1215188

HANFORD NATURAL RESOURCE TRUSTEE COUNCIL

To: Industrial Economics, Inc. and Ridolfi Inc.

From: Jack Bell, Chairman HNRTC

Date: May 7, 2012

Subject: HNTRC review of Preliminary Estimate of Damages, Phase 1, Primary Restoration Analysis and Technical Status Report on Compensatory Ecology Restoration for the 100-K Area

Please find attached the HNRTC's comments on the Preliminary Estimate of Damages (PED) Phase One, for the 100-K Operable Unit and Columbia River Component. Comments were submitted by individual trustees and are organized as such in the attachment. The Trustees have provided a variety of comments/edits to the documents and posed both technical and policy level questions on the methodology and results. I noted several major themes arising from the Trustees comments. There is a major frustration in the lack of data to document injury to many of the natural resources, especially in the Columbia River. Many of the Trustees have questions regarding the value of the PED if there is uncertainty in quantifying injury and the inability to estimate the cost for restoration.

We look forward to your response to our comments and questions. Please do not hesitate to contact the individual representatives, listed on the side of this letterhead, with questions regarding their comments. We appreciate your efforts to produce the reports in a timely and professional manner. Please feel free to contact me at (208) 621-4710 or by email jackb@nezperce.org with questions or scheduling time for a formal response.

Sincerely,

Jack Bell, Chairman

Cc: Technical Trustees

State of Washington

General Comments

These documents highlight that even with the enormous amount of Hanford data generated over years of environmental monitoring and ecological risk assessments, there are insufficient data to quantify service losses and estimate damages. Similarly, there are significant data gaps and uncertainties that permit confidence in estimating primary restoration costs.

Most limitations relate to the lack of adequate sample size, sample representativeness, applicable thresholds, and use of datasets featuring spotty spatial coverage or containing a great number of records that were excised because they lack precise location information.

Despite the limitations, the Phase I analyses supports that the final PED will be adequate to develop a reasonably unconstrained injury assessment. We are not inclined to think that either the document or the approach requires extensive modification to meet the needs of the Council. On the other hand, as we move forward with the assessment, we believe that it would be prudent to re-examine a number of the assumptions and judgments about the likelihood of demonstrating injury associated with particular contaminants and environments, given the fact that the data supporting these judgments were averaged spatially and temporally.

Considering the complexity of the task and that the analysis must be based on readily available existing data, we believe that the algorithms applied, aside from some clarification requested below are reasonable. They are designed to give a relatively simple way of potentially quantifying injury and damages, and contain assumptions necessary to support a preliminary estimate. In addition, IEc has been open about the shortcomings in their technical report (e.g., bulleted lists on pages 2 and 3).

The Ridolfi Primary Restoration Analysis also supports a final PED and employs reasonable assumptions and solid numbers for estimating a range of costs for restoration. The report notes that the Proposed Plan does not address how remedial actions may affect cultural resources. It is unclear how an alternative cost analysis would be done from lost uses from residual contamination.

Compensatory Restoration

Page 1, final paragraph – the authors acknowledge that existing data are insufficient for quantifying service losses and estimating damages. (Editorial note: we were reluctant for the Council to proceed with the PED because we thought this might be the case.) However, rather than spend time analyzing the analysis for fatal flaws, the appropriate question is whether the document is sufficient for supporting the Council in moving forward with the assessment. We believe it is.

At the same time, looking at the last bullet on page 3, we also believe it will be somewhat less useful at focusing our injury inquiries, because the judgments of injury likelihood are based on spatially averaged data points which "may have diluted small areas of particularly high contaminant concentrations."

Pages 2-3 – The list of data gaps and caveats represent issues we need to take into account in our full assessment.

Page 4, Exhibit S-1 – In the cell describing the potential for injury in terrestrial soils from lead as unlikely, we should recognize that sampling for lead/arsenic contamination in the old farm fields has been spotty at best. Ridolfi, page 14, last paragraph notes, "...we have not identified environmental data documenting arsenic and lead concentrations in the soils in the former orchard lands area along the river corridor." We may need to revisit this judgment.

