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Mr. Cliff Clark
U.S. Department of Energy
Richland Operations Office
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Dear Mr. Clark:

Thank you for the opportunity to review DOE's CERCLA Five Year Review Report for the Hanford Site. We recognize the effort that has gone into cleanup of Hanford during the past five years, and into your efforts to prepare this document. We are also appreciative that you, along with Briant Charbonneau and Karen Lutz, could come to discuss this review at the Oregon Hanford Cleanup Board meeting at Cascade Locks in March, and at recent public meetings in Portland and Hood River.

As noted in our comments at the Portland and Hood River meetings, it was Oregon's expectation that the Five Year Review would provide a comprehensive evaluation and discussion of cleanup on the site, and that DOE would use the review to do a critical self-evaluation of the status and effectiveness of Hanford cleanup. Unfortunately, as discussed in our remarks below, we believe DOE has fallen short on both these objectives.

1 Determinations of protectiveness for most operating units are based not on the actual protectiveness of remedies, but primarily on some combination of Institutional Controls (ICs) and/or assumptions that work in progress will be effective. We believe this approach misses the spirit of the Five Year Review. The Review should take a hard look at remedies being used, so as to determine whether they will be effective in the short and long term, after work is completed and the reliance on ICs has ended. Because the stated objective of cleanup, especially for the 100 Area, is cleanup to an unrestricted use standard, reliance on ICs and "work in progress" does not provide meaningful insight into the effectiveness of ongoing cleanup. Most of the work recently completed or in progress at Hanford is being done under interim action Records of Decision (RODs), so it is not unreasonable to expect that for at least some operating units (OUs), additional cleanup might be needed to get to final RODs. Unfortunately this report does not provide insight on whether additional work might be necessary, or at which OUs.

2 We do not believe that information described in this document or work completed to date for Hanford, can support any assertion of protectiveness of the environment, as ecological risk assessments have not been completed. We believe that in all cases, assessment of

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protectiveness for the environment must be deferred, in accord with EPA guidance (Section 4.5 of OSWER 9355.7-03B).

3 Following on comment #1, it is not clear that for at least some OUs the current cleanup will be protective when completed. As an example, we looked at the status of groundwater in the 100 B/C area, an area where most of the priority cleanup has been completed, and a site for which the Five Year Report states that remedies are protective ("No issues or actions specific to the 100-B/C area were identified during the review.") Working with information in the March and May draft reports, we surmise that:

- DOE's approach for this operating unit (OU) is that groundwater remedial measures were not warranted because it was anticipated that source cleanups would resolve groundwater contaminant issues.
- Most priority cleanups at the B/C area have been completed (all priority liquid sites have been completed, along with 8 of 10 priority sites for buried solid waste). As such one should expect to see decreasing concentrations of contaminants at this site. However, as described in the March and May reports:
  - Chromium concentrations have been steady or declining.
  - DOE has acknowledged that for sites in the 100 Area, "deep vadose zone chromium residues continue to act as a reserve for future contamination of groundwater."
  - Strontium 90 concentrations are neither increasing not decreasing in monitoring wells.
  - Tritium concentrations have increased in some wells and aquifer tubes and declined in others. One well had a sharp increase in concentration (to eight times the drinking water standard) during 2005.
  - The pilot ecological risk assessment for the B/C area identified antimony and nitrate as contaminants of concern, and also noted elevated concentrations of technetium 99, trichloroethylene (TCE), and TCE degradation products.

In contrast to DOE's finding of protectiveness, Oregon looked at the questions used for that assessment and finds answers different from DOE (for a finding of protectiveness, answers to these three questions need to be yes, yes, and no, respectively):

- Is the remedy functioning as intended? No. Concentrations of many contaminants in groundwater have not decreased. Some have increased. Moreover, the vadose zone has been recognized as a reservoir for chromium and as a source of chromium to groundwater.
- Are the exposure assumptions, toxicity data, etc. used at the time of remedy selection still valid? No. Cleanup has not led to decreased concentrations of contaminants in groundwater. Vadose zone soils have been found to be an important reservoir for chromium.
- Has any other information come to light that could call into question the protectiveness of the remedy? Yes. The pilot ecological risk assessment for the B/C area identified antimony and nitrate as contaminants of concern.

