



**START**

*Nez Perce*

ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT

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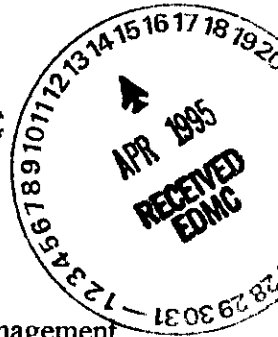
March 24, 1995

Mr. Richard A. Holten, Director  
Plateau Remediation Division  
U.S. Department of Energy  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

RECEIVED

APR 04 1995

DOE-RL / DCC



Dear Mr. Holten:

The Nez Perce Tribe Department of Environmental Restoration and Waste Management (ERWM) has received and reviewed a copy of DOE-RL 93-33, DRAFT A, FOCUSED FEASIBILITY STUDY OF ENGINEERED BARRIERS FOR WASTE MANAGEMENT UNITS IN THE 200 AREAS. Enclosed are the ERWM's comments and suggestions on that document, for your consideration.

The Nez Perce Tribe recognizes the need for this study of engineered barriers for the 200 Areas for the 300-FF-2 OU. The Tribe supports this study, with the following general comments:

a) DOE should provide technical reasons for discounting the possibility of gas production in the contaminated areas beneath the proposed surface barriers. Such explanations should be given especially for the cases of TRU and TRU mixed sites and possibly for greater than Class 3 contaminated disposal sites. For example, based on experience with TRU waste containers (and requirements in DOE order 5820.2A), venting is necessary to allow the escape of flammable hydrogen gas, which, if tritium is present, can vent in the form of tritiated hydrogen vapors.

b) Given that many set radiation exposure maximums, industrial hygiene sources should be researched to demonstrate how cover design provides protection from exposure at the surface for each type of barrier and related waste types to be covered. The active institutional controls to prevent exposures should also be discussed.

c) No mention was included in the document regarding how radiation activity measurements will be recorded at the surface and how data will be converted to exposure assurance assessments for the 100-year performance period. Consequently, no radiation monitoring sources were included in the

ARARs search. Nez Perce ERWM suggests that monitoring and/or institutional controls should continue longer than 100 years.

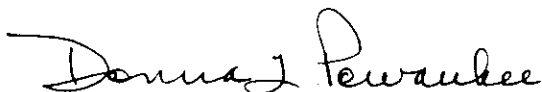
d) How does leaving in place waste containing radionuclides with half-lives longer than the term of expected operations satisfy DOE Order 5820.2A (III)(2)(a)? Such order states that no legacy requiring remedial action remains after operations have been terminated. Compliance with this pertinent ARAR was not addressed in describing the conceptual design criteria for the barriers.

e) Essentially, the intent to cap and leave waste sites in place will create permanent disposal sites. Therefore, ARARs pertaining to disposal sites should be considered with respect to siting location, design (covers, leachate control, monitoring, etc.) and performance standards. Nez Perce ERWM recognizes that no final decisions have yet been made, but also recognized the seriousness of leaving hazardous and radioactive waste permanently in place under a surface barrier with no future intention of removal. The Nez Perce Tribe insists that new activities at Hanford should strive to minimize the amount of permanently impaired land, and the Tribe be consulted in all such planned actions.

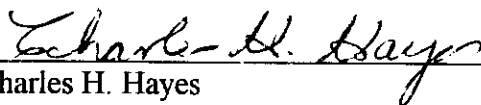
The Nez Perce ERWM Office appreciates the opportunity to provide comments on this Focused Feasibility Study. We would like to continue to receive all appropriate documents relative to this project.

If you wish to discuss Nez Perce ERWM's comments further, please contact me or Dr. Rico O. Cruz at 208-843-7375.

Sincerely,



Donna L. Powaukee  
ERWM Manager

In Concurrence:   
Charles H. Hayes  
Chairman

cc: John Wagoner, DOE-RL, Site Manager  
Kevin Clarke, DOE-RL, Indian Programs Manager  
Bryan Foley, DOE-RL, 200 Area Unit Manager  
J.R. Wilkinson, CTUIR, Hanford Program Manager  
Russell Jim, YIN, ER/WM Manager

**Response To:**

**Focused Feasibility Study of Engineered Barriers  
for Waste Management Units in the 200 Areas  
(DOE-RL 93-33) Draft A**

**Comments Prepared By:**

**Nez Perce Tribe  
Department of Environmental Restoration and Waste Management**

**March 24, 1995**

*THE NEZ PERCE TRIBE*  
**DEPARTMENT OF ENVIRONMENTAL RESTORATION AND WASTE  
MANAGEMENT**

**COMMENTS ON THE  
FOCUSED FEASIBILITY STUDY OF ENGINEERED BARRIERS FOR WASTE  
MANAGEMENT UNITS IN THE 200 AREAS  
DOE-RL 93-33, DRAFT A**

