in for a long time. In these past 15 years living here, our girls have started in the school system and graduated from the Chehalis School District. I run a piano studio and have students that take the bus here on occasion. I believe this is the only neighborhood that is so family friendly it takes the bus two trips from the schools to get the kids back and forth both in the morning and in the afternoon. This neighborhood will not be conducive to families if a large road/bridge (encouraging even more traffic than has already been encouraged in last 2-3 years) is next to the park and possibly even reducing the park's size-let alone make it difficult for residents to maneuver their own neighborhood.

I am a bicyclist and have felt a shortage of safe bicycle routes in the area. Every time I visit my parents on Seattle and Mercer Island I admire their network for bicycle routes. Instead of putting a bridge back in for cars, please consider a bridge that is just for pedestrians and bicyclists. This would make it

much safer for kids to bicycle to the other side of the freeway and to some of the stores up the road to the north. I believe there is room to put a bicycle path paralleling the freeway which would increase safety if that road becomes busier due to more people choosing to go over the freeway at main street. Putting a bike path over the freeway would be attractive to STP riders and those that do the Lewis County Historical bicycle tour. Making this bike path would seem to me a way to relieve some traffic congestion. This path would be one more step closer to connect a healthy (yes, pun intended) network of pathways in the county for people to exercise on, go do their errands by (I've spent time in Holland and its is incredible what they do on their bicycles) and increase their health, like they have in Seattle and other areas. Keep in mind there are 2 other bridges cars can use very close by.

Alternative 3: "I-5 Express Lanes" It does not address it in the Draft but this option also really negatively affects the community in Chehalis in Westside Neighborhood (East of the freeway) as well as many others. It will greatly lower the values of homes, it will cause many homes to be destroyed and it will change the appearance of Chehalis greatly making it seem more like we are in Chicago with the expressway running so close to downtown and homes in this small, quiet town.

Alternative 4: "I-5 Temporary Bypass": Does not address the I-5 clogging issue. Forget it.

In summary I consider Alternative 1 and 2 are only viable options and only ones that really address the I-5 crowding condition. As stated earlier one of the goals is to protect the people and community. By tearing up a long-standing historical neighborhood in Chehalis via express lanes (alt 3) or a new West street bridge you are protecting traffic on I-5 on occasion there is a flood as well as businesses (which if I had a say would not have been allowed to be built in the floodplains). If express lanes are allowed via alternative 3 you ARE INSTEAD damaging a major neighborhood and many homes that have been safe from floods (and we chose to live where we did to avoid risk of flooding and don't feel we should be penalized for this). You would be breaking up a peaceful rural community and history for this community.

My recommendations is Alternative 1 (short of seeing impact of what the levees might do to the environment) and/or 2 and turn the west Street bridge into a pedestrian/bicycle pathway instead of cars. No express lanes! (I've never heard of any other town our size or even somewhat bigger getting an expressway put in in the middle of their neighborhoods to relieve congestion of I-5.).

Thank you for your consideration,

Sincerely,

Karen and Raymond Monroe

To: Jim Kramer, Chehalis Basin Flood Mitigation Alternatives Report Project Manager, Ruckelshaus Center and Principal, Kramer Consulting 206.841.2145, jkramer.consulting@gmail.com; **and** Melissa Kuehne, Ruckelshaus Center, WSU West, 520 Pike St., Suite 1101, Seattle, WA 98101, Melissa.kuehne@wsu.edu **cc:** [See separate list attached.]

From: John F Cramer, MSEE University of Washington, 33.75 years in Boeing Aerospace, including 22 years in Engineering Management and Systems Engineering for Classified Military Projects.

Subject: John F Cramer's Advice, Comments, Criticisms Tues, Aug 28, 2012 on Ruckelshaus 16 July 2012 Draft Report concerning the Impacts of flooding in the Chehalis River Basin and Potential Flood Mitigation Alternatives.

The Ruckelshaus Foundation and Jim Kramer performed a valuable service by writing and compiling an extensive report on the importance of finding a solution to the Chehalis Basin flooding. We were encouraged that two of the three sets of projects outlined as worthy of consideration include the flood control dam in the upper Chehalis.

As a Manager and Systems Engineer concerned with the social welfare of all Citizens and businesses along the Chehalis River Basin from Pe Ell, WA to the Pacific Ocean, I have criticisms and suggestions that hopefully will be addressed prior to final report release.

First, the report does not state clearly enough, without equivocation, the benefits of upper Chehalis River Basin water retention using a dam above Pe-Ell [and gage above Doty]. Eliminating the dam eliminates the only project that benefits the entire Chehalis Basin.

Second and quite important, the Benefit - Cost Analysis [BCA], discussed in Appendix D by the UW Grad student, Tyler Scott and BCA Center Director, PhD Richard Zerbe, is biased against the dam above Pe Ell on the Chehalis River main stem for flood retention and biased in favor of your Alternative project set number One that eliminates the dam. In addition, our understanding is that Scott and Zerbe comments cannot be relevant to this decision process as the BCA necessary to obtain Fed funding for any Flood Control project must strictly follow the Corps of Engineers Benefit - Cost Methodology [as EES has done].

Third and crucial, all analyses should assume that there is at least 80,000 Acre-feet of free storage space in the dam at the start of any flood event; regulations require this dam to be operated thus. It is not clear in the Hydrology section that this is the case. Rock Creek constitutes the only major flow above the Doty gage that is not captured by the dam, but this flow contribution based on rainfall and drainage area has not been made clear. We are concerned that unstated assumptions have resulted in degraded simulated capability of the dam to lower Doty flood levels by some eight [8] more feet in a 2007 size event. This reduces a primary dam benefit and deleteriously affects all the Chehalis Basin, and also I-5 protection by the dam. [see Hydraulic Model, Appendix F]

LIST OF PEOPLE RECEIVING COPIES:

LC Commissioners:

Ron Averill, Col.USA(Ret);

F Lee Grose;

Bill Schulte, Cdr. USCG(Ret);

bocc@lewiscountywa.gov

Gary Alexander, WA Rep

Jaime Herrera Beutler, US Rep, 3rd District; Terassa.wren@mail.house.gov

Bruce Brown, Lewis County Tea Party; 736-4751

David Burnett, Chairman of the Chehalis Tribe

Fred Chapman, LC Floodplain Manager, Building Official, Fire Marshall; fred.chapman@lewiscountywa.gov

Edna J Fund, Centralia Rep to the Flood Authority [by her request]

Jay Gordon, Exec Director of WA State Dairy Federation

Harold Hahnenkratt Structural CE-PE; 736-1137

Dr John M Henricksen DDS - PS, Chair "One Voice Committee";

Bob Johnson , Mgr for LC Community Development

Rob McKenna, WA State Attorney General [by his request] Karen Sushak 360-664-9082; rob.mckenna@atg.wa.gov

Merlin McReynold, Chehalis City Manager

Keith Phillips, Governors Exec Policy Office, keith.phillips@gov.wa.gov 360.902.0630

Dave Muller PUD CEO [Ret.], dave@mullers.info

Vickie Raines, Flood Authority Chairman

John Rothlin for Richard de Bolt [via Bill Schulte]

Dan Swecker, WA Rep

J Vander Stoep, UW Juris Dr, Political Science; JV@vanderstoep.com 748-9281; member of Governors Committee to develop recommendations for Flood Mitigation next steps

The report failed to state directly that WITHOUT an Engineered dam on the Chehalis main stem above Pe Ell there will be NO EFFECTIVE FLOOD MITIGATION for the gestalt Chehalis River Basin. Eco-damage from flooding is very much worse without a dam and Eco-damage will not be stopped by a handful of bandaid projects. The "I-5 only" project does not qualify as a "real", "effective" Chehalis River Basin Flood Mitigation measure in our considered opinion because it addresses only a narrow strip containing I-5.

We note that Chehalis River flows in the summer are not big enough to keep river water temperatures down as fish need them to be. Not only will there be over 80K Acre-feet of flood storage in the dam above Pe-Ell, there will be another 65K Acre-feet for the purpose of maintaining summer river flows over minimum requirements and lowered temperatures within fish comfort range to improve rearing habitat for salmon and steelhead, similar to the operation of the Alder Dam on the Nisqually River. Additionally, the 65K Acre-feet will support the revenue gathering Hydro-Electric power generation capability of the dam.

The Tacoma Public Utilities Alder lake Dam has a Federal License for prioritized operation in addition to electric power generation. They must ensure at or above minimum river flows and these have been very successful in improving river rearing habitat for salmon and steelhead, resulting in runs that are greater than what would naturally occur without Alder dam. We expect the same type of operation for the dam above Pe Ell. This is important for all us fishermen. Dam Fish Saving Technology shall also be incorporated.

We note Alder dam also has a requirement to keep the lake elevation high during prime recreation months and we expect that the dam above Pe-Ell would also have this operation.

Although Alder Lake is a "small reservoir", Tacoma Power still lowers the elevation of the lake when possible to enable capture of high water inflows from rainstorms and snow melt.

Since a primary purpose of the dam above Pe Ell is flood control, operations would make sure that over 100K Acre-feet of storage was available by Dec 1 of each year. This would undoubtedly be written into the License for the dam.

We note that the Yellowtail Dam [named for Robert Yellowtail, chairman of the Crow Tribe], at the Bighorn River Canyon National Recreation Area [MT, WY] was built for the purposes of Flood Control, Power Generation [250 Mega watts], Irrigation and Recreation. All purposes have been successfully met and they have a World Class Trout Fishery. It is the most fished stream in Montana and yields one of our favorites, the Rainbow Trout.

WA State and US Federal governments understandably want the I-5 corridor protection to avoid 4 day closures at a cost of some $47Million for 4 days in Coast trade. However, we all must understand this cost is dwarfed by 2007 losses of some $500M in Lewis County alone. This does not count untold mental anguish suffered by citizens of 3 counties.

On the benefit-cost issue, saving Lewis County from the catastrophic damage expected from one (1) each 1996 or 2007 size storm is worth about twice the total cost of the dam.

Only by very seriously over-estimating the value of any possible ecological downside could the dam be shown to have less than stellar net benefit. The dam is the very clear winner.

UW's Scott and Zerbe suggest good decisions can only be made given Benefit-Cost Analysis [BCA] with sensitivity analyses. [Note: EES was required to use US Army Corp of Engrs method of computing benefits and costs. Unless the dam is built using only local funding with none, zip, nada Federal funding, then the USACE procedure must be used.]

Scott and Zerbe suggest doing a Monte Carlo Simulation [MCS] model of the projects. I led a Boeing group and built a successful, complex MCS of the Minuteman Weapon System Communications. Building a BCA MCS can easily use up a dozen man-years, one year + schedule time [decision makers really cannot afford another years delay] and $1Million+ of taxpayer

dollars. Businesses were profitable before BCA MCS models and computers; they successfully dealt with "uncertainty" and "efficiency" and still do. In my considered opinion, the Scott/Zerbe BCA MCS is counter-productive due to the time delay and extra tax money spent for results with questionable benefits to decision makers.

Scott and Zerbe thrash on "opportunity costs" which imply some project other than the dam is more important or desirable upon which to spend tax money [political speak this week is "invest"]. Zerbe says a discount rate of 6% to 8% reflects the opportunity cost of funds. The 10 year treasury note now earns about 1.5%. We consider that Zerbe's discount rate is useful for one thing: doing nothing, i.e. the "null alternative". Zerbe's analysis approach appears to have as it's main goal the killing of the dam project.

With the dam, you need far less expenditures on other measures like flood walls and levees. EES reports that with a dam in a 1 in 500 year event like a 2007 flood [~ 2.9σ on a normal cumulative probability distribution], and with improvements to the airport levees, that I-5 flooding is minor. One problem is attributed to Dillenbaugh Creek at Labree Road Inter-change. Another is in the vicinity of Greenhill school. A third potential problem area is the on and off ramps south of the SR 6 interchange. We think any Greenhill and SR 6 flooding issues could and should be corrected with minor modifications to I-5 when DOT designs and constructs the 3rd lane through this area. We are given to understand that the Labree Road flooding is totally unrelated to the Chehalis River and the Newaukum tributary and will have to be addressed separately by DOT for any I-5 protection scheme.

Scott and Zerbe proclaim that their "personal communications with DOT" [page 181] indicates the dam would not be sufficient to prevent I-5 from flooding [they do not say possible flooding might be inches to about a foot, for only a few hours not days, and the cost of some ½ $Million, not $12Million] in an event comparable to the 2007 flood. In their mind, this hearsay session with DOT calls into question [introduces ambiguity into] the cost savings of no longer having to raise I-5. Fixing I-5 does not help the Chehalis Basin.

Even very conservative railroad companies only build for 100 year threats [2.39σ on a normal cumulative probability distribution] and not 500 year threats. Therefore, Scott/ Zerbe's assertion that there is ambiguity of required DOT action must be rejected; the dam must be credited with flood prevention, period. Their assertion, based on unofficial inputs, clearly indicates bias against the dam.

We all know the Chehalis River dam above Pe Ell benefits the whole basin down to the Pacific Ocean, 3 counties, numerous cities, towns and districts from the day it holds water to projected end of life, perhaps 100 years later. Net benefit will likely be several $Billion.

As regards the UW's Tyler Scott and Richard Zerbe evaluation of Benefit-Cost Analysis [BCA] of the Chehalis River Flood Control, let us say that I also am enamored of math, computers, Monte Carlo modeling, etc. However, that said, the value of analysis and modeling lies in the ability, if at all possible, to make the executive decision process more simple, more direct and straight forward, sooner rather than later and certainly not more complex and indirect as appears to be the case in Scott/ Zerbe's BCA MCS and multiple scenario approach. With the presently available level of detail and accuracy in definitions of and data for alternative projects, it is doubtful that the Scott/Zerbe BCA approach would yield any improvement in the presentation of aids for decision makers. If knowledge of data is plus or minus 10%, it makes no sense to try to develop curves accurate to less than 1%.

<u>Scott and Zerbe say on page 169 bottom [their issue 1]</u> that it is insufficient to determine whether estimated project benefits exceed estimated project costs; rather net project benefits should be evaluated against the potential returns from an alternative project [other than the dam] or an alternative use of public funds [read spending taxpayer money].

John Cramer's Answer to Scott/ Zerbe issue 1 is as follows:

Scott and Zerbe ASSUME there is more than one "EFFECTIVE project set" that could accomplish the task with equal quality and quantity measured over the total affected flood area and time. When considering the gestalt Chehalis River Basin, this IS NOT the case.

After 50 to 75 years of study, no project other than the dam above PeEll has been identified that provides anywhere near the benefit magnitude for the Chehalis basin for similar cost.

We understand the flood mitigation objective is not just to protect the I-5 Transportation Corridor, but is to protect as much of the basin as possible from destructive floods and attendant losses. Yes, the airfield at Chehalis/Centralia must be protected as necessary by levees, but also the economic capabilities of the three counties involved, which include farm businesses as well as businesses located in towns along the River system, etc, etc; all must be protected. We understand a levee is needed on the south side of the airport and the road into the airport needs to be raised, but this is not a large project; it could be done now.