Page 4, Exhibit S-2 - As above, sampling for lead/arsenic in the old farm fields has been sparse, so the potential for injury in burrow soils may be an issue to re-examine for the full assessment. PCBs are listed as potentially injuring small mammals in the 100–K Area. Elevated levels of PCBs were found in a number of lizards collected in support of the 200 Area Risk Assessment. Though not applicable for this Phase I PED, it could affect the final version, and argues for the Council to pay attention to the history of PCB leaks and intentional use for dust suppression at the site.

Page 9, Resources of Concern, paragraph 2 – Use of a limited set of representative species is appropriate for this preliminary estimate. The Council should make an effort to make sure that the sensitivities of all families of native biota are adequately represented in the final assessment.

Page 15, Exhibit 7 – Noting the limited number of samples both upstream and in the riparian zone. What effect does the difference in sample size have on the analysis?

Page 17, paragraph 1 – the text points out the need for getting some sense of temporal trends, even in the absence of good spatial data.

Page 18, Metals and PCBs, and Exhibit 17 – We question using marine/estuarine data from Field et al., as the toxic effects of contaminants are typically greater in freshwater at the same concentrations. We suggest using the MacDonald et al. 2000 data to prepare injury curves using an appropriate method (*see* Moore, DRJ and Caux, PY 1997. Estimating Low Toxic Effects. Environmental Toxicology and Chemistry, Vol. 16, No. 4.).

Page 20, Exhibit 12 – there are differences between Cr and Cr VI in terms of sediment adsorption and solubility in water. These differences may have some bearing on the judgments of injury likelihood in the table. This is not important for the preliminary estimate, but may be for the full assessment.

Page 24, Hexavalent Chromium – the text acknowledges potential injury, but given the lack of data and high detection limits, please clarify why the methodology used overstates the true average.

Page 24, fish – there is major controversy on whether sediment quality guidelines are truly protective of aquatic life. They are used for regulatory purposes, e.g., cleanup standards, but their protectiveness has not been determined.

Page 27, Exhibit 17 – In the table potential injury to fish from zinc is considered to be unlikely for both the 300 Area and for the Downstream Area. However, Exhibit 16, shows fish tissue concentrations of zinc to be higher in the 300 Area than in the 100 Area (where the potential of fish injury is cited), and not much lower in the Downstream Area. Why the discrepancy?

Page 29, Exhibit 18 – After describing the need for modeling dietary intake of contaminants by piscivorous birds and mammals on the previous page, we note that this table shows no row for

total radiation dose potential injury for piscivorous birds. If injury is considered unlikely for these birds, it would be good to discuss why that would be, given the differing result for piscivorous mammals.

Page 34, Injury due to Remedial Actions – Note that, for a final analysis of remediation-related impacts, the Council may need to refine the parameters on percent service loss at individual sites, as well as recalibrate the recovery curve used.

Page 40, Exhibit 26 – Noting the quantification algorithm given on page 39, we don't understand the figures for average service loss in this table. In particular it looks as though the 9% loss for Aquatic Upstream is averaged over all four resource types, but that the 21% loss for Aquatic 100 Area is only averaged over two resource types – fish and piscivorous mammals. The 15% loss for Aquatic 300 Area looks to be generously averaged over three resource types (though the math doesn't appear obvious). The 9% loss for Aquatic Downstream looks to be averaged over all four resource types. Is there some kind of weighting being used in this calculation that would explain the differences?

Page 48 Data Gaps – to summarize; the extent of contamination and its effect on biotic resources in 100–K has not been determined.

Primary Restoration

Page 2, Baseline – It will be helpful to clarify what background concentrations for soils do not represent the baseline for specific contaminants

Page 3, fourth paragraph – please explain the nominal timeframe of 10 years for resource recovery.

Page 14, first paragraph – the estimated cost of $8,600,000 to monitor habitat recovery over a 10-year period seems excessive. Is this figure based on DOE estimates, and if so, what program or activities?

Page 15, Baseline – it would be helpful to expand on the unresolved issue of reference sites. Washington has been frustrated by, at face value, compromised or unrepresentative reference sites. Given the history, a logical path forward may be defining "true background levels" in the injury assessment.

Figures 1 – 3: Well done

State of Oregon

Compensatory Restoration

One of the bullets on p 2 notes the analysis does not consider synergistic and antagonistic effects. While we routinely note this issue, I'm wondering how, and how much, we will really be able to address this in any of our analyses, given the paucity of relevant data. I'm not suggesting a change to the document, but there should be some honest discussion of the topic – fairly soon – so we don't continue to have unrealistic expectations of our capacity to address synergies.