Since 1855, reserved treaty rights of the Nez Perce Tribe in the Mid-Columbia area have been recognized and affirmed through a series of federal and state actions. These actions have protected the interests of the Nez Perce to use their usual and accustomed resources and resource areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, the Nez Perce Tribe Department of Environmental Restoration and Waste Management (ERWM) has the support of the U.S. Department of Energy (DOE) to participate in and monitor certain DOE activities. The Nez Perce Environmental Restoration and Waste Management Program responds to documents calling for public comment from the U.S. Department of Energy. The Program critically reviews and comments on papers in an objective and straightforward manner. Each document review usually lists the Page number, Paragraph number, Sentence number: Comment. However, in this comment, we indicate our concerns followed by suggested action. Following are specific comments on the FFS of Engineered Barriers for Waste Management Units in the 200 Areas.

**SPECIFIC COMMENTS AND SUGGESTIONS**

**Page 1-3, Aggregate Area Management Study (AAMS) Program**

Discussion on the AAMS program did not include if any qualitative or quantitative risk assessments were performed as input to a cost benefit analysis for remedial alternatives selection. The text in Section 1.1.3 states: "Next, potential remedial technologies were screened based on their effectiveness, implementability, and cost." What were the "effectiveness" criteria? Did the screening include any relative comparison of risk resulting from alternative remedial technologies? Are barriers (page 2-1) the only remedial alternative being considered for IRM and LFI operating units?

Nez Perce ERWM suggests that this document should place the Focused Feasibility Study (FFS) for this one remedial alternative into context with the overall remedial plan for the 200 Areas. The reader can be misled into thinking that only this one remedial alternative is being considered for the 200 Areas and that the remaining question is only what type of barrier to use. Any risk assessment results from AAMS should be summarized and a brief discussion of the screening criteria supporting the use of barriers for the 200 areas should be explained. Were Tribal interests to minimize the amount of impacted area considered in the screening criteria? The AAMS Program reports should be reviewed from the Tribes' perspective.

**Page 1-4, 4-2 and 4-5, Remedial Action Objectives (RAO)**

The text states a cover is an effective method for minimizing tritium releases to the atmosphere along with its benefits of minimizing infiltration of precipitation and windblown dust. Later in the FFS document, mitigation of the listed factors are discussed in terms of design criteria. However, releases of tritium are not addressed and venting of any gases from the covered soil (through the barrier or around the edges of the cover) were summarily dismissed without explanation. At the bottom of the same page and continuing to page 1-5, the pathways typically evaluated in the qualitative baseline risk assessment (QBRA) are listed. Inhalation is listed as a pathway, but only for volatile organic chemicals and not for tritium or other gases or vapors. Page 4-11 states that surface barriers provide for long-term containment and isolation of radiological contaminants for all exposure pathways while decay proceeds.

ERWM recommends that, as stated our general comments, each site specific FS should provide scientific reasons for discounting the possibility of gas production in contaminated areas beneath proposed surface barriers, especially for TRU, TRU mixed and Greater Than Class C contaminated units. Any monitoring or other data should be cited. The FFS document should explain why gas and vapor production is not expected, and what surface controls will be placed to prevent walking around barrier edges where any migrating gases could potentially be most concentrated.

**Page 1-5, General Approach**

ERWM suggests that on line 31, check reference to AMMS reports (DOE-RL 1992A), which is probably a reference to the AAMS reports.

**Page 1-7, Waste Sites and Waste Category Designation**

Statements in the paragraph from line 26 through line 30, discuss plans for handling TRU waste. The discussion indicates TRU waste may be disposed at the Hanford, site or off-site, depending upon the radioactive activity levels and off-site disposal certification of each waste stream. TRU waste streams are certified or approved for off-site disposal. The interests of the Nez Perce Tribe, with respect to minimizing total land impact in terms of area and exposure levels, should be considered for retrieving TRU waste, obtaining TRU waste certification and for disposing of the TRU waste off-site. Additionally, Nez Perce ERWM is concerned that off-site radioactive waste may be brought to Hanford for disposal under one or more of the Area 200 barriers, after or without undergoing treatment. Was the Tribe consulted when considering the import of additional waste to Hanford? The "preferred treatment" options listed in the Site Treatment Plan for at least one other DOE site selects Hanford as a repository for treatment and potential disposal for particular radioactive and mixed waste streams. On page 1-7, lines 29 and 30, the FFS Document states that TRU waste not certified nor approved for disposal at the Waste Isolation Pilot Plant (WIPP) may be disposed at the Hanford Site.

ERWM suggests the Conceptual or (final) Site Treatment Plan for Hanford Site be reviewed. This plan, required by the Federal Facility Compliance Act, will describe how and where waste generated at the site will be treated and disposed.