It has been noted that protecting only the I-5 Corridor makes flooding worse in some areas. In the case of a dam on the upper Chehalis main stem, the dam restrains over 80,000 acre feet [26Billion gallons] of water, for whatever period of time necessary; ergo the destructive force of the flood water on the main stem is converted into revenue enhancing "clean" electrical power generation. The dam can keep ALL flood water in the watershed above the dam impounded until the Chehalis tributaries recede below the flooding stage and are within bank. This reduces the flooding problem all the way from Pe Ell down to the Pacific Ocean, including Native American property. No other project provides nearly this much protection to this much area [for whatever the required time], farm businesses and other businesses as well as individual houses, animals, farm land, habitat for fish and game animals, etc, etc. The walls and levees around I-5 certainly do not do this and therefore cannot be sold as "flood mitigation", it is "transportation corridor protection only".

It is crucial to design the dam such that in the worst case [or near worst case] year that we can find in the historical records, where it rains all year and there is no summer, that the dam has enough retention capability in Nov through Mar to restrain the total amount of storm/ flood water that falls on the Willipa Hills and drains into the Chehalis main stem above Pe-Ell. Dam operations strategy will also be important to ensure at least 80K Acre-feet of capacity will be available whenever needed. In a "normal" year, it will be easy in a dam that has 80K basic plus 65K for Hydro-Electric, etc Acre-feet capacity to arrange for somewhere between 90K and 120K Acre-feet in December through March. [The drainage area was measured to be 79,063 acres. M Reiter [of Weyerhaeuser] said that for the main part of the flood in 2007, their rain gage at Rock Creek measured 14.35 inches in 24 hours and Raccoon measured 13.85 inches in 24 hours. Averaging these, then the drainage above the dam may have collected some 93K Acre-feet of rain in 24 hours. Perhaps we should revise the required flood retention capacity of the dam from 80K up to 100K Acre-feet.]

We contend that the best strategy is to use a dam on the upper Chehalis main stem to subtract out all [ALL] the flood waters that fall on that section of the Willipa Hills [which is where a major

part of storm water falls], [google Maryanne Reiter, Hydrologist for the Weyerhaeuser Co, rain distribution report, Title: Dec 1-4, 2007 Storm Events Summary]. Then after you have provided for the restraint of the 80K or 100K Acre feet [or whatever it may be], you can take such other action as necessary to solve any residual problems.

Given a free hand to design a total system to solve the flooding problem, we would next put a dam on the South Fork of the Chehalis above Boistfort/Curtis, for there is where another slug of water usually occurs. But, we were informed this would be considerably more complicated, and maybe not economical, due to rock sub-structures along the South Fork. This area also does not get nearly the quantity of water that the upper Chehalis occasions. We understand some 20,000 acre feet of water was involved in 2007. This is a lot if you are in its' path. It may be possible through coordination with the NRCS, the Lewis County Conservation District and local area farms and landowners to pursue a 20,000 Acre-foot dam on the South Fork to supplement the flood storage provided by the PeEll dam and provide farm, conservation and ecological benefits as defined by NRCS criteria.

One long time resident said he had a really good close-up view of lake Boistfort which is normally farm land. In the 2007 flood, water from the main stem of the Chehalis backed water up to the store in Curtis. The store was flooded to the ceiling in 2007, but had never before been flooded. The dam above Pe Ell would cure this problem [among many others].

Usually, storm water falling on the Willipa Hills is about double that on the hills to the east of I-5. So a dam on the main stem of the Chehalis River efficiently covers most storm cases.

Yes, we realize that there are storms where the Cowlitz gets hit and other areas get hit by still other storms and action should be taken to help in those areas, but the really bad ones usually dump the most water on the Willipa Hills at the Chehalis main stem headwaters.

Note: Realize that we do not have any "skin in the game" for we are ridge runners and live at 1100 feet altitude. If we get flooded, all western Washington State is in serious trouble.

Therefore, the point is that there is no competing alternative single or even a combination of mitigation projects that can come anywhere close to the monetary, farming, business, animals and people benefits provided by the dam above Pe Ell. "The I-5 only" project monetary benefit is only about one-tenth that of the dam and does harm to people and property in Lewis County, not benefit them. We have heard of no projects for the alternate use of funds that provide the tremendous benefit that the dam gives to Washington State.

We contend that Scott/Zerbe issue 1 is solved; no additional work is necessary on this issue. The dam is effective in protecting the whole basin; "I-5 only" protection is only 10% of the benefit the dam gives in dollars and no benefit for the people of the three counties affected.

<u>Scott and Zerbe have a second issue</u>. They say that simple benefit and cost estimates are inadequate to reflect uncertainty [in costs ballooning and benefits not realized].

Assuming Federal dollars are involved, the USA Corps of Engineers would be involved. Their process is iterative for deriving requirements, additional preliminary design, geotechnical information, environmental, fish benefits, etc, etc, so the Corps of Engineers BCA will be updated at each process step until the Contract for Dam Construction is let.

Presently, we have the history of flooding and the attendant costs of destruction. Given the dam and the correct hydrology model, the attendant benefits will be realized. How much could benefits vary? We have to ask how accurate is the present hydrology model?

<u>Context switch temporarily to Hydrology</u>:

We have analyses of how much the flooding will be reduced. We previously assumed that the hydrology model was verified for taking out 80,000 Acre feet of water from the 2007 flood example. However, we are not at all sure this is the case; there is no explanation.

Do the assumptions and modeling equations made in the hydrology model give you +,- 2%, 5%, 10% errors, or what? Table 6 on page 225 shows a summary of model validation for flows for the Dec 2007 event. For Grand Mound, the model result is HIGH but within 4.5% for peak flow magnitude; the model missed the event volume [also high] by 28.3%. At Porter, the model is LOW by 16.9% on the difference in peak flow magnitude but within 3% for event volume. The report states that the rest of the numbers for different stations are within 10%. Perhaps they are. Perhaps they are not.

However, the not quite readable charts on pages 236 through 239 tell an interesting story. [Note: instead of 2 charts per page, surely the data can be arranged such that the charts have 12 point readable type with one chart per page. Someday, you also will be old.]

Hydraulic Model Simulation Results Disappoint: For the Dec 2007 flood, the station upstream/south of Doty [above Elk Creek confluence] and north of Pe Ell [below Rock Creek confluence], at cross section 100.95, shows a water surface simulated elevation of 328.1 feet without the dam and 315.8 feet with the dam for an improvement of only 12.3 feet. Using the USGS Water Information web site, we get 48K cubic feet per second at 328 feet elev and 12,000 cfs at the 315.8 ft elev. If you really believed the max average flow was 63,100, then the USGS Water Info site indicates a gage height of 31.36 plus the gage datum of 301.1 feet = 332.36 elevation, not 328 feet that the model shows, a difference of 4 feet.

The 315.8 feet has to be the result of the water coming down Rock Creek [within a few %]. Now, Rock Creek watershed is 13,010 Acres and the RC gage [Weyerhaeuser] measured 14.35" in 24 hours, so ~ 15,558 Acre-feet [677,697,405 cu ft] of water fell in 24 hours. This gives you an average flow of 7843 cfs assuming that input equals output [accurate to X%]. The USGS web data shows 7843 cfs occurs at 311.5 feet elevation, not 315.8'. Therefore it appears to us that the dam benefits have been shorted at least 4 feet with the dam and another 4 feet without the dam for a total of 8 feet that "the model" shorted the benefit of the dam. Total dam benefit should be 20 feet, not just 12 feet. This makes a 1 or 2 foot more flood level reduction at I-5 and Mellen Street [this needs verification]. Some folks complain that the dam would not protect I-5 by 1 or 2 feet. Our expectation is that the dam will [just] protect I-5 for a Dec 2007 [500 year?] size event.

Without more detail explanation, we do not find the model results totally believable.

The WEST constructed, FEMA approved 100 year flood specification shows 323.2 feet without and 313.0 feet with the dam when simulated. We doubt these numbers also. We are given to understand that FEMA has an agenda to increase the levels associated with a 100 year flood for the purpose of cementing in larger, more expansive flood plain and floodway definitions that certainly are not needed with a dam and probably not needed anyway. This generates more flood insurance premium money to refill FEMA flood insurance coffers depleted by hurricane Katrina in 2005. It appears to be just another sneaky tax increase.

PROBLEM: If the 2007 flood was a 500 year flood, then we need to see the derivation of the numbers to prove the FEMA 100 year designation. Was Feb '96 a 50 year flood?

The Feb 1996 numbers show a simulated 318.1 feet without and 307.2 feet with the dam. Are there any Doty gage numbers to back this up, or not? Why should the Flood Authority believe these numbers? Information given to me has it that the flow at the Doty gage was 27,400 cfs in Feb 1996 which should put the water level at about 322 feet without a dam, some 4 feet more than the simulation. What should we believe?

Finally, the Jan 2009 flood [which was primarily in the eastern and northern portions of the Basin, BUT significant rain fell in the upper Chehalis watershed and was the 2nd largest on the South Fork of the Chehalis after the 2007 flood] shows a simulated water level at Doty of 314.4 feet without and 306.7 feet with the dam. What was the Rock Creek flow?

The dam should [shall] be designed to stop ALL water flowing into it from the above dam watershed in a 2007, 1996, and 2009 flood event. The simulated water level at the Doty cross-section for these events should be reconciled with Rock Creek rainfall data and explained for/ to the Flood Authority well before final report release.

The max average flow in the Rock Creek watershed in the 3 Dec 2007 flood is about 7843 cfs for the first 24 hours of the storm. A 328' level at the Doty gage gives about 48,000 cfs total flow including Rock Creek. This says only 40K cfs is attributed to the main stem above the dam location. We note that Rock Creek is about 16.3% of the total water that is in the main stem. How do you get from 48K cfs and 328 feet height of water to the USGS guess of 63,100 cfs and a gage height water level of 332.36 feet altitude? Please explain.

Of course the time phasing of the flows is important, but when [near] steady flows should have been established, the Rock Creek flow was still some 16.3% of that in the main stem. However, steady main stem flow did not occur because of all the log jams on the main stem in 2007. Rock Creek was about as big as it was going to get by the time that the log jams broke and the transient wall of water swept down stream and took out the Doty gage somewhere just above 51,000 cfs flow rate. Was the max average flow really 63,000 + cfs? Not likely. The big transient slug of water resulting from log jams above Pe Ell breaking gave the erroneous maximum height of flood water readings [obtained by measuring debris height in brush]. Keying in on the max transient height of the surge introduced errors in the max flow USGS guess [WAG] of 63,100 cfs at Doty. We understand that when the flow rate exceeded 51K cfs the gage failed [the 37K lb concrete block/gage was moved across the river]; no one really knows the actual max average flow rate. But, the 63K + cfs number matches the FEMA agenda for more flood insurance [tax] revenue, so they ran with it.

THEREFORE, it appears that the benefit of the dam in reducing flood levels could well be understated by some 8 feet at Doty [unless proven otherwise, which we doubt]. This means that the flood level at the Airport levee and at Mellen should be perhaps a foot lower [eye-balling the data for 2007 on page 236]. We also would expect lower flood levels along I-5.

The Flood Authority will surely be quite interested in the detail explanation for all this.

We are given to understand that the benefits of the dam was understated in the ESS Consulting Phase 2 analyses as the benefits of reduced flooding only included Lewis County. At that time, the hydraulic model below Grand Mound [Thurston and Grays Harbor Counties] was not

completed, so the benefits of reduced flooding in Thurston and Grays Harbor Counties could not be attributed to the dam above Pe Ell at that time.

<u>Back to Scott and Zerbe</u>:

Since there are no alternative approaches that come close to the dam benefit for the whole basin by a factor of over 10, the dam is the winner, given intelligent design and operation.

But, you say, the dam might cost more than estimated. That is true, particularly if you specify that "prevailing wages" must be paid for everyone working on the dam project.

If you want better estimates of the cost of the dam, then hire someone who knows what they are doing to build a Specification for the dam and do a Preliminary Design of the dam to the level that is necessary to make a firm, fixed price bid on the dam construction. You can put into the contract for the System Engineering and Preliminary Design for the dam a provision that should this Company get the contract and build the dam, and the cost come out more than X % above the agreed-to number, the Company will be assessed penalties.

Confidence costs money and time. The question then is how much confidence do you want for the estimate and when do you require a high quality estimate? When a Company does the System Engineering and Preliminary design is the time they should define the upside and downside to the point estimates because then there is good data. Sensitivity analyses at present on the cost of the dam would just be wild speculation and thus hamper decisions.

Doing a cost model now, at the present level of definition of the dam and work necessary to construct the dam, is a waste of time and money in my considered opinion. If a company has built a similar dam in a similar physical and regulatory environment with similar requirements and site characteristics, you can get a guesstimate on a comparable dam and apply deltas to get an approximate answer.

The potential "Fly in the Ointment" in Zerbe's second issue is "an environmental impact prove(s) far greater than anticipated". We find it very difficult to believe you can find an environmental impact for a dam above Pe Ell even one millionth [10^{-6}] that of the 2007 storm/flood on the Chehalis River Basin. Without question the environmental impact of doing nothing is tremendous, maybe every ten years. We suppose someone could conjure up some imaginary big dam environmental impact, depending on what they happened to be smoking at the time. How it could be large enough to be of serious concern is a mystery.

We consider issue (2) adequately answered.

Scott and Zerbe have an issue (3), namely the time frame on which benefits and costs are modeled to occur. This is where they get into the "opportunity cost of funds", project viability versus interest [discount] rate for the costs and benefits, etc. They say that when benefits and costs are modeled to occur greatly affects the outcome of the Bene-Cost Anal.

We know for sure the lack of a dam [for some $250M] on the upper Chehalis resulted in $500 Million in destruction in Lewis County in 2007. The amount spent on the dam was essentially zero and the benefit was very negative. How many more of those events do decision makers want or

can WA stand? We had a 1990 flood, a 1996 flood that some folks call a 100 year flood [2.17σ on the normal probability density function] and a Dec 3, 2007 flood which some are calling a 500 year flood [about 2.9σ]. We already have messed around [pontificated, cajoled, argued, blustered, got red in the face, etc] for 4.5 more years and have not even started on the construction of any flood mitigation project. We surely do not need to waste another year and another Million Dollars of taxpayer money generating more "uncertainty by analysis" where acceptable uncertainty should and does now exist.

We also know with certainty that there will be no benefit until something [like the dam] is designed, built and operation commenced, and with certainty we know money will have to be spent before the benefit will be potentially available. What we do not know is exactly when the need for the beneficial water retention dam will occasion. However, looking at history, we see a major storm about every 10 years where destruction is great and a very significant percentage of this could be prevented given a dam on the upper Chehalis.

Now, we think that Scott and Zerbe can construct a time related scenario and a discount rate such that nothing [the null alternative] is what one would do. But that surely does not help meet the objective of seriously reducing the flood destruction along the Chehalis basin. Zerbe's 6% to 8% rate would likely kill all useful flood mitigation projects in our opinion. They have not shown how their analysis approach supports flood mitigation objectives.

If folks are serious about meeting flood mitigation objectives, it would be good to know the interest/ discount rate [and time related scenario] required to do something useful, and most useful is, in my considered opinion, to build the dam above Pe Ell [if you could do only one thing]. We can wish that Scott and Zerbe would use their considerable expertise to bring good scenario and discount rate tidings, but this may be like trying to win the lottery.

What we do hope is that the infamous Murphy and the Storm Gods take a nap long enough to where we can obtain funds, get the dam specified, designed and built [and other needed provisions done], so we are ready when the next big storm arrives, as it most surely will.

<u>Scott and Zerbe have an issue (4)</u> [pg 170], they state as follows: An appropriate basis is needed for project comparisons, namely "a benefit-cost analysis should estimate the difference in outcomes between what is likely to occur if a project is funded and if it is not." "Project benefits and costs should not include changes or expenditures that are likely to happen even if a project is not implemented." "This is particularly important when considering the selection of multiple projects, since numerous small programmatic or non-structural projects might obviate the benefits of a large structural project" [read dam]. Note: this statement also shows anti-dam bias.

