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Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

August 30, 2010

Mr. Matthew S. McCormick, Manager
U.S. Department of Energy, Richland Operations Office
P.O. Box 550, MSIN: A7-50
Richland, Washington 99352

Regarding: *Nonradioactive Dangerous Waste Landfill Closure/Postclosure Plan*-DOE/RL-90-17, Revision 1 *and Hanford Site Solid Waste Landfill Closure Plan*-DOE/RL-2008-54, Draft A

Dear Mr. McCormick,

The Yakama Nation ERWM Program appreciates the opportunity to review and provide comments on the *Nonradioactive Dangerous Waste Landfill Closure/Postclosure Plan*-DOE/RL-90-17, Revision 1 *and Hanford Site Solid Waste Landfill Closure Plan*-DOE/RL-2008-54, Draft A.

The Confederated Tribes and Bands of the Yakama Nation is a federally recognized sovereign pursuant of the Treaty of June 9, 1855 made with the United States of America (12 Stat. 951). The U.S. Department of Energy's Hanford site was developed on land ceded by the Yakama Nation under the 1855 Treaty with the United States. The Yakama Nation retains reserved rights to this land under the Treaty.

The Yakama Nation ERWM Program's review comments are enclosed. The Yakama Nation ERWM Program identified three areas of significant concern.

Regulatory Pathways to Closure/Postclosure:
There are multiple inadequacies and noncompliance with the Dangerous Waste Regulations (WAC 173-303) in the draft closure plan document for the Nonradioactive Dangerous Waste Landfill (DOE/RL-90-17). Foremost is the lack of a final complete design and a groundwater monitoring plan.

The assumption that successful closure of the Nonradioactive Dangerous Waste Landfill (NRDWL) and the Solid Waste Landfill (SWL) using an engineered Evapotranspiration (ET) cover will provide an opportunity to show the effectiveness of using ET covers at Hanford and that the project should go forward with a conceptual engineering design has no regulatory basis under WAC 173-303. To sanction approval of the approach presented in DOE/RL-90-17, Revision 1 prior to the Tribal/public involvement and permit modification process (including a State Environmental Policy Act (SEPA) determination) is presumptuous and erroneous.

The Yakama Nation ERWM Program does not recognize these documents (DOE/RL-90-17, Revision 1 and DOE/RL-2008-54, Draft A) as fulfilling the requirements of WAC 173-303-610, WAC 173-303-645, WAC 173-303-665, and WAC 197-11.

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References# 0083847

Ecology's June 10, 1998 letter to DOE expressed their position that limited data collected during the August 1997 soil gas survey clearly indicated that NRDWL posed a threat to groundwater. The data indicated that carbon tetrachloride and chloroform were increasing in concentration with depth at locations directly beneath the chemical trenches Ecology further required DOE to perform a detailed soil and groundwater survey at NRDWL, and that should the survey not be completed by the stipulated date, Ecology would pursue other regulatory avenues to ensure compliance and protection of soil and groundwater. **The Yakama Nation ERWM Program does not support the discontinuation of soil gas monitoring and request this continue throughout the duration of corrective actions.**

Closure activities for the SWL, under DOE/RL-2008-54, DRAFT A, are to be integrated with the closure of NRDWL. Yet there are discrepancies between the two documents with regards to length of monitoring activities, inspections, and maintenance activities as well as the scheduling (Phase I & II) of the final proposed cover (ET Barrier). **We are concerned over the integration and integrity of the final cover.**

The Yakama Nation ERWM Program recognizes the waiver of the SWL permit to deferral to a permit issued under WAC 173-303 as it should provide equivalent or superior level of environmental protection. However, we question the validity of waste inventory information and do not believe there has been sufficient characterization to identify the vertical and lateral extent of contamination beyond the boundaries of either of the waste sites. **We believe, to be effective, any corrective action groundwater monitoring program should be based on achievement of the Model Toxics Control Act (MTCA, 2007, as amended) Method B groundwater cleanup levels throughout the entire groundwater operable unit for all constituents and include a comprehensive well network. Earlier groundwater monitoring results also identified the need for additional soil characterization activities. The Yakama Nation ERWM Program supports Ecology's request to complete the focused characterization efforts at these sites.**

<u>Monofill Evapotranspiration (ET) Barrier Design:</u>
We reiterate the concerns presented in our July 13, 2010 comment response letter to the Department of Energy regarding the interim action environmental assessment for closures of the Non-Radioactive Dangerous Waste Landfill and Solid Waste Landfill (DOE/EA-1707D).