**Page 2-2 and 4-2, Potential ARARS**

As mentioned above, for any site capped with a permanent surface barrier and for which the waste is left in place, a new permanent disposal site will be established. It is of utmost importance (see page 2-2, lines 9-20) to consider where waste disposal activities may or may not be conducted (e.g., siting/location of a disposal site). ERWM suggests the FFS and site-specific feasibility studies consider whether capping and "disposing" of waste in place violates any siting criteria prescribed for new disposal sites for the relevant waste type. Pursuant to DOE Order 5820.2A, a radiological performance assessment must also be completed for any radioactive waste disposal sites, and this assessment must demonstrate compliance with exposure thresholds, (as defined in DOE Order 5820.2A).

**Page 2-2, Potential ARARS**

Lines 46 through 48 state design criteria are not dependent upon parameters or circumstances unique to a particular site. Typically, cover design and erosion control vegetation are very dependent upon location and orientation. We suggest this section be expanded to explain what factors do potentially affect site specific conditions, or justify how a general design is adaptable to different locations and for capping of different waste types.

**Page 2-3, Other Criteria (also pages 2-5, 2-6, 2-8 and 2-13)**

As aforementioned, the barriers need to not only contain physical and chemical attributes of potentially damaging or harmful contaminated materials, but also limit radioactivity exposures. No discussion is presented regarding cover design effectiveness at containing radionuclides. Not only ARARs procedures dictate searching for relevant requirements, but when radioactivity is involved, As Low As Reasonably Achievable (ALARA) measures must be performed. When site-specific designs and exposure levels are evaluated, the Nez Perce has an interest as to how design alternatives impact surface exposure levels and if the chosen design will allow safe access to the land above the cover. ARARs should include industrial hygiene, or other health standards, published by DOE, AEA, NRC and ASTM regarding proposed barrier effectiveness at shielding radionuclides and preventing the potential escape of other hazardous vapors or gases.

**Pages 2-4 and 2-5, Assurance and Individual Protection Requirements**

TRU disposal sites are expected to have active institutional controls for 100 years. For high-level radioactive and TRU wastes, the disposal system can not cause an annual or acute exposure over specified limits for 1,000 years, pursuant to 40 CFR Part 191. Nez Perce ERWM can help assess any period in excess of 100 years, that DOE monitoring or active institutional controls at a covered disposal site are in the best interest of the Nez Perce Tribe; and communicate this to DOE.

**Pages 2-4 and 2-5, Assurance and Individual Protection Requirements**

For the land disposal of TRU wastes, active institutional controls are required to minimize radioactive exposures. This FFS document should summarize the active institutional controls proposed for TRU waste sites to be covered.

**Pages 2-4, 2-5, and 2-14, Protection Requirements**

Will a radiological performance assessment be completed for each radioactive waste disposal site to be covered? Each site should undergo a radiological performance assessment based on waste characterization information and site conditions relative to barrier design, in accordance with the intent of sections contained in DOE Order 5820.2A and 40 CFR Part 191.

**Page 2-6, 2-8, 2-24, 2-25 and 5-1, Technical Requirements for Land Disposal Facilities and Cover Feasibility**

Class C waste, designated Category 3 LLW in this FFS document, must be disposed so the uppermost level of waste is at least 5 meters below the top of the cover. According to Table 2-3, the Modified RCRA Subtitle C Barrier will be used to cover Category 3 LLW and Category 3 mixed LLW sites. The conceptual design for the Modified RCRA Subtitle C Barrier, shown in Figure 3-2 on page 3F-2, indicates the cover will be only 170 cm or 1.7 meters thick with one additional layer of grading fill specified as having a variable thickness. The Hanford Barrier, as shown in Figure 3-1 on page 3F-1, is designed to be 450 cm or 4.5 meters thick with a variable thickness grading fill lower layer. What measures will be taken to ensure the Class C and higher activity categories of radioactive waste (Greater Than Class C), are buried at least 5 meters below the top of the cover?

ERWM recommends on a site-specific basis, policy require that any radioactive waste in these categories is buried at least 3.3 meters below the surface before applying the cover.

**Page 2-20, Conceptual Design Criteria**

The terminology stating the 200 Areas contain four waste categories (see page 1-8, line 35 and page 2-20 line 35) and subsequently referring to Table 2-3, which shows the relationship between more than four waste categories and cover designs, can be misleading. The table in Appendix A also shows more than four waste categories. ERWM suggests the four categories include perturbations for mixed LLW mixed TRU waste and greater than Class C waste, or refer to more than four categories. Table 2-3 actually includes more than six categories because LLW is divided into Category 1 and Category 3, LLW and mixed LLW in each case.