Data tables use the phrases "potential" and "unlikely" in describing likelihood of injury. Exactly what do these terms mean? If there is something quantitative, or even semi-quantitative, to define them, I missed it.

It is disappointing that most analyses relied on average concentrations of contaminants. As a result, many contaminants were labeled as unlikely to cause injury, despite presence of hot spots. It would have been helpful to look at frequency of exceedance of numeric criteria and thresholds to help identify injury occurrence.

In data tables, the very high frequency of "NT" is very discouraging. We will need help from IEC and Ridolfi to define an effective path forward to address the absence of data – I can't envision us funding anywhere near the amount of toxicology work that would be needed to fill all these kinds of data gaps.

The bottom of page 7 lists COCs for groundwater – it includes "chromium" but I suspect this should be (or perhaps should also include) hex chrome.

In January, the HNRTC adopted a list of COCs for consideration in the assessment; some of those are not included in Exhibit 2. These lists need to be made consistent for future work. It is good that IEc has added COCs that were identified as being potential risk drivers in the RCBRA and CRC.

The habitat map on p 12 seems to miss a number of substantial waste sites – there are large dumping grounds at the SE corner of the industrial area; the 116-K-1 crib at the NE corner of the industrial area, and burial grounds (118-K-1) east of the reactor area; also large areas of unplanned releases between the industrial area and the Columbia River (these might have fairly natural-looking vegetation, but got hammered with thermal and contaminant releases during operations when the cooling ponds leaked or overflowed).

It would be helpful to track things like area (Exhibit 6) and costs (when we get there) separately for the 100-K area and the river. This will be especially true for cost information, because DOE breaks these areas all out separately; we will need to similarly break up costs for each area to match DOE's land units to be able to compare numbers for the same areas.

In the description of injury quantification (p 44), it is unclear how losses in the past (since 1981) and in the future are counted.

In the description of injury quantification on p 44, the assumed time for return to near baseline conditions (90% recovery) is five years. This is way too short for all habitats, and is especially short for shrub habitats, which should probably be more like five decades.

Use of a three percent discount rate should be caveated to state this is only for purposes of example in the PED. It needs to be made abundantly clear that trustees are not conceding on use of a three percent discount rate.

The report notes general lack of data for mass of uranium and plutonium. Concentrations can (should) be estimated by conversion of read concentration data.

One of my hopes/expectations for the PED was to see some bounding estimates for injury; I don't see that in this document. Perhaps likelihood/extent of injury, based on comparisons of average concentration and % exceedance would be one place to do this.

One of the major problems with DOE/contractor data at Hanford has been small sample sizes for risk assessment sampling. The lack of adequate data shows up repeatedly in this document, with the result that is difficult or impossible to identify/quantify injury. For present/future injury we can address this data gap by collecting new information. I presume one end result of these data gaps will be a very limited capability of demonstrating historic injury to the Site and the river; will it be valid for us to argue/assume that historic (to 1981) contaminant concentrations were at least as high as now (based on operating history) in making an argument for duration of injury and service losses (recognizing also that security will limit service losses related to loss of access).

Another major problem with DOE data is crummy methods – they use methods that frequently have detection limits higher than action levels (sometimes by orders of magnitude!). DOE has always taken the path that non-detection equates to absence of risk; how might we reasonably challenge this in assessing injury? I assume we have to meet the measureable, adverse consequences threshold, but it is shameful that DOE can otherwise get away with recklessly-created Type II error to argue lack of risk.

We should probably start (sooner rather than later) discussing implications of the preliminary PED results, specifically the paucity of evidence for injury in the river. How do we do our due diligence to assess occurrence of injury in the river, while restraining our expenditure of time and funds chasing injury that maybe isn't there. How, as trustees, do we balance our responsibilities?

Primary Restoration

Overall, the document describes a straightforward approach for estimating costs for primary restoration and is well done and presented. Thank you.

- One option I don't think I see, however, is a total cost based on Alternative 4 from the RI/FS (which, curiously enough, was not included in the proposed plan). I made a guess at this number by replacing the first two items in Table 4 with the $985 million price tag for Alternative 4, then adding the other items in Table 4; this gives a total cost of $1267 million if my assumptions and arithmetic are right. (I don't think Table 2 includes costs for restoration or for activities beyond the aggressive RTD and expanded pump-and-treat, but I'm not certain)

- It might be useful to separate the total cost estimates for the 100-K area and for the river, since DOE is treating them separately. This would facilitate direct comparison of numbers.
- It might also be informative to develop a table comparing total costs of response actions plus primary restoration for the various alternatives developed by DOE – would allow a

straightforward comparison of the true costs of each alternative in getting us from now to a restored site.