In other words, it can be argued that the B/C area does not satisfy any of the three questions, and the remedy is not protective of groundwater in this area. It could be that there will be a

delayed response to source cleanups and that groundwater contaminant levels will decrease in the future. We believe that remedies should be deemed not protective, or the determination should be deferred until reduced contaminant concentrations are demonstrated by monitoring data and the ecological risk assessment for the area is completed.

We selected the B/C area for this analysis because cleanup of priority sites in the area is nearly complete, and because pilot risk assessment data are available for the area. If a similar assessment were conducted for other OUs in the 100 and 300 Areas, it is likely that we would find analogous shortcomings in evaluations of protectiveness. By relying on ICs and ongoing work to assert that remedies are protective, we believe DOE is overlooking significant shortcomings of the remedies selected for the interim RODs, especially in terms of contaminants that remain in the vadose zone. We strongly urge DOE to more carefully reassess protectiveness, without considering ICs and work in progress, for each individual OU in the 100 Area and restate its findings.

4 The report uses a single statement of protectiveness for each NPL site, rather than assessing and reporting protectiveness on an OU by OU basis as called for in EPA guidance (OSWER 9355.7-03B). We believe this approach, together with the heavy reliance on ICs and assumptions about work in progress, contributes to DOE's failure to recognize and discuss potential shortcomings of selected remedies, and thus of protectiveness.

5 We believe the document falls far short of being comprehensive in addressing "secondary" contaminant plumes. By "secondary contaminants," we refer to contaminants that occur in groundwater in concentrations higher than drinking water and/or aquatic life standards, but that are not the "big hitters" such as chromium at 100 D and 100K, strontium 90 at 100-N, and uranium in the 300 Area. Secondary contaminants include things like nitrate, tritium, carbon 14, strontium 90 at 100-B/C, etc. The presence of these contaminants is often not even mentioned in the report and they are never addressed in assessing protectiveness or included in lists of issues and action items.

6 We are surprised and disappointed by DOE's failure to acknowledge that existing remedies are not working for chromium at the 100-D and 100-K areas, and are not protective of groundwater or of the environment in nearshore areas of the river corridor. Protectiveness statements as written are simply not credible. Concentrations of chromium are increasing in many wells and a new plume has reached the Columbia River at K-West. The ISRM barrier has failed and chromium is escaping around the pump and treat barrier at the 100-K Area. DOE is willing to identify issues and action items for chromium at these sites, but has not admitted that existing remedies are not protective. New remedies are being implemented, but they have not been installed so it cannot be assumed or asserted they will be protective. Similarly, the ongoing chromium story - increasing well and aquifer tube chromium concentrations, new plumes, failure of pump and treat to contain plumes - provides unambiguous evidence that current remedies are not effective.

In summary, we strongly recommend this report be extensively revised before it is finalized. We encourage DOE to rewrite statements of protectiveness to more fully characterize the actual protectiveness of remedies, without reliance on ICs or assumptions about work in progress, and

to include consideration of all contaminants. We also encourage DOE to defer statements of protectiveness regarding the environment until ecological risk assessments are completed. We look forward to continuing to work with DOE on Hanford cleanup that will insure long-term protectiveness of human health and the environment.

Should you have any questions or wish to discuss any of our comments, please call Paul Shaffer of my staff at 503-378-4456.

Sincerely,

Ken Niles
Assistant Director

cc: Nick Ceto, U.S. Environmental Protection Agency
Jane Hedges, Washington Department of Ecology
Hanford Natural Resource Trustee Council