<u>John F Cramer's Comments on the Scott/ Zerbe issue (4)</u>:

If you add up all the benefits of ALL the numerous small programmatic or non-structural [i.e. non-dam, levees and walls] projects, the benefits cannot even come within sight of the benefit of a dam, they are miniscule by comparison [even though marginally useful]. This Scott/Zerbe statement shows a clear lack of understanding of the magnitude of the flooding problem and what it takes to solve the problem. We recommend they come to Adna to experience the next big storm and flood to obtain a full measure of wisdom. Bring a boat.

The dam is the 5 ton elephant in the room in terms of the benefits as compared to the partial ounce shrews such as critter pads. Do not mis-understand me, I think critter pads should be done now [this year] to help if the big boys and girls cannot get around to doing something useful like a

dam. Also, there are areas where dams and levees/walls, etc will not help much, if at all, and the critter pads are vital. They are still miniscule by comparison.

If we have the dam, levee improvements around the airport, etc. it is still a good idea to dredge out the Chehalis from, say, Adna on downstream to at least the Chehalis Tribe Casino to significantly lower river levels, particularly during a flood. I am given to understand that this segment tends to be polluted and silted up and the fish [which we all love, you certainly must comprehend this fact] will not spawn in this section. Particularly important is the confluence point of the Skookumchuk and the Chehalis Rivers.

We were just informed by a Local who was born and raised in Adna that the Chehalis River was navigable from the Pacific all the way up just past Chehalis at Claquato by Stearns Rd and that dredging was a normal activity in the past. [Note: I have not verified this with the Historical Society.] But the dredging stopped and the Chehalis River has become all silted up which raises the level of the river, particularly during flood events.

However, we were informed that such dredging was way too expensive and would require repetition. It was suggested that rules be changed so licenses could be granted to allow local people to dredge the rock out of certain short segments where dredging was needed.

In this way, the value of the gravel obtained by selective dredging offsets the cost of removing gravel. It would have to be done at a time and in such a way that fish are not harmed. We are not sure that this would work, but may be worth some thought.

The Hydrology Report, page 232 speaks to dredging downstream of Mellen Street to just downstream of Lincoln Creek [River Mile 67.29 to RM 60.51]. The modeled excavation had a 120 ft bottom width trapezoidal channel and would lower the channel bottom by as much as 15 feet in some locations. The ends of the excavation would be faired into the existing channel. This takes out a natural rise in the river bottom thought to be bedrock. Lowering the bottom will help the flow and lower upstream levels. Every foot and inch you lower the level helps to reduce flooding of areas like the proposed event center in Centralia. We hear pictures at the event center location show flooding was some 2 feet deep in 2007.

Everyone who has taken a hydraulics class at the U of WA understands that sharp changes in direction and bottlenecks in a stream significantly reduce stream flow capacity, so it is important to remove these restrictions to lower the level of the river flow upstream. We are given to understand that one of these restrictions occurs at the Mellen Street Bridge in Centralia. Lowering the flow level there will certainly reduce twin city flooding.

NOW, Flood Walls and Levees along I-5 have very limited spatial influence and benefits [and significant flooding downsides in nearby areas of residences and businesses; like MD's, we should do no harm]. Their total benefit is maybe a maximum of $47 Million for 4 days [i.e. not net] compared to some $500 Million for the dam in Lewis Co per event [up to a major portion of $800M for the whole Chehalis River Basin.] Therefore, in a big 1996 or 2007 style storm event, we expect the benefit of "I-5 only" protection to be less than 10% of the Socio-Economic benefit of a dam above Pe Ell, and no help to the Chehalis River Basin.

Say that the life expectancy of the dam is 60 years [it should be designed and built to be useful for > 100 years] and during that time we occasion 6 big Pineapple Expresses that hit the coast and the Willipa Hills. If it is a 2007 size event that dumps over 80,000 Acre feet of water on the watershed above the Pe Ell dam, then the benefit of the dam to the gestalt Chehalis Basin could

be some $500 Million times 6 events or $3 Billion in today size dollars. It will actually be more because of additional development protected over the years.

If we freeze all costs and prices at today's dollar value, the comparison of the dam to the "I-5 only" protection is useful. The dam is over 10 times more Socio-Economically useful and beneficial than an I-5 only set of projects. The dam also eliminates a tremendous amount of mental anguish and suffering that the I-5 only projects do not and cannot address. What is not understood about ten (10) times the benefit [of the "I-5 only" project] that the dam gives? If necessary, refine the numbers a bit. But do not take a year to do it.

There is no need to make the analysis any more complicated than this to make a reasonable decision to go forward with the dam. You say it is too simplistic? Well, there you go again. It is really, really clear [unambiguous] what the answer is and should be, like it or not.

Therefore, we reject the issue 4 assertion that "numerous small programmatic or non-structural projects might obviate the benefits of a large structural project" [read dam]. A handful of band-aids cannot replace or outperform a tourniquet. We need to get serious.

In Appendix D, Evaluation of Benefit-Cost work regarding Chehalis River Flood Control, Introduction, page 171, Scott and Zerbe say they identify and discuss five important issues that merit consideration for facilitating comparison across projects. (1) Policy goals and objectives; (2) Risk and uncertainty; (3) The yearly distribution of benefits and costs over the project time horizon; and (4) An appropriate baseline for comparison.

Then they take time out for several pages to talk about "moving forward with existing analyses and data" and declare that a benefit-cost analysis is "an exceedingly difficult exercise". This is interesting to know, because this negatively impacts future BCA work [i.e. drives cost up but for what, if any, benefit] and also any decision to begin such work.

They discuss causality which involves the question as to whether an expenditure directly results in a change in net benefits. [Apply this also to BCA to see if BCA supports a flood Mitigation Program.] We all understand that a critter pad built above a flood can save cows, sheep, horses, etc and we know animal sale prices so we can measure the monetary benefit [but really not the great benefit of saving the daughter's only 4 H animal which may auction off at SW WA Fair to help her education fund for $4000, as happened in 2012].

There is also a direct causality link for a dam that retains 80K to 100K + Acre-feet of water and uses the retained water over time to generate "CLEAN" electricity which is sold for revenue. A large amount of monetary benefits will be accrued over the dam lifetime.

We know, because we saw it, that the 2007 flood shut down I-5 with water many feet deep. The rapid, flowing water disconnected and displaced quite a number of the 5.5 ton concrete Jersey Barriers. The barriers were strewn about as if they weighed nothing. Even when there was no water left on the roadway, the barriers still had to be moved back into their proper place before traffic could resume. Similar things happened in 1996. Are we 100% certain that concrete walls along I-5 will always prevent I-5 from closing down? You may be, but I would not be until the concrete walls were tested by a flood. I would be concerned that the walls might be undercut by a raging torrent. [A dam prevents the raging torrent.]

Of course, part of the answer is driven by what flood levels were used for the flood wall design. If the flood event exceeds the level for which you design, the walls are overtopped and I-5 will be

shut down for the usual 4 days at $12 Million per day, and perhaps longer, depending on whether the walls now become a dam that holds in the water. Presently, flood waters in south Centralia east of I-5 cannot escape properly due to various impediments and one way flood gates, and this stretched a 4 day flooding event to over a week at an acquaintance's residence, thereby compounding his losses. His property value was also cut in half by the fear of future flood events like the FEMA approved 100 year flood levels.

We should like very much to examine the derivation of the FEMA approved 100 year flood description and suggest that this be included in your final report in a separate appendix.

We note that a great benefit of the dam is the expectation of reduced risk for flooding all throughout the Basin. This will cause property values to return to what they were before the 2007 flood [at least] and should also reduce the size of the floodway and flood plain. Do not forget this also reduces flood insurance rates. FEMA hates this because they want to pick 100 year levels to keep the artificially large floodway/ floodplain which drives up insurance cost and replenishes their coffers. This makes immediately suspect their approved 100 year flood definition.

Given a dam above Pe Ell with 80,000 Acre feet of basic storm storage and 65,000 Acre feet of Hydro-Electric storage that also provides fish with cold water in the summer months, and given that storms normally come in late fall and winter when the reservoir water level is down, the storm size would have to be some 120,000 Acre Feet [some 40 Billion gallons] of water to use up the dam storage capacity. This should take the flood levels at I-5 down by 1 or 2 feet more [this needs verification]. So the dam can make almost certain that flood levels at I-5 are below the I-5 surface level in 2007 type storms. If we have also dredged segments from Adna down past Galvin, this should reduce flood levels another foot or so [we have not seen this analysis yet, perhaps this could also go in the final report]. Unofficial inputs indicate fish do not spawn in this stretch of the Chehalis River anyway because of rumored water quality and summer heat. Salmon cannot live in warm water. When we raise water levels below the dam in the summer, we increase spawning habitat.

Then, on page 172 in the 4th paragraph comes the inditement against the multi-purpose dam for crimes against humanity and your brother fish. Scott and Zerbe take issue with Anchor QEA's model which predicts that spring-run Chinook salmon stock will increase by 140% given several assumptions that Scott and Zerbe find most questionable. However, they apparently have no issue with studies of other fish that found a down side. They also charge that there is absolute certainty that the dam eliminates SOME salmon-spawning habitat. They very carefully do not say why this should be so and how much habitat, but we are left to assume they think it is a terrible problem that cannot be overcome and is a fatal flaw for the dam. We say "Hogwash", since we must be restrained and civil in this document. We recall what President Harry S Truman would have called the inditement.

Scott and Zerbe hold harmless the Walls along I-5 particularly with respect to people and fish and suggest that re-vegetation of upstream lands would help fish stock. Our comment is maybe it would, until the next big storm which would wash it all out again as it has many times in the past. Scott and Zerbe failed to mention that re-vegetation would have to be done many times. Maybe the Walls along I-5 do no harm to fish, but the floods throughout the whole basin surely would continue to do gobs of harm. Some folks believe, with good reason, that the walls and levees redirect the flood waters and harm nearby residents.

Scott and Zerbe show on page 173 a figure 1 from the Anchor QEA salmon impact study [QEA figure 6-2, page 75] regarding winter steelhead number of spawns versus analysis scenario. Reading the chart indicates an optimized flood storage multi-purpose dam with passage for fish would reduce spawns from the existing 620 to 420, give or take.

We understand that Chinook salmon spawn in the main stem of the river, whereas other salmon species spawn in ponds in the headwaters of tributaries. Cold water from the dam in sufficient quantity for greater water depth of flow in the summer improves conditions for both of these groups, so we expect improved fish runs. Yes you will lose some habitat above the dam for spawning, but you will also see more habitat below the dam. It is yet to be proven whether there is a net gain or loss. Other streams with dams saw increases. This is particularly true when there is habitat mitigation; you see increased fish runs.

What this does for me is indicate the need to figure out a way to at least gain back what QEA thinks that we would lose in spawns. It is a problem to be solved, not a fatal flaw for the dam. To say it is a fatal flaw values fish way above the value of humans; we reject this contention.

Scott and Zerbe have now made their bias against the upper Chehalis River dam obvious.

Our position is totally clear that the dam is by far the winner, but this is not bias, folks, it is just objective truth. Yes, some action may be required at Dillenbaugh and Salzer creek crossings and for the ramps where I-5 and Hy 6 cross and almost certainly the levees/road around the airport should be addressed immediately. There are a couple of low spots on the west side of I-5 north of the Chehalis 13th street exit that probably will have to be solved regardless. These are all local actions that have local effects. The dam saves huge areas of Socio-Economic importance not addressed at all by the "I-5 only" and the local projects.

Scott and Zerbe then discuss tractable estimation of benefits. They say that often the estimation of non-monetary benefits and costs injects a great deal of uncertainty into BCA. We agree since it is difficult to assign a reasonable value to saving, literally, the life of the dairy farmer whose death was the direct result of losing his dairy farm and animals for which he had worked his whole life. How do you assign a value to the disrupted lives when these folks have to retrain for a different type of work because of a flood? How many fish was the dairy farmer worth? How many fish for the person that had to be retrained?

DO you seriously not want a dam because a few fish may not spawn? How many fish is Mr Tyler Scott and Mr Richard Zerbe worth? Pick a number. Is 150 fish too low? How about 1000 fish? O.K., What about 100,000 fish for a U of WA PhD. Now, is a dairy farmer worth less than a U of WA PhD? Consider it carefully.

There are hundreds of cases like this from the 2007 flood that would not have happened should there have been a dam above Pe Ell. HOWEVER, note that these cases of loss and heartbreak would still have happened given only the protective walls and levees around I-5.

What are your objectives?

<u>MAJOR PROBLEM for Zerbe</u>:

A major problem with UW's Benefit-Cost Analysis approach by Richard Zerbe, PhD, that stresses solution cost-EFFICIENCY is that it does not work well if you are trying to compare anything but

apples-to-apples, i. e. systems that have exactly the same objectives, requirements and functional performance. If you try to compare Dirigibles to Fire Hoses, it does not work at all.

You may say that for the upper Chehalis River dam versus the I-5 walls and levees that we are trying to protect people from the flood in both cases. That is clearly not true. The "I-5 only" cares nothing for Citizens of our 3 counties.

In the case of the dam above Pe Ell, we are working to protect the people, animals, farms and businesses [in the whole Chehalis River Basin for the whole length of the River] that are in the flood plain and the floodway for the worst case flood experienced to date. If we choose not the worst case, at least we endeavor to protect these for a 100 year plus storm of the "Pineapple Express" type that hits the Willipa Hills, which historically wreaks the most basin damage and havoc. This very significant protection will be afforded to the tribe(s) as well as non-tribal populations. One thinks the Tribe also should hate to be flooded out.

This protection is available since ALL storm waters that fall on the Willipa Hills in the watershed above the dam at Pe Ell is subtracted out of the flood equation for the duration of the storm. This is true if the storm mostly happens in just 12 hours and was essentially done in 24 hours as in the case of the Dec 3, 2007 storm, or whether it sits on the Willipa Hills for a whole week. The 80,000 Acre feet storm storage and 65K A-ft Hydro-Electric Generation capacity is available. On Dec 1, a net capacity of some 120K Acre-ft is expected. This is 39 Billion gallons of water the dam can take out of the flood equation. Beautiful.

For Ruckelshaus Alternative # 1 with no dam, NO water [none, zip, nada] is extracted from the equation. It all rushes down to the ocean carrying significant portions of 3 counties with it and wreaking tremendous destruction valued at some $800Million for the whole basin. It also effectively throws away, discards as valueless, enormous quantities of clean electricity revenue that can be generated given the Hydro-Electric Generation capability of the dam.

For the case of "I-5 only" walls and levees, people, farms, and businesses in the three counties are not protected at all. Rather, more of these are inconvenienced because the walls and levees just direct the flow of the water in the flood plain and protect a small strip of land; land containing I-5. The objective is just to protect a strip of land so the transportation of goods, services and people on I-5 is not interrupted. This is a different objective than that for the dam. The dam helps protect people in the Basin AND also I-5, though perhaps not I-5 to the total perfection desired by some.

THEREFORE, we do not have a direct apples-to-apples comparison when we consider the dam above Pe-Ell to the "I-5 only" protection. The two approaches serve different objectives [functional purposes] and have very different effectiveness and benefits with the Socio-Economic benefit of the dam being some 10 times [or more] that of the "I-5 only" protection per flood event.