It would be helpful to have a summary table or bulleted list explicitly identifying the things for which cleanup/restoration costs are not included in this PED – restoration of soils outside of waste sites, cultural resource losses, etc. This is sort of done in the discussion of data gaps.

Restoration costs for orchard lands ($31-38 k/acre) seem high – what is included in this?

There should be plenty of space available for additional waste at ERDF – I believe the site plan included space for something like 28 pairs of cells or 28 supercells, which would mean ERDF is only about 35-40% built out. Off-site disposal is probably very unattractive for radioactively contaminated waste, and WIPP is probably not a realistic option (prohibitively expensive; not licensed to accept other than TRU waste).

Discussion at the bottom of p 15 notes that proposed cleanup levels are "generally very high . . ." I think the implication is that cleanup or restoration will need to achieve lower soil concentrations to avoid/end injury and that costs would escalate to meet more restrictive cleanup goals, but are there other consequences for us to consider?

It is good that the document recognizes the myriad problems of "background" and "baseline" samples concentrations as defined and used by DOE and their contractors. This is an issue we will likely continue to struggle with throughout the injury assessment, but we appreciate that Ridolfi did not simply accept the DOE values.

At the top of page 3, it is probably important to identify the RI/FS and proposed plans for 100-K as draft. These are fluid documents likely to change substantially before being finalized. We understand that DOE is likely to change their preferred alternative to something more like Alternative 3 as described in the proposed plan in response to regulator and stakeholder comments. Any idea how implementation of Alternative 3 would impact costs for primary restoration?

Appendix B is of concern. There are a lot of errors indicative of a document that was hurriedly and/or not carefully put together – information and headers in tables for lead and PCBs are inter-mingled; headers are all upper case, making things like names and units confusing; inconsistent units (e.g., sometimes ppm, sometimes mg.kg); undefined acronyms (DW – dry wt?); and true typos (rad concentrations in PIC/G, which I assume is should be pCi/g). At one level these are minor annoyances, but they raise concern whether the information in tables is similarly laden with errors.

Confederate Tribes of the Umatilla Reservation

The CTUIR generally think there is a lot more data available than was used in preparing the PED. There are a lot of other issues, but given how little data were used and the lack of any risk basis, the dollar conclusion for primary restoration is probably under estimated by a factor of several-fold. Other than that, we do not know if the PED will be of much use until our NRDA team spends a lot more time compiling data and basically re-doing the PED ourselves.

Department of Energy

General Comments

1. The draft PED for primary and compensatory restoration at the 100-K area is a good starting point but many major concerns have been identified that highlight the need for further dialogue on key assumptions and data gaps that must be addressed prior to continuing the PED for other areas and ultimately the entire Hanford site. Many of the assumptions used in the primary restoration PED may be inappropriate, are inconsistent with NRDA regulations and have resulted in an extremely conservative estimate of damages. Primary restoration must be cost effective. While it is understood that IEc and Ridolfi used readily available information such as draft A of the 100-K RI/FS, many changes are being made to this document which will affect final waste site remediation.

2. The approach, rationale and results of the PEDs for primary restoration versus compensatory restoration are highly disparate and inconsistent. While the PED for primary restoration included costs, the PED for compensatory restoration did not. While the compensatory restoration PED concluded that there was insufficient data to estimate damages, the primary restoration PED concludes there is sufficient data to calculate costs. It would be helpful if there was a more consistent approach to the two PEDs.

3. The definition of "baseline" is inconsistent between the 2 PEDs and is used inappropriately for the primary restoration PED. Page 35 of the compensatory restoration PED states ".....we assume that baseline for the Hanford Site is a DOE facility without contamination of natural resources at injurious levels (i.e., physical structures would have existed and operations would have taken place, but the baseline concentrations of contaminants would be below concentrations that cause a loss in ecological services)." Page 2 of the primary restoration PED states, "....Hanford Site background concentrations for soils provided in the Proposed Plan are assumed to represent baseline conditions." NRDA is intended to restore an injured resource to a condition in which it is able to provide its **baseline level of services**, not to restore the resource itself to baseline. Page 23 of the compensatory restoration PED states, "It is important to note that the exceedance of background concentrations does not equate to ecological injury, only to potential exposure." The disparity between "baseline" and the fundamental difference in assumptions in the two PEDs needs to be reconciled.