1. Monofill Evapotranspiration (ET) Barriers currently under consideration are said to demonstrate effectiveness in arid and semiarid climates and at relatively low costs. These statements are not supported by the existing facts (see reference noted below).
2. Potential for subsidence is minimized; proposed ET Barrier is thought to accommodate moderate differential subsidence or subsidence with no detrimental effects. Current design does not include additional mitigation measures (i.e., redundancy of multiple hydrologic barriers).
3. Thickness, and thus water storage capacity and durability of proposed ET barrier seem to be at or near the minimum of ET barriers installed elsewhere.
4. It has not been demonstrated how the proposed barrier is capable of being in compliance with WAC 173-303-665(6)(a)(v) requirements of having a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present. Use of an "equivalent evapo-transpiration permeability" approach is not acceptable. Declaration that Borrow Area C soils have the required low permeability to meet the RCRA Subtitle C cover standards has not been demonstrated.

5. Use of the HELP and or UNSAT-H models to predict landfill cover performance of proposed ET barrier has not been validated. Neither of these models considers percolation through preferential pathways; may underestimate percolation; and have different levels of detail regarding weather, soil, and vegetation. In addition, HELP does not account for physical processes, such as matrix potential, that generally govern unsaturated flow in ET covers.
6. "Fringe-effects" and creation of ephemeral wetlands are not considered.
7. Potential cumulative impacts associated with the proposed action are said to be attributed to the Nonradioactive Dangerous Waste Landfill (NRDWL) rather than both landfills. Inventory for the Solid Waste Landfill (SWL) is uncertain at best and historical data (Westinghouse assessment of central landfill), noted significant releases of volatile organics (including carbon tetrachloride) in down-gradient wells.

   Reference: "Alternative Covers: Enhanced Soil Water Storage and Evapotranspiration in the Source Zone." W.H. Albright, W.J. Waugh, and C.H. Benson, May 2007.

Institutional Controls:
While details are absent from both documents, Institutional Controls will ultimately be required. We support the Hanford Advisory Board (HAB) Advise #174 (Considerations for Barrier Application) which stated "engineered barriers should not be considered permanent. Risk assessments should examine the magnitude of barrier failure, the likelihood of failed Institutional Controls, and the resulting consequences to human health and the environment." The Yakama Nation ERWM Program supports a more conventional and mature approach to remediating subsurface contamination which permanently removes contamination from the site and does not require long term maintenance or monitoring or use of institutional controls for extended periods (i.e. over 100 years). **We continue to recommend DOE consider partial remove treat and dispose of chemical wastes and use of a RCRA Subtitle C barrier over these sites.**

The Yakama Nation ERWM Program looks forward to written comment responses and dialog on these concerns and comments. If you have any questions, please contact Russell Jim at (509) 945-6741, or Jean Vanni at (509) 945-1100.

Sincerely,

Russell Jim, Manager
Yakama Nation
ERWM Program

cc: Dennis Faulk, U.S. Environmental Protection Agency
Jane Hedges, Washington Department of Ecology
Ron Skinnarland, Washington Department of Ecology
Kevin Leary, U.S. Department of Energy
Ken Niles, Oregon Department of Energy
Gabriel Bohnee, NPT
Stuart Harris, CTUIR

Susan Leckband, HAB
Jean Vanni, Yakama Nation ERWM
Administrative Record

Comments on DOE/RL-90-17, Revision 1-Nonradioactive Dangerous Waste Landfill Closure/Postclosure Plan:

Executive Summary: While the Yakama Nation ERWM Program recognizes the waiver of the Solid Waste Landfill permit to deferral to a permit issued under WAC 173-303, as it should provide equivalent or superior level of environmental protection, we continue to express our opposition to the use of an evapotranspiration (ET) barrier for the final cover for closure of the Nonradioactive Solid Waste Landfill (NRDWL) and the Solid Waste Landfill (SWL).

We have serious concerns regarding the validity of the waste inventory information and incomplete characterization at either of the sites; the continuity, integration, integrity of the barrier with placement and use of grout to fill large voids; the lack of a comprehensive corrective action groundwater monitoring program (including a comprehensive well network) based on achievement of the Model Toxics Control Act (MTCA, 2007, as amended) Method B groundwater cleanup levels throughout the entire groundwater operable unit for all constituents; and the use of a conceptual design rather than a complete, final design in compliance with the Dangerous Waste Regulations of WAC 173-303.

