START
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REGION 10 HANFORD PROJECT OFFICE
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0038540

March 31, 1994

Steven H. Wisness
Tri-Party Agreement Manager
Department of Energy
Richland Operations Office
P.O. Box 550, A5-15
Richland, Washington 99352

Re: Conceptual Design Report for the Environmental Restoration Disposal Facility

Dear Mr. Wisness

The U.S. Environmental Protection Agency (EPA), the Washington State Department of Ecology (Ecology), and their contractors have completed the review of the Conceptual Design Report for the Environmental Restoration Disposal Facility, DOE/RL/12074--28, Rev. 0. Enclosed are the combined comments on the technical and regulatory content of this report. Comments from the EPA Region 10 office will be sent as a separate document.

Also enclosed is a copy of Ecology's comments, as the support agency, for inclusion into the Administrative Record. A separate response to these comments is not required.

A Word Perfect 5.1 diskette is enclosed for your convenience.

If you have any questions or concerns regarding these comments, please contact me at (509) 376-4919.

Sincerely,

Pamela S. Innis
Unit Manager

Enclosure

cc: Bryan L. Foley, DOE
Michael Collins, DOE
Norm Hepner, Ecology
Cathy Massimino, EPA
Jeff Ross, PRC
Bill Lum, USGS
Vern Dronen, WHC
Mike Casbon, WHC
Becky Austin, WHC
Administrative Record, ERDF (w/copy of Ecology comments)

INTRODUCTION

The U.S. Environmental Protection, the Washington State Department of Ecology, and their contractors have completed the review of the *Conceptual Design Report for the Environmental Restoration Disposal Facility*, Hanford, Washington. This document was prepared by the U.S. Department of the Army, Walla Walla District, Corps of Engineers, for the U.S. Department of Energy (DOE), Richland Operations Office and is dated February 18, 1994. General comments are presented followed by specific comments.

GENERAL COMMENTS

Overall, the conceptual design report (CDR) adequately addresses the conceptual approach for the design and operation of the environmental restoration disposal facility (ERDF). Several issues are summarized in the following list that should be clarified or addressed in this final CDR:

- Several inconsistencies exist between the information provided in the CDR and the engineering studies and functional design criteria (FDC). No rationale is provided for any deviations from the conclusions of engineering studies and final FDC. Some of these inconsistencies are discussed in the comments below.

- Waste acceptance criteria for evaluating chemical and radiological compatibilities (resistance) of geosynthetic and natural liner materials with wastes and leachates are not stated.

- Substantial differences are seen between the final FDC, the conclusions of engineering studies, and the assumptions used in the CDR in estimating the amount of waste containers, equipment, operating personnel, water requirements, and the design of decontamination facility. No rationale is provided for any deviations from the FDC and engineering studies. Unless these deviations are clarified, the cost estimate presented in this CDR is probably overestimated.

- Waste acceptance criteria for waste containing free liquids are stated but do not include the optimum value or range of values for moisture content of the wastes to be accepted at the ERDF. This criteria should be provided to determine whether additional treatment such as blending with dry waste (or soil) is required at the ERDF. This information is also useful in estimating the leachate rate from the facility.

- The CDR does not provide preliminary groundwater monitoring plan and does not identify environmental compliance items.

- Several draft studies were referenced in the CDR; these studies are not currently released for public or regulator review. The reference to these studies to support the conclusions within the

CDR should be deleted unless the reports are released prior to public comment. Instead, a statement supporting the conclusion should be made in lieu referencing the report. Concurrent review of these technical reports would aid the regulators in their review of the CDR.

- Under the CAMU rule, remediation waste is specifically defined. We are currently studying and evaluating types of remediation waste allowed to be disposed of in ERDF. If appropriate, the disposal of ERDF site facilities and sludge from treatment operations will be allowed.

- Backhaul of excavated soil to the remediation sites is not well defined. Presently, the ERDF CAMU makes clean soil available for backhaul, but does not provided further services. Requiring all operable units to gather resources and manage backhaul of soil from the ERDF to the operable unit may not be cost efficient or wise. Since the stockpiles reside in ERDF and the resources can be made available, ERDF should provide backhaul loading, railcar transport, and offloading at a convenient transfer location.

- Soil stockpiles are envisioned to be placed on closed portions of the trench in the future. Placing soil on the closed portions of the trench may damage the interim cover. Constructing the Hanford Barrier prior to closing the facility will obstruct the drainage facility circling the trench and may impact the access road.