4. The trustees agreed, and IEc's contract provides, that the Injury Assessment Plan should be in accordance with DOI regulations except where the Trustees agree another method is appropriate. The regulations should be followed until there is a consensus on why and how to depart from the regulations.

Primary Restoration

1. A key assumption in the estimate is that Hanford site background concentrations for soil are assumed to represent baseline conditions and injury is implicit if these background/baseline conditions are exceeded regardless of whether or not it can be shown that a pathway, exposure and adverse effect to a resource exists. This is an extremely broad and conservative assumption that appears to be unprecedented, may be inappropriate and fails to account for

the quantity and quality of services provided by the resources as intended by the NRDA regulations. As noted above, the disparity between the two PEDs needs to be reconciled.

2. The cost for reactor core decommissioning and disposition should be removed from the PED. While the reactor cores will be dispostioned under CERCLA remediation in the future, there is no requirement under NRDA to remove industrial buildings such as reactors and return an industrial area to natural habitat. DOE's actions may result in a "credit" being appropriate.

3. The PED includes costs for upland habitat restoration and monitoring of 230 acres of industrial area. As noted in the previous comment, there is no requirement to restore these areas to anything other than for industrial use.

4. It appears that the PED included as primary restoration, completed cleanup actions under interim and future cleanup actions under both interim and final records of decisions. This is an incorrect use of primary restoration according to DOI regulations. Only actions required after remedial actions are completed are appropriate for calculating primary restoration.

5. Many assumptions regarding remediation and the need for restoration of the vadose zone, especially below 15 feet, are incorrect. Remediation will be required to be protective of human health and the environment. As noted previously a pathway, exposure and adverse effect to a resource must be shown before injury (and need for restoration) can be determined.

6. Population level injury is required rather than an injury to an individual receptor absent an injury to an endangered species.

7. The former orchard lands are being addressed under CERCLA response actions, but the document does not address the reasonable basis that exists to apportion harm. There is no tie shown between a Hanford release and an injury to former orchard lands. Likewise, the contribution from upstream sources has not been sufficiently identified.

8. Page 3 - The first paragraph states, "(refer to Table A-1 of DOE/RL-2011-93 Rev. 0)" It would be helpful to the reader if these tables were put into the text where possible.

9. Page 5, Analysis and Results, last sentence - It appears that table "3" should be changed to table "2".

10. Page 7, 2nd to last bullet, last line and Page 8, Table 1 - It appears that a transcription error appeared between the range on page 7 ($27,500,000) and what was placed in the Table 1 on page 8 ($25,000,000).

11. Page 10, section 4, second full paragraph, last sentence – It states that the restoration could be climax shrub cover for the orchard. This would seem inappropriate if the land was an established orchard and had later been sprayed with lead arsenate. The baseline condition would seem to be an orchard or farm land. This set of paragraphs could be rewritten for clarity.

Compensatory Restoration

1. Some contaminants of concern such as zinc, Potassim-40 and other radionuclides are not associated with Hanford operations and should be considered background.

2. Page 7, Contaminants of Concern – It is stated that the COCs came from the RCBRA, CRC and Trustees. This does not appear to be correct. CRC, for example, has very few COCs that results from the risk assessment.

3. Page 14, Section 2, Injury Determination, last sentence – The assumption that a pathway exists from Hanford operations and releases to each of the identified injuries is overly broad and unsubstantiated.

4. Page 14, Footnote at bottom of page, 2nd line – change the word "that" to "than".

5. Page 16, Exhibit 9 – It is suggested a footnote be added explaining that K-40 is a naturally occurring element.

6. Page 26, Exhibit 16; page 28, Total Rad Dose; and page 38, Exhibit 24 – The total rad dose in these sections is significantly more than indicated in DOE's environmental monitoring reports and appears to be an error.