**Page 2-8, 10 CFR Part—Licensing Requirements for Land Disposal of Radioactive wastes, Subpart C—Performance Objectives**

Contact of disposed radioactive waste with water must be minimized. Other radioactive waste disposal requirements required performance assessment based on 1,000 to 10,000 years (see page 2-4). Has water contact due to anticipated changes in river course, drainage patterns, 100-year flood, or 25-year storm been assessed considering these longer periods of time? In Appendix C, Numerical Performance Assessment, and as summarized on Pages 4-7 to 4-10, were the 25-year storm or 100-year flood (if applicable to location) tested in the models for 1,000 to 10,000 year time periods.

In the radiological performance assessment, reasonable estimations of the potential for water contacting radioactive waste during the 1,000 to 10,000 year timeframe should be included. In the site specific performance assessments, any water contact conditions that could arise given such an extended timeframe should be considered

**Page 2-13, 2-18, Minimum Functional Standards for Solid Waste Handling**

Regulatory requirements state that controls minimize or eliminate escape of landfill gases or waste decomposition products to the atmosphere. How would a cover without any subsurface controls on passive gas collection systems eliminate or minimize the potential for gas or vapor venting from radioactive waste or other waste decay? The FFS documents, or site-specific documents should provide sound reasoning for the assertion that no off-gases are expected from the wastes and contaminated materials to be covered and left in place.

**Page 2-13, DOE Orders**

DOE Order 5820.2A, Radioactive Waste Management, and other DOE orders were listed and discussed as potential ARARs. Requirements such as leaving no legacy contamination requiring remedial action (mentioned in general comments), performance of a radiological performance assessment and ALARA are discussed in this FFS document. Starting on page 2-17, with the Screening of ARARs, TBCs and other Materials, and continuing to sources relevant to the Conceptual Design Criteria starting on page 2-20, DOE Orders are no longer discussed. While DOE Orders may not state design specifications, they do dictate specific performance standards which must be met. Nez Perce ERWM suggests the relevant DOE orders in the evaluation of relevant resource materials and ARARs be included.

**Pages 2-17 to 2-19 and Tables 2-1 and 2-1 on pages 2T-1 and 2T-2**

Nez Perce ERWM did not note any reference to, or inclusion of, any intergovernmental or Tribal agreements as ARARs, TBCs or other materials to be considered. Are these agreements with the affected Tribes included by reference via DOE Orders, or have they not been considered? It is recommended to include references to pertinent Tribal and intergovernmental agreements and discuss any potential impacts on these agreements anticipated from the use of barriers on units at 200 Areas. If



the future intent to install these barriers will promote the import of additional radioactive or other wastes to Hanford for treatment and disposal, then address how land disturbances will be minimized and damaged areas will not be increased, as has been expressed by Nez Perce ERWM and the other Tribes. In addition consider DOE Order 1230.2 as an ARAR.

#### **Page 4-10 and 4-14, Long-Term Durability**

The barriers are to be constructed of natural materials. The silt loam soil will be obtained from the McGee Ranch. Will other materials be derived from locations at the Hanford site, private land, or from public lands where the affected Tribes have natural resources interests? ERWM recommends to identify whether the natural barrier materials will be obtained from either public, reservation or private land.

#### **Page 4-12, Short-Term Effectiveness**

On lines 38-40, the statements imply that a qualitative cost and risk benefit evaluation was performed to reach the decision that construction of surface barriers are preferred over alternatives that would involve excavation and transportation of contaminated soil. Was the Nez Perce Tribe permitted to participate in any such decision making processes? Reference any comparative risk and benefit studies performed to allow for review by Nez Perce ERWM or to substantiate the sound basis of the decision to use surface barriers.

#### **Page 4-15, No section**

Have Tribal acceptance provisions been incorporated into the plans to construct surface barriers? Nez Perce ERWM recommends to add section 4.2.10 on Page 4-15 that calls for Tribal review and acceptance of any proposed plans and designs. The section could include reference to intergovernmental and tribal agreements in addition to DOE Order 1230.2.

#### **Page 5-1, Definitive Design Requirements**

The FFS document states: "The design process has accounted for all applicable requirements and criteria with the exception of site specific items." Have the intergovernmental and Tribal agreements been considered in selecting or designing the remedial action? The DOE should provide Nez Perce ERWM with any documents relating to the decision process which lead to the initial selection of surface barriers for the 200 Area waste sites remedial actions. Intergovernmental and Tribal agreements should be included in the list of ARARs.

#### **Pages 5-1 to 5-2, Definitive Design Requirements**

The Nez Perce Tribe is understandably sensitive to disruption of cultural resources, and any construction activities at Hanford must involve tribal knowledge and consent. Include Tribal input on any plans to disturb land in culturally sensitive areas within the 200 Areas waste sites, as identified by any of the affected Tribes, if any. Add this requirement to the list in Section 5.2 of this FFS document.