The Executive Summary discusses compliance with *National Environmental Policy Act of 1969* (NEPA) and the needed approval of the Barrow C Site source reclamation plan prior to initiating field activities. These efforts remain outstanding. Furthermore, there is no discussion of required compliance with the *State Environmental Policy Act* (SEPA) regulations of Washington State.

The Yakama Nation ERWM Program requests this section be edited to accurately reflect the regulatory process.

Chapter 1: Section 1.2: Part A Permit Application:
The Yakama Nation ERWM Program requests this section be edited to include the permit renewal process required under WAC 173-303-810, and which occurred in 2004. For clarity and informational purposes, we request the Part A form be included as an Appendix to the Closure Plan.

Chapter 2:
Section 2.2.3: Soil Gas Monitoring at the Nonradioactive Dangerous Waste Landfill: Ecology's June 10, 1998 letter to DOE expressed their position that limited data collected during the August 1997 soil gas survey clearly indicated that NRDWL posed a threat to groundwater. The data indicated that carbon tetrachloride and chloroform were increasing in concentration with depth at locations directly beneath the chemical trenches. Ecology further required DOE to perform a detailed soil and groundwater survey at NRDWL, and that should the survey not be completed by the stipulated date, Ecology would pursue other regulatory avenues to ensure compliance and protection of soil and groundwater. ***The Yakama Nation ERWM Program does not support the discontinuation of soil gas monitoring and request this continue throughout the duration of corrective actions. Based on the presence of volatile organic contamination in the vadose zone, corrective actions could include soil vapor extraction. The Yakama Nation ERWM Program requests this section be edited to include further soil and groundwater surveys and possible future removal actions.***

Chapter 4: Waste Characteristics: ***The Yakama Nation ERWM Program requests clarification on what characterization was performed on the 57,300 pounds of "non-regulated, oil soaked sand" contained in Trench #26.***

Chapter 5: Groundwater Monitoring: WAC 173-303-Dangerous Waste Regulations require a groundwater monitoring plan for RCRA TSD unit closures. It is inappropriate in this closure plan, to propose Ecology exercise its authority to allow alternative requirements for groundwater monitoring of NRDWL in lieu of the required groundwater monitoring plan. ***The Yakama Nation ERWM Program takes issue with any assumptions based on future decisions and requests DOE edit this section to reflect compliance with the Dangerous Waste Regulations and develop the groundwater monitoring plan pursuant to WAC 173-303-610, -645,-665 requirements.***

We request a comprehensive corrective action groundwater monitoring program based on achievement of the Model Toxics Control Act (MTCA, 2007, as amended) Method B groundwater cleanup levels throughout the entire groundwater operable unit for all constituents (including a comprehensive well network).

Chapter 6: Closure Strategy and Performance Standards:
A discussion of future land use is irrelevant and contentious. ***The Yakama Nation ERWM Program requests this sentence be deleted.***

Section 6.1: Closure Strategy:
Ecology letter dated May 7, 2010 states the closure of the Solid Waste Landfill will be under the WAC 173-303-64620 requirements. The Yakama Nation ERWM Program is unclear as to what is meant by the statement '*...closure of the SWL, which will be closed in accordance with the requirements of WAC 173-350, Solid Waste Handling Standards.*' ***The Yakama Nation ERWM Program requests clarification of the cited text and answers to the following questions:***

- ***By which standards is the SWL to be closed?***
- ***If WAC 173-303-646 is to be imposed, how are corrective actions under WAC 173-303-646 to be incorporated into the Hanford Facility RCRA Permit?***
- ***What is the process for modifications to corrective actions?***

Section 6.2: Final Cover Selection:
The document lacks a final design. The assumption that successful closure of the NRDWL and SWL sites using an engineered Evapotranspiration (ET) cover will provide an opportunity to show the effectiveness of using ET covers at Hanford and that the project should go forward with a conceptual engineering design has no regulatory basis under WAC 173-303. ***To sanction approval of the approach presented in DOE/RL-90-17, Revision 1 prior to the Tribal/public involvement and permit modification process (including a State Environmental Policy Act (SEPA) determination) is presumptuous and erroneous.***

The Yakama Nation ERWM Program does not support the premise that these documents (DOE/RL-90-17, Revision 1 and DOE/RL-2008-54, Draft A) are fulfilling the requirements of WAC 173-303-610, WAC 173-303-645, WAC 173-303-665, and WAC 197-11.