The "I-5 only" protection is totally ineffective for protecting the people, farms and businesses in the Chehalis River Basin. These program strategies [dam versus "I-5 only" protection] are not at all interchangeable or comparable.

In contrast, the upper Chehalis River dam does afford significant protection to the I-5 corridor while it restrains flood waters and generates electricity.

Even in the Dec 3, 2007 flood event, described by some as a once in 500 year, 3.3σ event, some argue that I-5 would be completely protected and some argue that there would be a low level of

flood water on I-5 for a few hours, not 4 days. Since the cost of a one day closure is about $12 Million, the net cost for four (4) hours would be some $2 Million.

The total cost of the 2007 storm and flood was some $800 Million with about $500 Million of this occasioned in Lewis County, not counting all the mental pain and anguish suffered by the people during and after the flood along the whole river length. The 4 days of closure of I-5 is said to cost $47Million so you see that what the dam would protect is at least 10 TIMES the value of what the "I-5 only" protection affords PER EVENT of the 2007 size.

Since history says that we will occasion a big storm and flood about once in 10 years, and since a dam will have a useful lifetime of over 60 and maybe over 100 years, the dam would potentially save those protected from 6 to 10 events at, say, an average of some $500Million per event for a total of about $3Billion to $5 Billion saved from destruction. This compares to the benefit of $300Million to $500Million for the "I-5 only" protection.

NOTE: BUILDING A MODEL TO ESTIMATE BENEFITS AND COSTS VALUES TO WITHIN 1%, WHEN THE EXISTING DESIGN AND COST DATA IS ONLY ACCURATE TO, AT BEST, 10% IS NEITHER "EFFICIENT" NOR "EFFECTIVE".

So, in the first big flood event, some $500 Million would be saved and the dam will cost less than that. Present estimates are about $250Million. It is easy to see that the dam pays for itself in the first big storm that happens after it comes on line. If we do not continue to mess around but rather go ahead and build the dam, perhaps the first big storm would come in the first fall/ winter after the dam is constructed and employed. Now folks, that would be efficiency.

Think of buying a tool, and the first time that you use the tool it earns back in savings more than you paid for it. Would you think that purchase was a good "investment"? We would.

It appears to us that you would likely not have to wait 10 years to completely offset the total cost of the dam. Then, you are on the positive side economically, regardless the value of the interest rate or the discount rate. Common sense says that building the dam is good to do.

In the case of only doing your report's Alternative # One with the walls and levees along I-5, etc. and no dam, you could still see $500 Million of loss in Lewis County per storm and flood due to flood damage of homes, farms and businesses; because the I-5 only protection does not work that problem at all.

Now, on page 174 their section IV. Important Issues for Consideration in Comparing Projects, Scott and Zerbe consider first Policy Goals and Objectives. They say that in an economic BCA, the objective is to maximize social welfare benefits, which greatly increases the complexity of the exercise [partially] since defining social welfare is a vexing political question. We suppose that one can make it complex and vexing if one desires to do so.

We believe there is no virtue in analysis methods that greatly increase analysis complexity for a small gain in insight into the decision process. We were taught that simplicity and clarity were next to Godliness. We think, without vexation, that saving people, property, businesses, livestock and the basin environment gives maximum social welfare benefits.

Since dam effectiveness meets the goals and objectives of maximizing the protection of the Chehalis River Basin from Pe Ell on down to the ocean, including the I-5 corridor, and saves some

10 times the cost of destruction that the "I-5 only" projects do, for what good reasons would one then engage in a complex analysis that muddies the water, so to speak.

Perhaps if one fish was as valuable as one dairy farmer, you might be able to make a case, but we doubt it. If the worth of a dairy farmer is taken to be that of a U of WA PhD in Socio-Economic Analysis, and this value is equal to 100,000 fish, then the dam is by far the winner, as everyone comprehends.

Page 175, 1st paragraph states that what is wholly unambiguous is that BCA takes efficiency to be the justification for policy decision-making.

Very well, we say that unless the set of projects meet basic requirements for EFFECTIVENESS, then efficiency is totally meaningless.

In this regard, the walls and levees protecting I-5 fail spectacularly to protect the people, animals, farms and businesses in the Chehalis River basin from Pe Ell to the ocean and therefore fail the effectiveness test miserably. Ergo, we must reject Alternative project set number one that discards the dam.

It is also for this reason that we take the carefully considered position that Benefit - Cost Analysis is not needed since it ignores the effectiveness of the solution sets and tries to compare, as equals, grossly different projects with grossly different objectives, requirements and performance.

We maintain that it has already been adequately shown that the net benefits gained by the expenditure of project costs for the dam grossly exceeds the opportunity cost of those funds and the dam totally will pay for itself in the first ten years with reasonably high probability. We think you should not leave the taxpayers money in an interest bearing account at 1% or 2% interest nor bury it in the back yard [which is almost equivalent these days], but should use it on the most effective project for the whole basin, namely the dam. There will be no benefit until one builds the dam and renders it operational.

The dam clearly produces the most benefits and this is particularly true when one out-fits the dam with fish saving capabilities, with Hydro Electric Generation [HEG] for revenue, and for supplying cold water in the Chehalis in the summer for fish. The dam provides additional recreation opportunities which are valuable in and of themselves. The dam clearly yields the most social welfare benefits. The HEG surely pays for itself at today's electricity prices and we have no doubt that the HEG has a good and acceptable net benefit cost ratio. We think it will be difficult to find a set of activities that come close to the HEG net benefit. The $90 Million for HEG, etc will prove to be a bargain as it will also give additional flood capacity. We are surprised Scott and Zerbe are trying to bring this into question. Apparently they are trying to bring every piece of the dam project into question.

We are not here talking about cashing in a Lotto ticket or an annuity, so defining a bunch of scenarios and wrestling with net present value we think is a waste of time. The net change in social welfare is clear and the dam wins hands down. It would be a very bad political decision to not build the dam. One would certainly not want that as their legacy.

We think that with a dam, the I-5 highway would not have to be raised from Napavine to Rochester. Since the benefit of the dam is so large, we are not sure whether any savings on I-5 are counted as a benefit or a negative cost will change the answer that the dam is the winner. Should

it matter, obviously we count it as a negative cost since this boosts the net benefit/cost ratio for the dam.

Complexity and obfuscation are the enemies of good decisions. We need neither of these.

On Page 177, Scott and Zerbe discuss "Uncertainty", inherent, irreducible uncertainty. They opine that even with perfect and complete data, system outcomes cannot always be accurately or precisely predicted.

NOW, everyone should realize that nothing is perfect, particularly the analysis models which are full of implicit and explicit assumptions, each model with varying degrees of imperfection in the abstract representation of reality. Assumptions are made by those building the model to simplify their work such that they can get the analysis done within time constraints, within the constraints of the language they use to build the model and within the constraints of the computer system upon which they run the model. It is folly, total folly to treat models as dispensers of truth.

There are times that even the analyst does not recognize implicit assumptions such as the assumption that the dam and the I-5 only flood walls/levees are of equal effectiveness across the total Chehalis Basin in relieving flooding effects and destruction costs before one can reasonably compare the efficiency of the "solutions". Without equal effectiveness across the solution space, efficiency comparisons between potential system solutions are meaningless. Theory is wonderful, but reality can be hell.

Scott and Zerbe say they are especially troubled with the way uncertainty is treated [or not treated] in the present analyses given the high variability associated with flood events. The high variability that has them all fretted up includes flood timing, sizes, distribution of rainfall, pre-existing conditions such as soil saturation, snow accumulation amounts in the Willipa Hills just prior to the main event, etc, etc, etc. Get used to it, that is nature, folks.

What is needed is a flood mitigation strategy that works across as many of these variables as possible. We look for a strategy that handles the usual experiences from the past, such as 1996 and 2007 floods, and that handles as many variables as possible given the actual physical environment in which we find ourselves. Over the years and many flood events, the rainfall distribution that occurs often, with maximal impact, is the "Pineapple Express" hurricane type storm that dumps water on the Willipa Hills in the watershed of the upper Chehalis and the water flows down the main stem through Pe Ell and the Doty gage.

To intercept the flood above Pe Ell is likely the most effective strategy available. It reduces significantly the flooding along the whole Chehalis River Basin. The "I-5 only" flood walls/ levees do nothing [are no help] until water gets to Chehalis and then it only directs the flow away from I-5, BUT does not reduce flooding at all anywhere else except that narrow strip on I-5. The people, farms, livestock, and businesses in the Basin still take the massive direct hit of the flood and the resulting costly destruction.

The "I-5 only" strategy is not an effective flood mitigation strategy for the Chehalis Basin. That is why it is called "I-5 only".

Recent experience [the last 100 years] indicates that one should expect a "100 year" storm about every 10 years of the "Pineapple Express" variety. So we may have 5 years left until the next one [Note: this is longer than the USA was involved in and committed to WWII]. We understand

well enough the cost of not being ready for the next big flood, therefore we are compelled to protect businesses, farms, animals, people, etc as quickly as possible.

We are certain that uncertainty will bite us much less than the next big storm.

The decision makers need to make the best decision they can with the data now in hand. The model makers can do whatever folks think may be useful in parallel with building the dam, if they wish, but let us not delay because we know that the "perfect" [even if you could achieve it, which we very seriously doubt] is the enemy of the "good" when it comes to decision making.

In the making of abstract models of reality there is certainly no end. We have nothing against models and theory and efficiency, etc, and the making of new PhD's in Socio-Economic Analysis as long as it does not impede getting the job of protecting the Chehalis River Basin done NOW before the next big "Pineapple Express".

We think that the so-called "expected value", and "point estimates" for benefits and costs illuminate the choices adequately.

When you combine these with an understanding of the experiences of flood history, one can easily see that while it may be safe in Seattle at the U of WA over the next 5 to 10 years, it certainly is not safe along the Chehalis River Basin from the threat of a repeat of a 1996 or 2007 type flood event. If we move to solve these, we will have moved from a position of DREAD of the next big storm to a position of relative confidence where we can consider what else one should do in addition to the dam. The dam should clearly be first, and then fix the remaining smaller challenges.

Our experiences with flooding tell us clearly that to mess around with assigning a yearly value of 1/500th of the cost associated with the estimated damages from a "500 year event" on the Chehalis is not clever in the least.

Our experiences indicate that our understanding of "100 year" and "500 Year" floods is somewhat amiss when we seem to get a "100 year" or worse storm every 10 years or so. We should probably study what is going on and see if it is possible to come up with a new understanding of the probability of occurrences of storms of various sizes. However, this also should not stop us from building a dam as soon as possible.

And, let us not forget global warming and global cooling and what effects they may have on the ferocity and frequency of storms. It seems that both the believers in global warming and the believers in global cooling think that storms will get worse and more frequent in the future. Are they all pessimists? We think it unlikely that there will be any measurable difference in storm frequency or ferocity probabilities in the next 10 years. It would be good to understand just what those probabilities really are now from historical data.

You probably are by now getting a clear picture of our thoughts.

We think that the penalty is very large, unacceptably large, not only in monetary terms but also in terms of human suffering, for doing nothing or doing something that is far less effective than a dam in preventing the devastation of a flood from a big storm in the gestalt Chehalis River Basin. Something like "I-5 only" protection simply does not satisfy flood mitigation requirements for the Basin.

No reasonable Citizen of Lewis, Thurston and Grays Harbor Counties supports the "I-5 only" project at the expense of the upper Chehalis River dam above Pe Ell that protects the whole Basin.

Protecting "I-5 only" is far, far less effective than the upper Chehalis dam and therefore does not deserve our support.

We like protecting I-5, but not at the expense of all the folks, farms, animals and businesses along the whole Chehalis River Basin.

No efficiency argument can change these facts and the obvious conclusion that the dam is the winner with the most Socio-Economic benefits by a factor of about 10.

There is no reasonable excuse to delay the decision to start the permitting, design and construction of the dam on the upper Chehalis above Pe-Ell as soon as possible, should one be serious about saving the Chehalis River Basin from more destruction and also protecting I-5 from the next big storm and flood.

Let us all pull together and get this done.

Sincerely,

John F and Nancy R Cramer; cell 880.1934, email JFC451934@aol.com

Date: August 30, 2012

Subject: Chehalis Basin Flood Mitigation Alternatives Report, draft July 16, 2012

The Washington Department of Fish and Wildlife (DFW) has reviewed the Draft Chehalis Basin Flood Mitigation Alternatives Report (Alternatives Report) and offers the following comments for consideration.

Our comments are offered based on our interest in protecting species that may be affected by alternatives identified in this report. We are also interested and willing to continue the dialogue on the flooding issues in the Chehalis basin to assist in identifying basin wide solutions that include fish and wildlife protection and mitigation.

GENERAL COMMENTS

The report identifies few options other than a dam to address flooding issues as a basin wide solution . Even though there are alternative evaluations and considerations pending, the report seems biased towards a dam.

SPECIFIC COMMENTS

The executive summary references the Anchor QEA Fish Impact Study (Anchor Report) and identifies the potential for *flow augmentation that may increase the number of spawning spring Chinook in the upper mainstem by 22%-46%.* The suggestion for potential improvements in fish distribution and spawning is uncertain at best and relies upon downstream habitat that is suitable for spawning. This is an unsubstantiated claim that should be removed from the Alternatives Report. The statement would be more accurate to state that the flow augmentation from a dam could potentially improve water quality downstream.

There is also the reference to the Anchor Report which predicts *reductions in winter steelhead populations to be 32%-81% and coho by 28%-67%* respectively in the upper mainstem. The Alternatives Report mentions that *people who support water retention recommend mitigation like side channel restoration and removal of fish passage barriers to mitigate these effects*. It is misleading to suggest that removal of spawning habitat in the upper river can be mitigated by improving access to lower quality habitat in the basin and reconnecting side channel rearing habitat. The presumption is that the fish will simply relocate. Steelhead, in particular have a high fidelity for spawning location and generally do not stray from these areas, year after year. If the spawning habitat is eliminated, it is likely the rearing habitat mitigation could have little or no use. August 30, 2012 Page 2

Page 30, there is a typo at the beginning of the last sentence of the paragraph. The word “Information” is misspelled “Informaiton”.

Page 31, the chart “run sizes and escapements” needs more explanation to help identify the gap between the solid and dotted lines as harvest to demonstrate the significance of the Chehalis fisheries.

I have also included reference photos for use in the report at your discretion (figures 1-5).

Thank you for the opportunity to provide these comments. Please contact me at 360-902-2390 or Travis.Nelson@dfw.wa.gov if you have any questions.

Travis Nelson

08/30/2012

To whom it may concern:

I am writing this letter to express my concern about the proposed changes involving I-5 and the West Side bridge in my neighborhood.

My name is Brian Raymor and I am a 7 year resident of the historic West Side neighborhood. My property is in a constant state of improvement as I attempt to add to the sense of community that is felt in this area. I feel strongly that my neighbors contribute to this end and it is important that this neighborhood remain as unified as possible.

The suggestions proposed by DOT would effectively cut the neighborhood into two distinct areas divided by a larger road. We would also experience increased traffic and noise due to large trucks being free to drive down West street.

Additionally, under this plan home owners in this area will suffer a reduction in property values as some of the equity in our properties is tied to the desire to live in a quiet, family oriented area absent large transit trucks and traffic. Surely there will be those among us in the neighborhood that will propose to resolve the various conflicts of interest and damages by litigating the issues in court. This is an expensive option that would best be avoided by finding a way to resolve the DOT flooding concerns without affecting our neighborhood.