U.S. Fish and Wildlife Service

Compensatory Restoration

We are concerned about the use of records with geographic coordinate information as this will limit records primarily to recent records. Since, in many cases, higher levels may have occurred earlier (e.g. 1980-1990 time frame) exclusion of these data may miss potential injury. I understand that the level of effort to include this data is prohibitive however some effort should be made to understand the potential effect of exclusion of this data perhaps through examination of a small subsample of the non-geolocated data.

Other than for the remediation related injury, I did not notice a temporal component to the injury/service loss. This appears to be an important omission and, when included, should be sensitive to the potential for early samples to have higher level of service loss.

The groundwater data from a single year (2010) may not accurately represent injury. A second year's data, preferably from a year in the 1980-1990 time frame, should be considered to understand the temporal aspect of potential groundwater injury.

Primary Restoration

The use of 1:1 remedial slopes appears to be overly conservative. Some justification should be provided for using this ratio, or a more realistic slope should be considered.

National Oceanic and Atmospheric Administration

General Comments

The PED highlights substantial gaps and uncertainties in existing cleanup data and analysis, and [continues] to call into question the appropriateness and utility of a PED at this stage of the investigation. For example, even the recommendations for focusing injury are based largely upon non-detects. As such, we are supportive of IEc's Phase II proposal to only proceed with a PED in areas where "substantial data exist" to be able to assess probable injury.

Specific Comments on Compensatory PED

Unlikely Injury

We believe there is insufficient information available to conclude "unlikely injury" for many of the contaminants and resources. The results are strongly biased towards 'unlikely injury' due to (among other things): i) questionable representativeness of data, ii) averaging contaminant levels over large areas and time, and ii) using whole body tissue values.

For these reasons, we recommend IEc only report probable injury and drop the "unlikely injury" categories unless there is sufficient certainty to affirmatively state that conclusion. As noted above, we support IEc's Phase II approach and recommend IEc identify the decision criteria for determining when it is scientifically appropriate to support an analysis of unlikely injury.

Non Geo Referenced Data

If possible, we recommend reporting contaminant results from the non-geo-referenced samples that exceed injury screening thresholds in order to get a sense of usefulness of referencing this data set.

Past Contamination

We recommend discussing the potential injury and/or data gaps associated with past releases, and strongly recommend calling this out in the introduction. Currently past data and injury is only incidentally mentioned on page 7 and deeper within the document. We also recommend describing the temporal scale and distribution of the historic data utilized in the report.

Percent Service Loss

We could not follow the averaging calculations for Aquatic Habitat Service Losses in Exhibit 26 and would welcome more detailed explanation.

Contaminants Outside Operation Areas

Sediment exceedance summary map: Several exceedances occur outside operation areas. If PED is conducted by operational area, will exceedances outside operation areas be addressed in the eventual site-wide estimate of damages?

In Map/Exhibit A-6 "Sediment Samples Above And Below Zinc Potential Injury Threshold (Upstream Map)", There seems to be a mismatch in color between the values on the map and the legend.

Primary Restoration Report

It is unclear how costs were estimated. We recommend expanding upon metrics used and references. For example, the table on Page 2: recommend including cost per site and cite the source. The step from cleanup action to remediation cost seems unclear.

Table on Page 2: Habitat monitoring at 100-K and then for the whole reach are the same price. Please clarify.

Recommend including additional justification (say from land use designations and land management plans) to support the level of primary restoration and monitoring proposed within the PED.

Recommend additional discussion in the habitat restoration or cultural use section about potential restoration costs should residual contamination remain at the site.

Adaptive management should be an integral component of the ongoing maintenance and monitoring of restored habitats. Adaptive management is mentioned once on page 3 in the fourth paragraph, but not in the remainder of the document. Please clarify whether or not adaptive management is incorporated into the maintenance and monitoring cost estimates and for what time frame these activities would occur (i.e. monitoring occur for 10 years, but funds for adaptive management and maintenance stop at year three).

Page 3, fourth paragraph - Time period assumed for resource recovery is 10 years. What is the basis for this? In grassland communities this may be appropriate; however, for shrub-steppe or riparian communities the recovery time is likely longer.

Page 10, remedial action 4, second paragraph – Please provide more detail on what actions are included in the $2.4M restoration and monitoring estimate.

Page 11, remedial action 7, second paragraph – The 10% of total construction costs for annual maintenance. Is this for perpetuity or a specific period of time? What actions are included in the estimated costs for ongoing maintenance?