We reiterate the concerns listed in our response letter and as presented in our July 13, 2010 comment response letter to the Department of Energy regarding the interim action environmental assessment for closures of the Non-Radioactive Dangerous Waste Landfill and

Solid Waste Landfill (DOE/EA-1707D). ***The Yakama Nation ERWM Program does not support the proposed conceptual design.***

While details are absent from both documents, Institutional Controls will ultimately be required. We support the Hanford Advisory Board (HAB) Advise #174 (Considerations for Barrier Application) which stated "engineered barriers should not be considered permanent. Risk assessments should examine the magnitude of barrier failure, the likelihood of failed Institutional Controls, and the resulting consequences to human health and the environment." ***The Yakama Nation ERWM Program supports a more conventional and mature approach to remediating subsurface contamination which permanently removes contamination from the site and does not require long term maintenance or monitoring or use of institutional controls for extended periods (i.e. over 100 years).***

Chapter 7: Closure Activities:
Again, only a conceptual design is presented. There are discussions of new groundwater monitoring wells, filling of voids, suggestion of compacting the site surface to provide a suitable foundation layer (*which will not transform the operational cover into substitute bottom liner system nor does it become the necessary natural subsoil*), conforming to both WAC 173-303 & WAC 173-350 requirements, development of material specifications for the side-slopes, finding a barrow site, etc. The Executive Summary discusses compliance with *National Environmental Policy Act of 1969* (NEPA) and the needed approval of the Barrow C Site source reclamation plan prior to initiating field activities. These efforts remain outstanding. Furthermore, there is no discussion of required compliance with the *State Environmental Policy Act* (SEPA) regulations of Washington State. It lacks a Construction Quality Assurance Plan. The schedule for closure actions remains subject to change. Actions to complete the southern portion of the SWL under Phase II are unsettled. ***In lieu of a final design, all actions are at best simply proposed actions.***

Having a design strategy is not complying with the Dangerous Waste Regulations of WAC 173-303 or -350. The Yakama Nation ERWM Program requests DOE rewrite the document and provide a final design for Tribal and public review and comment.

Chapter 8: Postclosure Plan: ***See previous comments on groundwater monitoring***
Sections 8.1 thru 8.1.5: ***The Yakama Nation ERWM Program requests clarification and actions to be taken to correct concerns on the following:***

- **How will assessment of cover integrity be complete if not linked to erosion?**
- **How will use of grading equipment affect the compression of wastes beneath the cover?**
- **If using only 6 inches of pea-gravel, how will the desired effect of a desert pavement be maintained if erosion is only dealt with when at the 1 foot depth?**
- **How are evaluations to be performed to determine all types of corrective actions (e.g. subsidence, erosion)? Who is the 'responsible maintenance organization?'**
- **When will a re-vegetation plan be developed?**
- **What is the frequency of evaluation of the drainage system? How will the drainage system be designed?**
- **What are the locations of drainage for the proposed drainage ditches?**

- **Will drainage ditches/run-off areas have the potential to create preferential pathways and channel contaminates into the underlying waste site soils, the underlying aquifer, or creates ephemeral wetlands? What will be done to prevent this?**
- **Well inspections are not included. Why?**

Section 8.3: Amendment to Plan: Changes to closure/postclosure must be in accordance with WAC 173-303-830. ***The Yakama Nation ERWM Program requests clarification as to why EPA will need to be involved in the modification process.***

Appendix B: Inventory is difficult to assess. Details are provided in what appear to be daily manifest of disposed wastes reported in varying units (oz., lbs, drums, gallons, etc). ***It is questionable as to whether there remains a threat to human health or the environment.***

Appendix C: Conceptual Design: ***The design remains conceptual. A final design is required under WAC 173-303.***

Comments on DOE/RL-2008-54, Draft A Hanford Site Solid Waste Landfill Closure Plan:

While the Yakama Nation ERWM Program recognizes the waiver of the Solid Waste Landfill permit to deferral to a permit issued under WAC 173-303, as it should provide equivalent or superior level of environmental protection, we continue to express our opposition to the use of an evapotranspiration (ET) barrier for the final cover for closure of the Nonradioactive Solid Waste and the Solid Waste Landfills.