Thank you for your considering my opinion.

Brian Raymor
654 St. Helens Ave
Chehalis, WA 98532
(360) 508-6049

Hello My name is Marlene Hampton. I have lived in Rochester Washington since 1980. I can in no way describe to you what it is like to be flooded to make you understand the trauma a person goes through. It is one of those experiences you have to experience to fully understand. I was very disillusioned when I heard awhile back that our governor was more interested in the commerce of out state than she was the flood victims. I went to a meeting last week hosted by WSDOT which reiterated the states goal not to interrupt commerce at the expense of the people. From what I understand the walls they plan to construct will make flooding on the west side of I-5 worse! What kind of a solution is this? Wouldn't it be great to have a advocate to expedite the Dams process. This would benefit EVERYONE and the money spent on the walls could be put towards the Dam project. The craziest aspect of the whole idea of the walls is that some tax payers will be helping to fund a project that will causing them to be flooded more!!! I honestly don't know how the folks that make these decisions can sleep at night. This is like throwing a drowning victum an anchor!

August 31, 2012

Ruckelshaus Center, WSU West

520 Pike Street, Suite 1101

Seattle, WA 98101

We appreciate this opportunity to provide comments on both the Chehalis Basin Flood Mitigation Alternatives Report prepared by the Ruckelshaus Center as well as upon the WSDOT Draft Report: I-5 protection from 13th Street to Mellen Street near Centralia and Chehalis, both of which address flooding issues in the Chehalis River Basin.

Addressing how to prevent and/or mitigate recurring flood damage in the Chehalis Basin has been a topic of concern and discussion for over 100 years. More recently the interruption of commercial and personal travel along I-5 during major flood events has also come to the fore. Both issues now seem to be coming to a head.

In the more than 22 years that our family has lived in Chehalis we have lived through the largest flood events this basin has experienced during the lifetimes of all but any centenarians residing in our communities- those of 1996, 2007 and 2009. There have been almost constant debates about how to address flooding. And no resolution. Politics, personal interests, economic constraints and a myriad other factors have prevented action. Hopefully the current approaches outlined in the Chehalis Basin Flood Mitigation Alternatives Draft Report will lead to a different result.

It is with that hope, and as a gesture of appreciation for the work that has gone into both the Flood h Mitigation Alternatives Report and the WSDOT Draft Report: I-5 protection from 131 Street to Mellen Street near Centralia and Chehalis that we offer the following comments on the two reports.

Comments on Chehalis Basin Flood Mitigation Alternatives Report

Proposals to provide flood protection to I-5 as set forth in alternatives contained within the WSDOT Draft Report are being criticized by some policy makers and local officials because protecting I-5 does not offer basin-wide flood mitigation benefits. The rationale those individuals use in supporting that criticism is that focusing on protecting I-5 will dampen the pressure to undertake other flood protection measures to provide relief to areas outside of the I-5 corridor.

What those criticisms of the I-5 protection alternatives fail to take into account is that there are no proposals under consideration (or to our knowledge that have even been conceived) that,standing alone, protect the entire Chehalis Basin. And there is no politically viable prospect for marshalling local, state and federal funding in an amount sufficient to accomplish a basin-wide approach at one time. Face it, basin wide flood protection and mitigation will have to be phased in and should begin immediately. The surest way to niake a start- and the way that provides the earliest and greatest positive impact - is by securing the I-5 transportation corridor with its accompanying protection to the more heavily populated areas in Chehalis and Centralia. Thus, our later comments on the WSDOT Draft Report will address the specifics of what we believe is the preferred manner for protecting I-5.

Having said that, and not wanting to ignore the balance of the Chehalis Basin, we want to now begin to address the Chehalis Basin Flood Mitigation Alternatives Report.

A large water retention dam near PeEll appears to be a popular alternative for maximizing protection throughout the basin because it is easy for a lay person to understand. But that alternative is very expensive and has drastic ecological and environmental impacts, some of which we believe are unacceptable. Furthermore, it does not preclude flooding. It merely reduces the 2007 flood level by 3 to 4 feet in the Twin Cities. A dam alone, if not augmented by I-5 protections, would still inundate and close I-5 in a flood event comparable to the 2007 flood.

It would also still leave water depths of 5 to 6 feet on Prindle Street in Chehalis and intrude about 2 feet or more into the lower level of the historic round carriage house located on our property.

And should the dam fail (which does happen, as recently as this week in the Southeastern United States) there would be catastrophic damage to property downs.tream and potentially a significant loss of life. A dam failure would also drain the reservoir area creating additional environmental havoc.

Presently, instead of a dam we believe a better basin-wide approach to mitigating flooding is to encourage implementation of programmatic options like those set forth at page 47 of the Chehalis Basin Flood Mitigation Alternatives Report. Land use management, flood plain regulations, limits on fill and development in flood plain, structure modification and raising and other options of that sort can be implemented at the lowest cost to the public at large.

We recognize the great drawback to this approach. It transfers the cost of flood mitigation to landowners through reduced property values and limits on land uses. That runs afoul of the politically conservative residents who comprise the majority of the residents here in the Upper Chehalis Basin. And our experience in trying to enforce the State's Growth Management Act here in Lewis County clearly shows the depth of political and public opposition to such measures that would be faced and would have to be overcome. But in the long run the benefit is well worth the effort.

As a fall-back position if political opposition to programmatic options cannot be overcome and a "big project" approach is undertaken, we prefer some version of Combination 3 outlined in the Flood Mitigation Alternatives Report that includes Option 1 from the WSDOT report. For that reason we now turn to comments on the WSDOT Draft Report: I-5 protection from 13th Street to Mellen Street near Centralia and Chehalis.

Comments on the WSDOT Draft Report: 1-5 protection from 13th

Street to Mellen Street near Centralia and Chehalis

As residents of the Historic Chehalis Westside neighborhood and business owners in Chehalis the proposed solutions for protecting I-5 from flooding contained in the WSDOT Draft Report are of particular personal relevance to our family. Our home is located at 647 NW St. Helens Avenue in Chehalis. We travel from home to our downtown law office in Chehalis several times daily. Both our neighborhood on the Westside and the downtown Chehalis business district are National Historic areas about which our community is proud. We have lived in our home on St. Helens Avenue since early 1995. Our property is approximately one acre in size and slopes downward to the alley abutting the residences on Prindle Street. Our property includes a home built in 1910 that is on the National Historic Register and a large round carriage house/ bam built in 1900 that is also on the National Historic register and may well be the largest surviving round carriage house in Washington1 •

Since we moved into our home in 1995 we have lived through the major floods of 1996, 2007 and 2009, all of which closed I-5 for varying periods of time. The lower part of our property, including the carriage house, was flooded in each of those major floods, with water being more than 5-feet deep in the carriage

house and to a depth of 12-feet or more in the lowest part of our yard during each of those floods. During each of these three major floods in sequence the flood waters came closer and closer to the residence itself.

In addition to those three great floods we have seen flood water intrude into our yard several other times, usually with less than 6 inches of water reaching the carriage house on those occasions. Fortunately, because our home is several feet above those flood levels and also because we do not store personal property of high value in the lower level of the carriage house, the flooding has not caused us any significant monetary loss. Our neighbors, though, especially those abutting our property on Prindle Street, have suffered huge losses from flooding.

Nevertheless, we are extremely interested in measures, including protection of I-5, that will mitigate or eliminate flooding in our neighborhood. Thus, our interest in and these comments on the WSDOT Draft Report are offered for consideration in evaluating and/or revising proposals for flood control in our area.

Of the six proposals (four analyzed briefly and two mentioned but dismissed by WSDOT as financially infeasible) discussed in the WSDOT draft report, the one we favor is Alternative 1: I-5 Levees and Walls, Raise Airport Levee, New SW Chehalis Levee, reflecting widening ofl-5 to six lanes and constructing protection assuming no dam being built in the Upper Chehalis basin. Elevating I-5 in some places should be considered as an additional alternative. We favor this approach for the simple reason that protection is needed for the Chehalis/Centralia area immediately. I-5 is not only crucial to the economy of Washington State and the west coast, it is vital to the economy and lives of the people in Lewis County. Those losses to interstate commerce, as well as to the businesses and home owners whose property is flooded when I-5 is threatened, must not be allowed to be repeated over and over again.

While several years may pass before the improvements in this alternative will be completed, prospects for basin-wide agreement on any plan, let alone an extremely costly dam above PeEll is extremely controversial. Prospects for construction of a dam are both much more speculative and the timing of construction, if it ever occurs, is likely to be much later in the future.

Frankly, the savings from proceeding with Alternative 1 now regardless of the outcome of a dam proposal will save more in losses from a single flood like that of 1996, 2007 or 2009 than it will cost to construct the levees, walls and I-5 widening.

While Alternative 1 is our preferred option from among those contained in the WSDOT Draft Report, there is one aspect of that alternative we want to see changed. It reflects widening ofl-5 necessitating replacement of the overpasses at Main Street, Chamber Way and West Street. The Main Street and Chamber Way exits are less than a mile apart. A new bridge at West Street would offer no access to I-5 and serves no purpose in easing the flow of traffic on I-5. But it would have two severe impacts upon the Westside Chehalis Neighborhood.

The first is the increased volume and speed of vehicle traffic through the Westside neighborhood, particularly of large trucks. The existing bridge is narrow and has a sharp curve at its western end that makes it difficult for trucks to navigate. Widening and lengthening the bridge and its approaches will make it easy for large trucks to navigate that route allowing trucks going to National Frozen Foods and/or Sorenson Trucking's terminal on State Street to get to their destinations without having to travel by way of either Chamber Way or Main Street. And a new bridge will encourage more cars to use that route through our quiet neighborhood to get to the airport, to the shopping area along Louisiana

Avenue and to the Riverside Golf Course. That increases noise in the neighborhood and the potential for children and other pedestrians to be injured.

The second negative impact of replacing the West Street Bridge is its impact upon the Westside Park and the access to homes on New York and Ohio Avenues. New road construction standards will require a replacement bridge to be much wider and higher than the existing bridge. In addition, widening I-5 will push that interstate east toward Maryland Avenue and New York Avenue south of West Street. The bridge approaches for a new bridge will block access to West Street from New York and Ohio Avenues and will either take part of the already small (3/4 of an acre) Westside Park or result in retaining walls eliminating the sidewalk that runs adjacent to the park on West Street and blocking access to the park for those living north of West Street.

Two of the proposals put forth in the WSDOT Draft Report are unacceptable. Alternative 3, the I-5 Express Lanes, and Alternative 4, the I-5 Temporary Bypass, have such a negative impact upon the City of Chehalis and the Westside Chehalis neighborhood that regardless of their costs (which are for all practical purposes unknown since the availability of the Tacoma Rail Line right of way is up in the air) that they should be rejected as politically infeasible.

Both alternatives contemplate using the Tacoma Rail right of way through Chehalis as the route for a single lane of traffic each direction. Both involve construction to a height that places the surface of the express lanes/bypass lanes, including the guardrails, some 22-feet above the existing street surfaces at Main Street, Prindle Street (and St. Helens Avenue as it joins Prindle Street where the Tacoma Rail line crosses Prindle) and West Street at State Street. Depending upon whether the option will be a temporary bypass or express lanes, the roadway through the urban development area of downtown Chehalis will be a 40 to 50 foot wide wall with vehicle and pedestrian access between the Westside and Downtown area only through the three bridge crossings at Main Street, Prindle Street and West Street.

What those two options do is bisect the City of Chehalis, separating the Westside neighborhood, including the businesses located there, from the rest of our community and permanently altering the overall nature of our city. Even worse, they result in the Westside neighborhood being completely surrounded by freeways making the area an isolated island of primarily residential development exposed to even more noise from high speed motor vehicle traffic and accompanying exhaust pollution than currently exists or would exist with a simple widening of I-5 to six lanes.

The homes in the Westside neighborhood include some of the largest, most expensive and historic homes in Chehalis. The history of our community was written by the original owners of these lovely homes - judges, bankers, politicians, prominent business leaders, etc. Evaluating Alternatives 3 and 4 looking only at construction costs, as was done in the WSDOT Draft Report, does not take into account the very real historic, cultural, social and other very important costs associated with building either of those two alternatives.

It ignores the cultural impact that will occur when either alternative severs our community. It ignores the huge impact that removing the rail service to the Wilco Agricultural Center and CENEX has on those major businesses as well as the impact upon the new Lewis County PUD electrical facility that construction of the elevated roadway there will have. It gives no consideration to the negative impact that the increased noise and pollution will have on residents of the Westside, particularly those whose homes are immediately adjacent to the proposed express or bypass lanes and to the elderly and infirm residents living at Chehalis West, a nursing home that abuts the existing Tacoma Rail right of

way. And it does not take into account the tremendous loss in real property values to the homeowners living immediately adjacent to the Tacoma Rail right of way on Prindle Street, St. Helens Avenue, Division Street, Hawthorne Place and Rhode Island. Everyone else owning property on the Westside will also be damaged as a result of the inevitably loss in property values occurring because their property will be a much less desirable place in which to live if bounded on all sides by freeways and cut off from downtown Chehalis by Express Lanes or a Temporary Bypass.

We thank you for this opportunity to comment upon the Ruckelshaus and WSDOT Draft Reports.
Sincerely,

Deanna M. Zieske Lewis Zieske

Our family would like to add our comments to this report. We live close to Adna WA and were greatly impacted by the Dec. 2007 Chehalis River flood. It is impossible to describe the prolonged stress and difficulties that this brought. Our major clean-up and repairs took six months and $70,000 to complete. We are in the cattle buying business and due to destruction of our fences and damage to our corrals we were unable to operate for those six months. The financial burdens are going to be long-standing. Emotionally the experience was crushing. A flood control plan that merely includes dikes to protect I-5 will put us at greater risk. There should not be a few winners and many losers in the end result of a movement started to protect the entire Chehalis River basin. We encourage those considering the different options available for flood control to work towards the combination of solutions that will help as much of the basin as possible. Dan and Larissa Maughan

Hi, Melissa. To the writer/editor of this report, compliments on the actual writing in the report. It's beautiful!! Good writers are rare and worth their weight in gold --thanks for a technical report that's lucid, easy-to-read, and nicely laid out

Comments/questions:

1. p. 1 of Executive Summary, second sentence, please say "...the Basin suffered two catastrophic floods ONLY FOURTEEN months apart..." instead of 'approximately 18 months apart.' It's important to recall that essentially two years in a row, big floods hit the Basin.

2. p. 3 of Executive Summary and p. 48, final sentence under water retention paragraph: Not ALL hydrologic analyses show these benefits of a dam (esp. the 2 feet at Montesano), so adding a qualifying sentence or phrase about what different reports and analyses show would be more accurate here.

3. p. 9 of the Executive Summary and p. 52: excellent summary of our group's discussion on what a 'basin-wide solution' meant to each of us. Speaking in terms of 'hallmarks' or 'principles' of a basin-wide solution is a helpful way to frame the problem.

4. p. 49, final paragraph under '...Upstream Water Retention Facilities': I think it must be said here that NO analysis shows that a dam offers complete protection from an 07-like event, and even less for an 09-like event. The proposed dam doesn't prevent flooding, it merely reduces the height of the flood. The report should be explicit about what the data/analyses of the dam show. The graph on p. 59 that seems to compare the benefits/effects of the three different project combinations, for example: doesn't this depend on which storm event you're looking at?