Page 11, remedial action 8 – The difference in costs between monitoring the 100-K area should the restoration be separate from the remediation compared to restoration being incorporated into restoration are orders of magnitude apart ($8.6M verses $300k). Please provide more detail as to why monitoring would only be a minimum of $300k should habitat actions be incorporated into the remediation. We agree that there will be significant costs savings, but this magnitude of difference between the two seems high. In addition, please provide more information on what was included in the $8.6M monitoring estimate.

Page 12, Columbia River Sediments - Please provide more information to support the conclusion that exceedances of the ecological thresholds for the river sediments are limited. For example it was noted that 266 samples had exceedances, out of how many samples is this?

Page 14 top of the page - The $2M, $1.3M, and $300k cost estimates are not for monitoring only, but for restoration actions incorporated into the remediation.

Page 16, Restoration Estimates, fifth paragraph – Implementation of a long-term monitoring and adaptive management plan can help to reduce the uncertainty of re-grading and re-vegetation actions for restoring ecological function.

Nez Perce Tribe

General Comments

Our review of the reports was focused mostly on the methods employed and general conclusions from the analysis. We believe both reports follow a reasonable methodology for analysis of available information. Both reports suffer from limited data availability, both temporally and spatially. Unfortunately, the lack of data will not be overcome in the near future based on current funding levels and past data collection efforts. We understand the PED is a requirement under CERCLA regulations, but believe estimating damages over a 9 month period when the full damage assessment will most likely take over 10 years has very limited value. At best we may have a better understanding of data gaps to focus injury studies, but at worst it will create more disagreement among the trustees over injury and the path forward. If the PED is unable to generate reasonable restoration cost estimates then we do not understand what value it has beyond the Injury Assessment Plan, currently being developed.

Primary Restoration

The approach and methods seem reasonable for estimating primary restoration. The weakness in the report, which will be repeated for entire site, is using draft Proposed Plans or guesses at what final remediation will be for each operable unit. Changes in remediation actions will have major impacts to estimates of primary restoration, both higher and lower. Providing a range of estimates seems to only reasonable approach at this stage of remediation.

Compensatory Restoration

Using 2010 GW Monitoring Report for the estimate of contaminated GW is a bare minimum and at lowest end of the range of possibilities. The methods used by IEc to arrive at the estimate are very simple. (page 35) In addition, it does not reflect what wider range of contamination was reported in past annual reports. We understand this is a data gap that will need to be addressed (pages 36 and 37) by Trustees in the future.

The report states IEc is unable to estimate a value for restoration of contaminated ground water without the designated use from the HNRTC. The Nez Perce Tribe has always believed the Hanford site should be cleaned to allow for unrestricted use of both surface and subsurface natural resources. We do not believe the trustees will come to agreement on this issue in the time frame for completion of the PED. We recommend IEc calculate compensatory restoration for a range of uses, such as irrigation and drinking water. Obviously, if there is no use for groundwater it would only have value once it reaches the surface. The Nez Perce believe in the future, both tribal and non-tribal publics should be able to use the Hanford site as their public's demand and should not be limited by residual contamination left untreated or unrestored.

Yakama Nation

General Comments

The Yakama Nation submits the following comments regarding the PED Phase 1 deliverable, which apply to both primary and compensatory restoration estimates. Overall, we agree with the general approach, but understand that other areas of the site will have less information on which to base estimates, adding to the uncertainty.

Data

It is clear that data are lacking. Utilizing all data that are currently available, however, will at least contribute to more accurate estimates. We request that DOE provide spatial information (i.e., coordinates) for samples in HEIS where that information is currently lacking, and that these data points be used in the estimates.

Planned remediation

The PED assumes that wastes currently scheduled for cleanup will be accomplished as planned, including removal and disposal of materials at ERDF. Does ERDF have the capacity, however, to store all of the wastes planned for disposal there? Is ERDF the appropriate destination (provide adequate protection) for all types of wastes (known and unknown, such as TRU wastes) that may be disposed of there?

Baseline assumptions

Concern regarding DOE's development of Hanford Site background values creates uncertainty regarding the use of these values to represent baseline conditions. An injury assessment study focused on determining baseline conditions (of soils and sediment, for example) would eliminate this uncertainty as we move ahead into the injury assessment.

Former orchards

It would be helpful to provide costing details for the cleanup of former orchard and farm lands. We request that DOE provide any available details to support these remediation costs.