We have serious concerns regarding the validity of waste inventory information and incomplete characterization at either of the sites; the continuity, integration, integrity of the barrier with placement and use of grout to fill large voids; the lack of a comprehensive corrective action groundwater monitoring program (including a comprehensive well network) based on achievement of the Model Toxics Control Act (MTCA, 2007, as amended) Method B groundwater cleanup levels throughout the entire groundwater operable unit for all constituents; and the use of a conceptual design rather than a complete, final design in compliance with WAC 173-303 or WAC 173-350 regulations.

Furthermore, it appears there is a potential conflict in the groundwater monitoring postclosure time period. Groundwater monitoring should not be discontinued before cleanup levels under WAC 173-340 (MTCA, 2007, as amended) are achieved for the entire groundwater operable unit. It is incorrect to state groundwater monitoring will continue only 'as long as necessary for the site to stabilize'.

Chapter 2: Site Conditions:
Section 2.5: A discussion of future land use is irrelevant and contentious. ***The Yakama Nation ERWM Program requests this sentence be deleted.***

Section 2.7: What is termed as an interim cover is more appropriately describing what the operational cover is. Present cover materials will not suffice as a final landfill cover. ***The Yakama Nation ERWM Program is concerned that final, Phase II work activities for the SWL will not be completed. We request DOE provide a complete final cover design for review and comment.***

Section 2.8: ***The Yakama Nation ERWM Program reiterates our similar concerns regarding subsidence as stated for NRDWL. See these comments.***

Chapter 3: Current Monitoring Systems and Results:
The Yakama Nation ERWM Program disagrees with statements regarding the hydrogeological conditions at the SWL (also see our comments on NRDWL). Assessment of the geological environment is incomplete, due in part, to the shallow nature of the monitoring wells. Interpretation of the hydrogeologic environment is also incomplete, in part, due to erosional subchannels and preferential pathways. ***The Yakama Nation ERWM Program requests DOE perform additional characterization of the aquifer (as well as continuation of soil gas monitoring).***

Reducing or eliminating analysis of constituents based on method detection limits being below the groundwater quality criteria is unacceptable. ***The Yakama Nation ERWM Program requests DOE not eliminate analysis of any constituents and work to reduce your detection limits. As***

they are applicable to the SWL, see our NRDWL comments for our position regarding the groundwater monitoring plan and well network, the sampling and analysis procedures (including Quality Assurance and Quality Control procedures), filtered vs. non-filtered sampling, constituents of concern, etc.

Chapter 4 and 5: Closure Activities and Postclosure Activities:
The document lacks a final design. We reiterate previous concerns. For more clarification, see our comments on the NRDWL ET barrier design. In lieu of a final design, all actions are at best simply proposed actions. ***The Yakama Nation ERWM Program does not support the premise that these documents (DOE/RL-90-17, Revision 1 and DOE/RL-2008-54, Draft A) are fulfilling the requirements of WAC 173-303-610, WAC 173-303-645, WAC 173-303-665, and WAC 197-11.***

It is inappropriate to simply state groundwater monitoring of the SWL will be coordinated and managed under the 200-PO-1 Groundwater Operable Unit. Again, we request a comprehensive corrective action groundwater monitoring program based on achievement of the Model Toxics Control Act (MTCA, 2007, as amended) Method B groundwater cleanup levels throughout the entire groundwater operable unit for all constituents (including a comprehensive well network). ***The Yakama Nation Program takes issue with any assumptions based on future decisions and requests DOE edit the appropriate chapter sections to reflect compliance with the Dangerous Waste Regulations and develop the groundwater monitoring plan pursuant to WAC 173-303-610, -645,-665 requirements.***

Chapters 4 and 5 discuss closure and certification of closure of the SWL per WAC 173-350 regulations. ***The Yakama Nation ERMW Program understands the SWL corrective actions and closure to be under WAC 173-303 regulations as Ecology made the determination to defer permitting requirements under WAC 173-350. We believe it is inconsistent with the regulations, and the approach presented in both closure documents, to allow independent closure of one unit prior to completion of closure activities of the other. The Yakama Nation ERWM Program requests closure of the SWL to be pursuant to the requirements of WAC 173-303.***

Additionally, we note absence of sections describing notice to local land authorities, institutional controls, and amendment of the closure plan. ***For these issues, see our similar concerns and comments for NRDWL. For Chapter 5 and the Appendices, also see our NRDWL comments as they are relative to the SWL.***