5. p. 60: at the end of the 'Another Way' section, I think a summary discussion of the 2010 Earth Economics report would be helpful. Here's the gist of what I suggest:

In the 2010 Earth Economics study commissioned by the Flood Authority, "Flood Protection and Ecosystem Services in the Chehalis River Basin," the authors identify and estimate the economic value of natural systems (floodplains, forests, wetlands, free flowing rivers, permeable soils, etc) in the Chehalis River Basin, many of which provide flood protection. When these natural systems are impaired or ruined by built structures like roads or buildings, two costs are incurred: the loss of these free ecosystem services that protect against flooding, and the need to build additional structures (dams, levees, flood walls, etc) to protect the first built structures. The report identifies at least $11 billion or more worth of free ecosystem services in the Chehalis River Basin, the loss of which should be part of the calculus of any benefit/cost analysis when considering some of the large capital flood protection projects discussed in the project combinations section above.

6. The report makes nice use of photos and quotes throughout. Here's a quote I suggest be added wherever most appropriate (a photo to go with it would also be nice):

"By taking a comprehensive basin-wide approach to flood protection, inclusive of communities affected by flooding, and areas that provide flood protection, the Chehalis River Basin Flood Authority is set at the right scale to integrate flood protection with development and conservation goals across jurisdictions, industries, ecosystems and communities." [cite from *Flood Protection and Ecosystem Services in the Chehalis River Basin*, Earth Economics, May 2010]
Thank you for the opportunity to comment on this report.
Karen Valenzuela

Thank you for the opportunity to participate in the outcome recommendations on the Draft Chehalis Basin FLood Mitigation Report. We appreciate that this is a very complex project and hope our input will be of assistance in making decisions that will benefit the environment, visitors and residents of the Chehalis Basin Watershed.

FOGH is a broad-based 100% volunteer tax-exempt 501(c)(3) citizens group made up of crabbers, fishers, oyster growers and caring citizens. The mission of FOGH is to foster and promote the economic, biologi- cal, and social uniqueness of Washington's estuaries and ocean coastal environments. The goal of FOGH is to protect the natural environment, human health and safety in Grays Harbor and vicinity through sci- ence, advocacy, law, activism and empowerment.

As we all know, the Chehalis basin drains 2,660 square miles and is broken into two separate WIRAs, the upper 23 and lower 22, which empty into the Grays Harbor Estuary and the Pacific Ocean. It goes without saying that what happens upstream affects the ecology of those waters downstream. As a result the water-quality, water-quantity and timing of flow are of significant importance to the health and economic vitality of the region.

We are concerned that consideration is given to any sort of dam or water retention configuration and strongly oppose that as a solution, partial or in whole. Dams have proven to be destructive to salmon and steelhead runs. As Mark Cedergreen, CEO of the Westport Charterboat Association and advisor to the Pacific States Marine Fisheries Com- mission stated, referring to the salmon run on the Columbia River, "...its production today [is] about 10-15 percent of what it was pre-dam." The Chehalis runs are smaller to begin with and they cannot suffer a decline from their present levels.

The treaty tribes, such as the Quinault Nation depend on the delicate balance that nature provides to sustain their culture and sustinance. The natural flow of waters during flood events depends upon healthy and natural storage of wetlands and riparian areas. Any interruption of this natural process only exacerbates problems elsewhere - usually downstream.

A comprehensive review of all zoning law, exemptions and variances should be done in and around the basin drain- age area. Stringent prohibitions should be made to filling or modifying wetlands and riparian areas. Mitigation for projects should NOT be allowed out of area or kind. If the proposed project would jeopardize existing functions and values then it should not go forward.

We note that the basin is described as Forestland making up approximately 84 - 87% of the WRIAs. Considerable data has been collected and various reports have shown that large trees have a greater water storage capacity rela- tive to water use than smaller trees. We encourage that forest practices need to be enforced and special consider- ation should be given to the critical areas that lie within those permitted areas. Perhaps the cut cycle of the forest practices should be studied and a calculation used to determine the effects of water storage in trees if the cycle is increased to 80-years from its current

level.We concur that dredging practices will negatively impact and dramaticlly affect flooding in the lower main stem and downstream cities. Actions which speed drainage from the upper WRIA will interfer with and potentially overwhelm the rivers, streams and other tributaries as they begin their own natural drainage system of storm gen- erated waters.

In summary

Problems with dam proposal:

1. Would not protect I-5 under all flood events

2. Highest risk for damage to ecological functions – salmon, steelhead

3. Highest cost of all proposed projects. Cost-benefit not analyzed yet

4. Limited federal funding for new large scale projects like water retention

5. Project design is still in early phase and cost estimates may change significantly

6. Need for significant additional technical and design work if the project moves forward, including for fish pas- sage facilities

7. Process for approval and construction of a dam can take 8–15+ years, with many opportunities for challenge by opponents

8. Damming rivers is the most expensive, most damaging alternative and should not be considered.

Problems with dredging:

1. Impacts for increased flooding in lower main stem and downstream cities.

2. Significant environmental impacts, damage water quality habitat, damage high quality riparian zones.

Problems with levees:

1. Levees would increase flooding in other areas.

2. One proposal for levees would only provide I-5 and airport with protection - not a basin-wide solution.

3. Levee proposal for Twin Cities –same concerns as above – increase flooding in other areas; not basin-wide

solution.

We encourage that before any structural solutions are considered that a long view of the problem and its solu- tions are instituted for the long-term. Enforcement of existing wetland and forestry rules should be augmented by reviewing culverts, blockages and improper practices.

Sincerely,

Arthur (R.D.) Grunbaum

President

Cynthia & William Tahl

616 NW Hawthorne PL Chehalis, WA 98532

August 30, 2012

To whom it may concern:

We are writing this letter regarding the proposed 1-5 Express lanes.

Our home/property is on the Historic Westside of Chehalis, sitting approximately 125 feet west of the Tacoma rail line.

We have been resident homeowners here for 33 years. For many years the rail line was active and busy and was of little disturbance to our neighborhood or our lives. Lately the rail line is used much less and in open to the Historic Steam Train during the tourist season.

The proposed express lanes would turn our quiet historic neighborhood into an unsightly nightmare; our neighborhood would become or at least resemble an industrial area with bridges, concrete walls, noise & pollution. This would without doubt adversely affect the property values in our historic neighborhood.

While we are well aware of the need to improve access through this part of the 1-5 corridor, this

2-lane expressway is not a logical alternative. A two lane expressway would not have useful traffic flow during normal traffic days, and would be a virtual parking Jot during an emergency. Currently, with four lanes available, our area of 1-5 moves at a crawl every weekend. This expressway location is just not a viable option as it will not provide the solution sought.

Regards,

Cynthia Tahl

Chehalis Basin Flood Mitigation Alternatives Report and

1-5 Expansion, 13th Street to Mellen Street

Westside Chehalis Neighborhood Association Comments

August 31, 2012

We value this opportunity that citizens and the Tribes living within the Lewis, Grays Harbor, and Thurston County portions of the Chehalis River Basin have been given to comment on the difficult task Governor Gregoire has assigned the Chehalis Basin Flood Authority with assistance from the Ruckelshaus Center. Developing a basin-wide flood mitigation plan that addresses everyone's interests and concerns is a virtual impossibility. But giving citizens an opportunity like this to provide comments and suggestions at every stage of the planning process offers the best opportunity to achieve something at least approaching a consensus.

We also value the opportunity granted by Jim Kramer, Chehalis Report Project Manager, of the Ruckelshaus Center to favor our request for extending the comment period for its report to allow us and other communities to utilize the contents of the WSDOT Draft Report in our responses.

In November, 2011, the President of the Westside Neighborhood Association, in her capacity as a member of the Scoping Committee for the I-5 Expansion from 13th Street to Mellen Street, presented written information gathered through a series of three local meetings in our neighborhood to help WSDOT understand our views about I-5 expansion during the WSDOT early planning for exEansion ofl-5 through Chehalis. Since then the WSDOT Draft Report on I-

5 Protection from 13 Street to Mellen Street has been completed and made available for

comment.

Following receipt ofthe August 17,2012, WSDOT Draft Report and WSDOT's community meeting at the Veteran's Museum the Westside Neighborhood Association met again to address that report's content and to develop additional comments concerning flood mitigation planning in the Chehalis Basin.

For nearly a half-century the residents of the Chehalis Westside have worked together in an organized fashion to improve our neighborhood and foster a friendly, attractive, and safe community. The current version of that organization is a not-for-profit 501(c) corporation called the Westside Chehalis Neighborhood Association working on behalf of the more than 270 residences located on the west side of Chehalis. Our association encompasses all the residences from State Street to I-5 (east to west) and Main Street to Geary Street (south to north). While there are several businesses located within this area, we do not claim to represent them or their interests.

As residents of the Historic Westside Chehalis neighborhood who will be significantly impacted by expansion ofl-5 between 13th Street in Chehalis and Mellen Street in Centralia we on the Westside want our thoughts and recommendations about the I-5 expansion project to be considered. Because of our proximity to I-5, the disruption that will result from construction operations during the expansion work and the long-term impact that I-5 changes and expansion will have on air pollution, noise levels, traffic volume adjacent to and through our neighborhood, and the flow of water in and through our neighborhood during flooding, the Westside Chehalis Neighborhood Association invited all members of the Westside community to prioritize and voice their concerns, to discuss and ask questions, and to offered

suggestions to be included within comments made on behalf of the Association to the Ruckelshaus Center and WSDOT.

As a result four significant questions arose and are presented here.

1. *Should 1-5 be elevated between Main Street and just passed Chamber Way so that future floods will not cause a closure of that vital transportation route? Yes.* Our neighbors expressed a very strong interest in making sure that the freeway is designed to remain open during all floods.

2. *Should the planning for 1-5 expansion take into account the impact of the freeway on flood mitigation and floodplain management? Absolutely.* Westside residents are very concerned that changes to I-5 should not adversely impact the extent of flooding in our neighborhood and that planning should incorporate responsible flood plain management considerations. Dillenbaugh Creek is the source of our south side flooding.

3. *Should dense and oversized sound barriers be installed to reduce noise impact on the Westside neighborhood? Yes.* We are very much in favor of adequate noise control measures being included in the I-5 expansion project, including installing oversized sound barriers. Foliage such as trees and plants also would quell some of the sound.

4. *Once the West Street Bridge is removed to allow the widening and relocation of*

1-5,should the West Street Bridge be replaced? No. Not replacing the West

Street Bridge was strongly favored. Eliminating that bridge would significantly reduce itinerant traffic speeding through the neighborhood and increase neighborhood cohesiveness. We are not interested in a replacement of West Side Bridge over 1-5 ending in a roundabout at Louisiana, especially one costing more than $6,000,000.

Specific Ideas Put Forth at Neighborhood Meetings

Specific ideas and/or recommendations offered by those attending the neighborhood meetings are listed below.

Designing for Handling Water Flow

- Make a concentrated effort to pursue funding for the elevation of and the I-5 expansion because it surely will flood again and again, continuing to destroy and damage residences and businesses through this corridor.

- Protect and keep the Westside Residential Neighborhood safe from flooding, air and noise pollution. Protect and keep the Chehalis River healthy.

- Elevate I-5 from Main Street to Chamber Way allowing water to collect and flow away from the roadway while protecting the residential neighborhood.

- Planning for I-5 expansion should make use of Preliminary FEMA Maps.

- Homes on Prindle Street near I-5 are the ones that flood in virtually every flood incident.

We propose that the State purchase at fair market value all homes on Prindle Street West from Quincy Street to I-5. But leave the existing alley to allow access to the City of Chehalis Pump Station and for St. Helens Avenue home owners' access to the back of their property.

- For drainage dedicate the vacated property on Prindle Street for a large retaining pond, not for any further development of or expansion to Liberty Plaza.

Noise Control

- Retest Sound Density levels emanating from I-5 into the Westside neighborhood.

- Build extra tall and dense sound barriers for the residential neighborhood beginning at

Main Street and extending to Chamber Way.

- Maintain the elevation of West Street as it currently exists and Dead End West Street at

New York Avenue.

West Street Bridge & West Side Park

- Historically this % acre park was part of an elementary school playground. During the

1949 earthquake the school suffered extensive damage and as a consequence demolished. What remained became the West Side Park. The present West Street Bridge with the narrow lanes and extreme curve at its western end was constructed in the 1950s.

- Following its removal, do not replace the West Street Bridge with one designed for the use of autos or trucks. Rebuilding and extending West Street and the Bridge will disturb, widen, and invite even more unwanted speeding traffic to cut through our neighborhood. Not replacing the West Street Bridge will eliminate West Street as a dividing barrier in our neighborhood.

- *Construct a handicap accessible covered pedestrian/bicycle bridge over 1-5 from West*

Street to the Airport Loop TraiL

- Don't encroach upon the existing West Side Park. Where homes on New York Avenue are removed for I-5 expansion use the vacated property wherever possible to enlarge West Side Park

Other Suggestions

- Add a cul-de-sac to every dead end street for emergency vehicles access.

- Prindle Street dead ends at I-5 and currently does not have a cul-de-sac as required or any place for emergency vehicles to turn around.

- Several of the homes nearest to I-5 in the areas flooded have been raised as a form of flood mitigation. But the ones closest to I-5 are vulnerable should large vehicles go out

of control and veer off the freeway toward the east. Some sort of protective barriers need to be installed to protect those homes.

- Maintain our neighborhood character. It is a National Historic District with a friendly and cohesive neighborhood character.

WSDOT Draft Report: 1-5 Protection from 13th Street to Mellen Street

It is imperative in making progress on this extremely complex and emotional project that we remain calm and explore the options laid out before us and perhaps some that have not been mentioned. We believe one option WSDOT states is not viable because it is cost prohibitive does deserve consideration. That option, elevating I-5 for a limited distance between Main Street and just past Chamber Way is one that could have an impact on flooding because I-5 does cause closure from flooding for that distance. Combine that option with the New SW Chehalis Levee allowing the flood waters to run freely under I-5 while protecting homes and businesses.

While varying opinions regarding flood issue combinations were obvious, there is no doubt that two alternatives provided by WSDOT got resoundingly and unanimously rejected at our neighborhood meeting! Both Alternative 3, I-5 Express Lanes, and Alternative 4, I-5 Temporary Bypass, prompted the most vigorous discussion. The end result of that discussion are the following: No, No, and No!

Either of those alternatives negatively affects our entire community is drastic ways without offering significant benefits to mitigating flooding or protecting I-5. The WSDOT Draft Report at page 20 states, "However, the lanes likely would be visible from some homes on the edge of the West neighborhood in Chehalis. A noise study has not been conducted yet, but cost estimates for the project include funding for noise walls in the event they are needed." That statement comes nowhere near describing the adverse impacts of those two alternatives.

Express Lanes and Temporary Bypass Lanes at 22 feet in height and at least 50 feet width with bridges at Main Street, Prindle Street at St. Helens Avenue, and West Street at State Street would be visible and heard from most Westside streets, not to mention home owners' private property they would invade. Residents of some historic streets directly affected by the ugly sight and sounds of Alternatives 3 and 4 are West Street, Rhode Island, Hawthorne Place, Division Street, Quincy Place, St. Helens Avenue, Prindle Street, State Street, Pennsylvania Avenue, Gertrude

Street, Folsom Street, and Westside Park.

Tacoma rail line traverses through the Historic Westside Neighborhood, Historic Downtown Chehalis, some industrial area, and under the Chamber Way Railroad Bridge. Is the rail line wide enough, is the existing Chamber Way railroad bridge high enough, and does it flood there are additional questions not even addressed in the WSDOT Draft Report.

Thinking about Express Lanes, Temporary Bypass Lanes, and a bigger than life West Street Bridge isolating the Historic Westside makes one know how the citizens of Kalama, Washington, must have felt when I-5 bisected their city.

The Lewis County Historic Museum, located in the former Burlington Northern Depot, sits adjacent to the Northern Pacific/Burlington Northern main line at the intersection of Market Boulevard and West Street. The museum offers the ***Pennsylvania Avenue - West Side, National Historic District A Public Guide,*** as a ***walking tour*** beginning at the downtown

Chehalis Museum crossing the tracks and up West Street into our neighborhood. In part it states,

"The National Register of Historic Places is the federal government's official list of cultural resources worthy of preservation. It was authorized by the National Historic Preservation Act of 1966 and is part of a program to encourage public and private efforts to protect historic and archaeological resources. Properties listed in the National Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register of Historic Places is administered by the National Park Service, United States Department of the

Interior, Washington, D.C." Why would any Municipality or State authorize interstate express lanes/temporary bypass lanes with unhealthy, unsightly bridges or promote the deterioration of a National Historic District by building an unneeded hulking ugly West Street Bridge through the middle of that Historic District?

To add some perspective to our concerns about the impact that WSDOT Alternatives 3 and 4 have on our community we have included as an attachment to these comments a series of photographs of the area where the bypass or express lanes would traverse.

At our most recent meeting to discuss the flood mitigation planning that is going on participants offered the following specific comments about the WSDOT alternatives contained in its Draft Report.

- There are essentially two issues associated with protecting the Chehalis Basin from flood damage: the issue of flood damage and the issue of keeping transportation and commerce flowing through the area on I-5. The flooding issue may best be addressed through alternatives like a retention dam, but ifWSDOT cannot wait to protect I-5 until after retention dam is completed then the Westside residents of Chehalis would prefer

Alternative 1 from the WSDOT Draft Report.

- If Alternative 1 is adopted the residents of the Westside Chehalis Neighborhood recommend that the existing West Street Bridge not be replaced. That opposition arises because replacing that bridge with a higher and wider bridge will result in substantially increased traffic through our neighborhood, particularly by commercial vehicles and

large trucks. Construction of approaches to a raised and widened West Street Bridge will also block access to West Street from New York and Ohio Avenues and will likely cause loss of some of the land that is currently occupied by the Westside Park. A bridge blocking New York and Ohio Avenues due to extended ramping will also preclude access from West Street to those two residential streets from either direction by emergency vehicles and residents.

- If either the Express Lanes or Temporary Bypass alternative is adopted residents of the Westside Chehalis neighborhood will have their real estate property values negatively impacted. If this is the direction taken then those property owners would like a "buy out" option under which they can be compensated for the lost value or have their property purchased outright at fair market value. That option should be available to all property owners on the Westside, not only to those whose property is immediately adjacent to the Tacoma Rail right of way or whose land may be used in part for construction of the new roadway.

- We don't like the idea of a being "blocked in" and set apart from our City of Chehalis.

- If the proposal for either express lanes or a temporary bypass is adopted it will lead to extensive litigation by opponents.

- NOISE! NOISE! NOISE! Express lanes will dramatically increase noise and pollution levels in the Westside neighborhood caused by trucks and automobiles. The noise will be coming at us from both the east and the west as we will be surrounded by I-5.

- Look at the west side ofl-5 for solutions to protect that arterial.

At our most recent neighborhood meeting we also received the following comments associated with Chehalis Basin-wide proposals to mitigate flooding.

- A basin-wide solution to flooding problems is so far off in the future and there is so little agreement about what options for addressing flooding throughout the basin that WSDOT is going to be forced to protect I-5 from flooding before a basin wide plan will ever be agreed upon or funded.

- **The Proposal for a Retention Dam Near PeEll**

If a retention dam near PeEll is to be seriously considered as a basin-wide approach to flood mitigation it is important that the residents of the entire basin, but especially those in the PeEll area, be educated about and involved in the planning process from start to finish.

The cost estimate for the proposed dam near PeEll, an earthen dam, 300 feet high and *Yz* mile long, for water retention is most likely too low. The proposed PeEll Dam site is approximately 2 miles from town and not in sight from town. Warning systems and evacuation plans for the 700 residents and about 300 school age children are concerns.

There are residents of the Chehalis Westside neighborhood who do and those who do not favor a retention dam as a way of reducing flooding below the dam site.

A retention dam may be a good idea and it may help solve flood problems in the basin. But it does not solve the I-5 flooding problem.

- **Other Comments Offered for Dealing With Potential Flood Damage**

Improved timber practices, including management of harvested timber, need to become part of any proposed basin-wide solution to Chehalis Basin flooding.

- Any basin-wide solution to flooding must also address flooding that is caused by groundwater levels that have increased during periods of flooding causing flooding from water intruding from beneath the ground's surface in low lying areas not otherwise affected by surface water flooding.

Respectfully submitted on behalf of the Westside Chehalis Neighborhood Association,

Deanna M. Zieske Psresident

P.O. Box 1272

Chehalis, WA 98532

August 31, 2012

I-5 Protection from 13th St. to Mellon Street

My husband and I live in the Chehalis West Side area and belong to the Westside Chehalis Neighborhood Association. We have become very concerned with proposed alternatives being considered for flood protection and have attended the public community meeting hosted by WSDOT at the Veteran's Memorial Building in Chehalis and a meeting at our local neighborhood association on August 28th.

After considering the alternatives with the information presented, we feel we cannot endorse the temporary bypass or the express lanes. The only plan that we feel might be worthy of considering would be the earthen levy as it could keep our neighborhood from suffering from the flooding that has been an issue in the past. While our home has not flooded, we have had many neighbors and friends that have and they still are suffering. Some have not completed restoration of their home and property yet.

The temporary bypass or the express lanes would be an eyesore and a barrier that would cut off this area from the historic downtown shopping area and could create two towns. It would cause lost revenue to the already struggling small businesses. I speak from experience as we sold our business seven years ago, and during the 22 years that we owned it we found that something as minor as a change in the weather would affect our sales. The bypass/express lanes would also cause air pollution, noise and a decrease in our property values.

Please take these issues into consideration. We do not have the answers, but don't feel these are either.

Ted & Darlene Held

451 NW Division St.

Chehalis, WA 9853

August 31, 2012

Melissa Kuehne • Ruckelshaus Center WSUWest

520 Pike Street Suite 1101

Seattle WA 98101

Dear Ms Kuehne,

I attended a meeting of the Westside Association regarding the flood mitigation Report A. We did not learn about other options but I wanted to be sure you knew my feelings about the one presented. I had to leave the meeting early but my husband stayed and said the audience when polled were mostly against the I-5

Express lanes or Temporary Bypass. (I have attached the picture we were given.)

In my opinion it would ruin our very nice historic district. The raised two lane expressway would look so poorly with the rest of the neighborhood. The district is made up of three blocks of all maintained homes with tree lined streets. Our property values will really suffer with an elevated expressway as you enter the neighborhood.

We formed our Westside Association years ago in order to maintain the District and improve what we can. Recently we added flowering fruit trees to our playground. We payed for this with money raised at the holiday tour of homes we which we sponsored for several years. When we requested to be on the State register of historic homes the gentleman who came and evaluated the

neighborhood told us it was the best in the state because all the homes were

together in one place and were so well maintained for the period in which they were built. Some go back to the early 1900's.

Please consider other plans and let us keep our district the way it is now.

Sincerely,

Marion A. Ruth

LEWIS COUNTY COMMENTS

THE RUCKELSHAUS CENTER CHEHALIS BASIN FLOOD MITIGATION ALTERNATIVES REPORT

GENERAL:

1. We, the Lewis County Board of County Commissioners, having reviewed the Ruckelshaus Center Report, note the thorough and objective process through which the document was prepared. We want to compliment all of those who contributed to this document which we believe helps the public to understand the complexity of the problem.

2. We do want to note that this Report is a compendium providing background and analysis on a number of alternative projects stipulated in ESHB 2020, Section 1033, and is not intended to be the definitive recommendation as to the approach to achieve "The Best Basin Wide Solution to Flooding." For that reason we will make comments on each of the alternatives, separately, and leave the discussion on what combinations of projects are the best alternative to a basin wide solution to the Governor's Ad Hoc Committee.

3. The Chehalis River Basin, as the river wends its way down the 125 mile main stem, creates unique problems for the residents in each of its major segments: Upper, Middle and Lower Basin. We in Lewis County are impacted by those problems created in the upper basin which is characterized by mountainous terrain and narrow valleys in the west and emptying into a broader more populated plain in the I-5 corridor. This area has been subjected to numerous 100 year or greater floods (the most recent being in 1990, 1996, 2007 and 2009) which have closed I-5 and caused millions of dollars in damages (over $500 million in the 2007 flood).

4. The report does not fully communicate the impact of flooding in terms of human suffering, damaged property and livelihoods. Breaking the cycle of disaster, discussion, and inaction requires a shared understanding of the impact of an event such as the 2007 flood. Without a shared understanding – up and down the River – of the cost of flooding, including in particular the human cost, we will find it difficult to reach a common understanding on how to address flooding.

5. The costs tallied by think-tanks, accountants or mathematicians do not include suffering, broken lives, or other impairments of human capital such as the diversion of available savings from a planned college education to rebuilding or refurbishing a business or residence. The impairments to existing human capital are already greater in the Basin communities than in the Puget Sound area or other urban communities in the State. Grays Harbor and Lewis Counties and the rural areas of southern Thurston County already suffer among the highest unemployment rates in the State and among the lowest rates of educational achievement. The additional diversion of household and public capital to rebuilding from flooding required by "living with the river" reinforces these underlying trends.

6. The report needs to include a paragraph that expresses the magnitude of the 2007 flood. For example, in June we were informed that 300,000 acre feet of water flowed by Grand Mound during five days of the 2007 flood. We also were given the visual that 300,000 acre feet of water is the amount of water that would cover I-5 with a column of water one-half mile wide and five (5) feet deep from Portland to Seattle, a distance of approximately 180 miles. That kind of visual, given the common experience of the public in travelling between the two cities, would help the public to understand the magnitude of the problem in weighing the suggested solutions.

7. Anyone who has lived through one of these events understands the tragedy created by flooding and the compelling need to put an end to a preventable cycle of flooding. There have literally been 100's of studies conducted on flood mitigation, with none to date providing any relief. The public is tired of studies and want to see solutions implemented.

8. Throughout the document, there are assumptions based on hydraulic or other models. These models predict potential outcomes based on scenarios that are to be analyzed. These model runs are based on assumptions and the results are not hard facts. We suggest whenever the potential effects based on a model are described, the results should be clearly stated as potential, using such terms as could, may, might, possible, probable, anticipated, etc., rather than absolutes such as will or would. For example, on page 5 of the executive summary, in the first paragraph: "Protection of I-5 and the airport provides collateral flood hazard mitigation to homes and business in some parts of the Twin Cities and increases flood elevations in some other parts." This sentence relies on modeling to suggest that protecting I-5 may protect other areas and may pose risk to other areas. The key here is "may." Models have a built in margin of error and are only predictive models. Model predictions are not exact results or outcomes, especially in a dynamic situation with many variables. They are an educated guess as to the potential results of any particular scenario based on the assumptions used to build the model. In such cases, the report language should reflect such uncertainty by using appropriate language to convey uncertainty rather than some absolute fact. That being said, the above sentence should more appropriately read: "Protection of I-5 and the airport may provide collateral flood hazard mitigation to homes and businesses in some parts of the Twin Cities and may increase flood elevations in some other parts." The entire report needs to be reviewed to make sure that potential or even probable outcomes are not portrayed as absolutes.

9. The FEMA maps based on the recent floods are draft maps and have not been finalized or approved. The 100 year flood maps are preliminary. Throughout the report, such as on pages 4 and 51, the draft maps are assumed to be the regulatory maps. References to the 100 year event or 100 year floodway or floodplain should be to the "adopted FEMA flood maps", "adopted 100 year floodplain" or "adopted 100 year flood level." In such cases, such as on page 4, speaking to the raising of the Chehalis Airport levee, the levee is proposed to be constructed to an elevation three feet above the "adopted 100 year flood elevation."

10. Additionally, the report does not describe the differences that exist among the communities on the River that, in the past, have prevented a consensus on how to address flooding and its consequences. However, the report can and should highlight, to a greater degree than it does, the singular achievement of bringing these disparate communities "to the table" to participate in this discussion and to reach a decision.

11. An issue which is not addressed in the Ruckelshaus Report, and was raised in ESHB 2020, is future governance over flood mitigation in the Chehalis River Basin. The current Chehalis River Basin Flood Authority is a loose collective of twelve government jurisdictions bound together by an Interlocal Agreement. It does not include all of the government jurisdictions in the watershed, and it specifically does not include the Quinault Nation or the Confederated Tribes of the Chehalis Reservation. It is not a municipal corporation so the function of managing money and projects is provided by Lewis County acting as fiscal agent. The Flood Authority hired a consultant, FCS, who conducted a year plus study on governance; however, implementation dissipated over "trust" issues and no agreement was reached. We are now at a point where at least some funding for projects and project maintenance will need to come from local resources; and, procedures for approving projects that are shared by or impact multiple jurisdictions will need to be promulgated.

There are several options: a Basin Wide Flood Control Zone District, County Flood Control Zone Districts bound by Interlocal Agreement; County and Municipal Jurisdictions bound by Interlocal Agreement, etc. This issue needs to be addressed.

WATER RETENTION PROJECT ON THE MAINSTEM:

12. It is not viable, as stated in the report, to raise or relocate all residences and businesses from the floodplain. It may not be possible to prevent the repetition of widespread destruction by enacting new land use restrictions, restoring wetlands, removing the Airport area, or installing several small diversion dams, because the sheer volume of water draining through particular points in the Basin at the height of a 100-year flood event will overwhelm the protection provided by those measures.

13. From our perspective water retention must be a part of any basin wide solution. During the 2007 flood event 376,000 acre feet of water flowed passed the confluence of the Chehalis and Skookumchuck Rivers during the seven day flood, with approximately 64,000 acre feet of water effectively stored (dammed) in the I-5 corridor behind the Mellen Street choke point at the peak of flooding. There is no solution that will work for us unless we can hold back at least 80,000 acre feet of water from entering into the main stem of the Chehalis River. Further, the narrow valley and population base provide no alternative diversion projects that will work. We believe that the studies conducted to date by the Lewis County PUD, EES and Anchor QEA have shown that building a diversion or multi-purpose dam is feasible, that there are no "fatal flaws," and that mitigation can be provided against damage to the fish population. In addition, water retention is the only solution which provides some degree of protection to everyone in the basin.

14. Unless and until the necessary geological, biological and other studies are undertaken and completed as part of the permitting process for a dam, no one can confidently predict the impact of a dam on the environment. Moving forward does not require final or irrevocable approval of an alternative. For example, the decision may be made to begin the permitting process on a proposed retention facility without committing irrevocably to completion of a dam. The permitting process will require the completion of geological, fish, and other studies long before any excavation is made at the proposed site. If those studies establish the lack of viability or safety issues of the facility, then no construction of the facility will ever be undertaken.

15. We acknowledge that the decision to move forward on water retention is dependent upon additional studies on location, design and safety of a dam which will be so close to Pe Ell; and, we will have to further study fish mitigation options before we will receive buy-in from all of the Flood Authority members, state and federal government agencies and the Native American Tribes. However, we do think the evidence shows that water retention is the only solution that works for the upper basin and provides benefit to most of the rest of the basin. It is time to take the next step. We also acknowledge that water retention alone will not solve the problem and that other mitigation projects will need to be implemented throughout the basin, including the upper basin.

PROTECTION OF I-5 AND THE CHEHALIS-CENTRALIA MUNICIPAL AIRPORT:

16. This is probably better identified as the Washington State Department of Transportation (WSDOT) set of six proposed projects, along with improving the Airport levee to 100 year protection, to provide protection against flooding and closing of the Interstate during a flood. Two of the proposals were thrown out as being too expensive. However all of the projects were

without benefit of water retention and while protecting the freeway, they did not provide substantial protection to the population living in the corridor. Protecting the freeway and not the population is just plain NOT ACCEPTABLE!

17. Of the six alternatives, the only one in our perspective which has any merit is Alternative 1: I-5 Levees and Walls, Raise Airport Levee, New SW Chehalis Levee; however, we do not believe it can be a standalone project. We believe that a water retention project needs to be included and then the scale and location of levees and walls can be substantially reduced both in size and location. Several of the proposed projects in this alternative, especially those from the south end of the Airport Levee and running south to 13th Street should be looked at in developing a protection plan for the corridor. We think previous plans to divert Dillenbaugh Creek into the Newaukum River further south still are worthy of consideration; however, no plan is workable without including water retention as part of the plan.

18. Alternative 2: I-5 Raise and Widen Only, Alternative 3: I-5 Express Lanes, and Alternative 4: Temporary Bypass are clearly unacceptable because they are only variations of protecting the freeway from flooding without mitigation of the impact to the surrounding residents in the inundation zone. We have said from the very beginning that a solution which leaves the freeway high and dry while leaving our residents in a bathtub below is not our idea of fixing the problem – and Governor Gregoire has promised us that would not happen.

19. We are very skeptical of the accuracy of the hydrology impacts reported by WSDOT, both from the perspective of downstream impact and the inundation maps provided as appendices. There have been extensive studies conducted by the US Army Corps of Engineers (USACE) in their 16 year study of the Twin Cities Levee project that indicate that a levee protecting the I-5 corridor and the Twin Cities would force water through the Mellen Street Choke Point sooner and in greater quantity. For that reason the USACE included additional water retention at the Skookumchuck Dam to provide mitigation against this increased flow.

20. WSDOT's predictions of increases in downstream elevation (from Mellen Street) of 0.1 to 0.2 feet are simply not believable. Furthermore, the inundation maps give an optimistic picture of reductions in flood elevation in the I-5 corridor on the east side of the freeway of 1.4 feet. The fact is that a substantial amount of land on the east side is inundated and some of it substantially. In the 2007 Flood parts of the Fairgrounds were in 12 feet of water so a reduction of 1.4 feet would still leave that area under almost 10 feet of water.

US ARMY CORPS OF ENGINEERS LEVEE SYSTEM AROUND CENTRALIA AND CHEHALIS:

21. For all intents and purposes this project is as good as dead. After 16 years, and millions of dollars in expenditures, USACE determined that this project did not meet their cost-benefit ratio and should be terminated. We could argue about the veracity of the USACE cost-benefit model and the merit of project components (Skookumchuck Dam modifications) and/or restrictions (not building levees to 100 year protection) which guaranteed failure. But the fact is that project design at 35% plus completion was laden with deficiencies that either left significant population or commercial areas inundated or created new areas of inundation. We believed from the start that the minimum additional water retention (11,000 acre feet) was insufficient and in the wrong location. We believe that the project could have been significantly downsized and could have provided better protection to both the freeway and population if it were combined with at least 80,000 acre feet of water retention on the main stem of the Chehalis River.

22. The one component of the project that deserves further consideration is that it provides a federal source of flood mitigation funding and the magnitude of any basin wide solution would benefit from federal funding. However, we are concerned about the alternatives the USACE has presented on how to proceed.

23. The first is: Terminate the project; flood mitigation might be pursued under the Chehalis Basin General Investigation (which would require a local sponsor) or as smaller components under the Continuing Authorities Program (CAP) authority: There is already a General Investigation (GI) on the Chehalis River for Ecosystem Restoration. A two year attempt to add flood mitigation to this GI resulted in a projected timeline of 14 years and $14 million dollars in study costs. There have been hundreds of studies in the basin, including those of the USACE, yet the USACE insists on going back to base line and starting the study from scratch each time there is a change of focus. Whether we do a combined GI, or we do a flood mitigation focused GI, we do not believe it is necessary to throw out what we already know and start all over again. The CAP program is not an alternative because it is restricted to projects under $7 million and there is currently no funding anyway. Our experience is that this is not the route to take.

24. The second is: Fully reformulate the project under a General Reevaluation Report: If it is possible to get federal funding, then we think this is the route to pursue. We believe that there are salvageable parts of the original project; however, the focus of water retention needs to be larger and on the main stem of the river; and, with better water retention the need and size of levees in the corridor could be drastically reduced. We do believe that to be successful Congressional intervention with the USACE will be required to both scope and approve a federal appropriation.

25. The remaining options: Conduct a limited Post Authorization Change Report and remove unjustified separable elements or modify separable element to a level where they are justified, and Move forward with a Post Authorization Change Report concurrently with a Basin wide flood risk management study under the Chehalis Basin General Investigation, in our estimation, are not workable. The project as proposed does not provide the needed level of protection and removing or modifying elements would only result in further deterioration of protection. Moving forward with a Post Authorization Change Report in conjunction with another GI would just return the project to the slow and costly USACE process without promise of any results in the near term.

OTHER FLOOD HAZARD MITIGATION ALTERNATIVES:

26. We are aware that there are different problems to be addressed on the river other than our concern about developing water retention and protecting the I-5 corridor. Certainly, solutions that focus on the I-5 corridor alone do not address our concerns in the basin up-river of the corridor; or, for that matter, either impacts down river or other local problems in the middle and lower basin. We believe we should be good neighbors and make sure that our projects mitigate downstream impacts. We also believe that a basin wide solution must address all of the concerns in the basin and that the process of achieving a solution will be long term. For that reason we would be open to investigate any projects that will provide local protection and contribute to the eventual objective of a basin wide solution.

27. Some of the solutions will be more difficult than others. Obviously there are opponents to both dredging and flood water bypasses that will impede and cripple the approval process making pursuit not practical. There may, however, be some level of dredging or “soil modification” in parts of the river that provide mitigation and may be doable.

28. There are many other projects that can be accomplished separately with a net benefit to flood mitigation and we would fully support such projects. We also believe that achieving a basin wide solution is a long term project and that we will have to achieve parts of the solution incrementally. We will support any projects which have been properly planned and for which there is basin wide consensus that the project contributes to a basin wide flood mitigation plan. In other words, we support the Hallmarks of a Basin-wide solution presented in the Ruckelshaus Report.

F LEE GROSE	PW "BILL" SCHULTE	RON AVERILL
Commissioner, District 3	Commissioner, District 2	Commissioner, District 1
Chairman	Vice-Chairman	Member

Aug. 29, 2012

Melissa Kuehne.

I have been asked to write about our experiences during the 1996 flood. My typewriter deserved and I have retreated to longhand since then.

My name is Helen Holloway - 823 J St. Centralia, Wa 98531 - 360-736-2296 and I am 87 years old.

The weather was horrible for days - cold, windy and very heavy rain. We awakened on Feb. 8, 1996 to very high winds and heavy rain and I noticed the ceiling was leaking just above the dinette windows. I called the roofer who would come the next day. The rain was unrelenting.

Just after lunch I called the fire department to inquire about the condition of the Skookumchuck and Chehalis rivers, just blocks away from our house. I was told to leave immediately and go to the shelter at the Edison School two blocks from our home. The dike - four blocks south of us on the Skookumchuck river was giving way.

That night about 7 P.M. the dike broke and the water washed out the ground under the railroad tracks two blocks north of us and we flooded. The tracks

saved us on several occasions from possible flooding.

We spent Feb. 8 & 9 at the shelter and decided to check on our house. Our house was a half block from our Pastor's which was higher & only had his basement flood and the sump pump took care of that.

Our house was at the lowest section of "J" street and had a foot of water, sewage, petroleum products, garbage and who knows what else. The smell was awful!

Our garage and a small storage building out back each had 2½ feet of water. We could not get to our house on the 10th and just stood and looked on in horror. We were invited to stay with the Pastor and his family the 10th & 11th. Our cars were safe parked at the center so they were saved.

Our grandson-in-law came back on the 11th and took out all the carpet and it was taken to the space between the sidewalk and the street. The pile of debris got about five feet tall. We had just had insulation installed under our house we had to tear it out so we could have the floor start drying. It joined the carpet. Later that pile was about six feet high with all that flooded along with appliances. Later the city came with dump trucks and removed all the trash.

It took about 2 weeks before the water

went down in the back yard. Only then could we begin to clean the garage and the storage shed which held several generations of treasures and pictures.

On the 12th we decided to go home. We were able to turn on the furnace and start drying out the house. Our furnace ran day & night for three months. Then the night-mare of clean-up started in earnest. The dump trucks would remove piles of debris and we would continue to make more piles - it was endless.

Unless you have lived through a flood you can't imagine what it does to your home, health, - mental & physical and your life savings. The cost to us was over $50,000 plus the funds we received from FEMA. We had NO FLOOD INSURANCE. We bought insurance in July of '96. We have been insured since then - I have been paying premiums that went from $300 per year to over $1550 for the past 10 years. My husband died three years ago and those premiums are harder and harder to pay.

We worked for 13 months - cleaning, sanitizing, replacing and repairing. All our floors were replaced. Our first job was to put in all new windows as only two could be opened. Wall paper paste became

moldy and the paper fell off the walls. Our floors never got dry enough until Sept. to start replacing the floors.

My husband and I lost weight - there were days that we couldn't eat because we both cried over all the irreplacible keepsakes we had to take to the pile. For months we started our day by not even knowing what to do next. Family helped carry out garbage to the pile, Church helped clean and sanitize garage floor. We finally decided to work alone. It was easier than directing help who didn't know where to start or what to do.

We dried furniture and though it didn't look as nice as before we had to make do. We used gallons of Pinesol. Everything had to be sanitized. Every room - nook + cranny had to be cleaned, sanitized and repacked.

After months of just plain back breaking work and sadness - came the workmen who replaced floors - walls and began the actual putting the house back together. There was endless furniture moving from one room to another. Each room had to be absolutely empty as we floored painted or cleaned and returned furniture.

After 13 months we began to see some return to normalcy. I was in my 70's and

my husband was in his 80's when we flooded. We only had a foot of water in the house - and I know that doesn't sound like much! One cannot believe what damage a foot of water did & cost us.

Why can't the rivers be dredged and retention dams be built? They did it in Oregon - it worked! We live in the same country. Let's keep spending years, and millions for studies, planning and arguing while the flooding increases and the damage is astronomical. Please somebody Help!!!

I left my home 3 times in the past 7 years fearing flooding. Thank God when I got back all was well — others weren't that lucky.

Helen Holloway

21 August 2012

Vickie Raines
PO Box 2007
Cosmopolis, WA 98537

Hello:

Congratulations on being appointed to the Governor's Flood Advisory Group. This is the best address I found to contact you. I have attached my reply to The William D. Ruckelshaus Center draft report dated 16 July 2012 to share with you.

BY, ON AND IN THE NEWAUKUM RIVER

Michael L. Smell •

470 Hamilton Rd

Chehalis, WA. 98532

360-748-1918 9 AUGUST 2012

CoMMENTS ON YOUR DRAFT REPORT DATED 16 JULY 2012

I WOULD LIKE TO MAKE SOME OBSERVATIONS:

As [HAVE STATED AT MEETINGS AND IN WRITING BEFORE, I FEEL A DAM ON THE UPPER CHEHALIS RIVER IS NOT THE CORRECT CHOICE BECAUSE IT WOULD BE STATIONARY ON THE UPPER CHEHALIS RIVER. You OWN DRAFT LISTS 3 EXAMPLES AND LARRY KARPACK'S PRESENTATION AT YOUR MEETING ON 14-15 JUNE 2012 SHOWED 10 EXAMPLES OF MAJOR RAIN EVENTS. THEY SHOW THAT MAJOR RAIN EVENTS ARE SCATTERED ALL OVER THE CHEHALIS RIVER BASIN. DAM PROPONENTS HAVE NOT ADDRESSED THIS ISSUE. EVEN IF THE MAJORITY OF THE RAIN EVENT OCCURRED BEHIND THE DAM SITE, THE DAM WOULD BE LESS EFFECTIVE THE HIGHER THE RETAINED WATER LEVEL WAS AT THE BEGINNING OF THE RAIN EVENT. THE DAM WOULD BE USELESS IF THE RAIN EVENT WAS BELOW THE LOCATION. THIS IS MY MAJOR OBJECTION. THE COST IS VERY HIGH WITH OR WITHOUT HYDRO AND AS STATED ABOVE: IT MAY OR MAY NOT HAVE ANY EFFECT ON FLOODING DOWNSTREAM. You MUST ALSO ADD TO THE COST ANY MITIGATION PROJECTS THAT WOULD HAVE TO BE ACCOMPLISHED SUCH AS FOR FISH HABITAT AS A DAM WOULD PERMANENTLY ALTER THE LAND AND RIVER DOWNSTREAM. NOW ADD THE FACT THAT THE TOWN OF PEEL!.. IS ONLY 2 MILES DOWNRIVER WHICH MEANS ANY BREACH ON THE DAM WOULD GIVE THE TOWN NO TIME TO EVACUATE. THE CHEHALIS RIVER BASIN FLOOD AUTHORITY HAS OVER A HUNDRED VARIED PROJECTS ON THEIR LIST THAT ARE SCATTERED THROUGHOUT THE BASIN. IWOULD RATHER SEE ALL OF THEM COMPLETED FIRST. NATURAL PROJECTS LIKE THE HORSESHOE BEND (OXBOW) THAT THE CHEHALIS TRIBE FUNDED ON THE NEWAUKUM RIVER IN 2000 TO TEMPORARILY STORE FLOOD WATER WOULD BE MY FIRST CHOICE. ANOTHER NATURAL PROJECT NOT EVEN LIST-ED .BUT THAT USED TO SE THE PET PROJECT FOR THE LEWIS COUNTY GOVERNMENT WHEN THE COE TWIN CITIES PROJECT WAS PROPOSED IS THE HAMILTON MEADOWS PROJECT. UNLIKE THE SCHEUBER ROAD BYPASS, THIS PROJECT WOULD TEMPORARILY STORE FLOOD WATER NEXT TO STATE ROUTE 6 AND THEN RELEASE

IT AFTER THE RIVER LEVEL WENT BACK DOWN. IWOULD LIKE TO SEE ANY PROJECT THAT WORKS WITH NATURE INSTEAD OF TRYING TO CONQUER IT. ANYONE CAN LOOK AT OUR LAND AT 470 HAMILTON RD. CHEHALIS, WA TO SEE NATURAL WAYS TO TEMPORARILY STORE. FLOOD WATERS. I ALSO HOPE THAT MORE WETLANDS WILL BE ESTABLISHED THROUGHOUT THE BASIN AS ANOTHER NATURAL WAY TO ABSORB THE FLOOD WATERS.

BY, ON, AND IN THE NEWAUKUM RIVER MICHAEL L. SMELL