SPECIFIC COMMENTS

Section 2.0, page 2, fourth paragraph. This paragraph lists the criteria and engineering studies used in the CDR for the ERDF facilities. The list, however, does not include the following engineering studies:

- Engineering study for the *Source Inventory Development for the Environmental Restoration Disposal Facility*, DOE/RL/12074--30 Rev. 0

- Engineering study for the *Load/Deformation for the Environmental Restoration Disposal Facility*, DOE/RL/12074--31 Rev. 0

- Surfactant pilot engineering study for the *Environmental Restoration Disposal Facility*, DOE/RL/12074--30 Rev. 0

The results of these studies should be incorporated into this CDR according to the draft CDR (DOE 1994) or a specific reason should be stated for not incorporating the results of these studies.

Most of the engineering studies and design analysis reports enumerated here contain out-of-date material. Examples include the Engineering study for the decontamination and wastewater treatment..., the Engineering study for the volume reduction system..., and the Engineering study for on-site transportation network... all state that the trench design is for multiple 33-foot deep cells (incorrect now) and use that as a basis for analysis and the Engineering study for the trench and engineered barrier... states that a low-permeability interim cover is not cost effective and will not be used (incorrect now). Are these studies going to be updated? Are the new conclusions, cost estimates, and data going to be added to the CDR?

Section 4.0, page 5, fourth paragraph. The text states "The face of the waste placed in the trench will be coated with a dust suppressant." The type of dust suppressant and the estimated quantity of dust suppressant required, however, should also be documented in the report.

Section 4.0, page 5, paragraph 5, sentence 2. It is stated that facilities to load containers with clean excavated soil for backhaul is proposed.

Recommendation: Elaborate that these facilities will include dedicated containers, loading equipment, and railroad access. Backhaul operations will be performed by ERDF personnel with offloading of the backhaul at a convenient transfer location. At this transfer point, the responsibility of backhaul transport to the remediation site is the responsibility of the operable unit.

Section 4.0, page 5, fifth paragraph. Air and groundwater monitoring are proposed, but no ecological or physical monitoring is included. Short-term ecological and physical monitoring are necessary components of the performance assessment of the interim cover until the final cover is placed over the disposal cells. This monitoring may be done for experimental purposes or may be used to validate the design against the intended performance objectives. The CDR should include a section on short-term ecological and physical monitoring and the cost associated with the monitoring. At a minimum, the following interim cover monitoring elements should be included:

- Vegetation monitoring
- Soil monitoring such as
  - Burrow depths
  - Soil loss
  - Deformation--surface roughness change
- Moisture monitoring
  - Infiltration using lysimeters
  - Runoff quality
- Maintenance
  - Frequency
  - Man hours required
  - Water quantity

Section 4.0, page 5, sixth paragraph. This paragraph states "Site characterization activities are being conducted and monitoring wells are being installed to meet RCRA requirements. These actions are part of project W-296 but are not included in the facilities described in this CDR." If these activities are part of project W-296, a brief narrative describing these activities should be included in this CDR.

A waste disposal trench surveillance groundwater monitoring plan meeting the corrective action management unit (CAMU) criteria for the ERDF facility should be included because of the following three reasons: (1) the function of a groundwater monitoring system is to obtain data about the physical and chemical state of the groundwater system at and in the vicinity of the disposal trench; (2) the system must function to detect and quantify any impact of the disposal cell on the groundwater; and (3) the system must, in addition, function to provide information about potential migration of contaminants (if any) from the site and assess the need for corrective or remedial action. The plan should contain or reference the CAMU application for information about the following topics:

- Monitoring well locations: upgradient, downgradient, and at the point of compliance
- Monitoring well design (i.e., open standpipe or pressure monitoring, or screened with filter pack)
- Depth and screened interval of the wells
- Strata into which the wells will be placed
- Monitoring well sampling frequency
- Water quality parameter measurements
- Water level measurements
- Groundwater model that will be used to analyze data and assess disposal trench performance

Additionally, the text states "The costs are included in section 8 under "Other Project Costs." Costs for site characterization and monitoring well installation activities are not included in Section 8 or Appendix D, Work Breakdown Structure/Cost Estimate. Because the site characterization and monitoring well installation activities require a substantial amount of work, a detailed cost estimate should also be included for these activities.

Section 4.1.3, page 6, paragraph 2. As stated, areas that will not be repeatedly disturbed will be revegetated.

Recommendation: Add that these areas likely to be repeatedly disturbed will be managed to prevent erosion.

Section 4.5.1, page 10, first paragraph. This paragraph lists the special equipment needed for the ERDF project. The list does not identify and include equipment to handle (i) remote handled, low-level waste, and low-level mixed waste, and (ii) hazardous/dangerous wastes as listed in the FDC (WHC 1993) but should. Costs associated with these handling equipment should also be included in the detailed cost estimate analysis.

Section 5.1.2.1, page 14, second and third paragraphs. The text states that the stormwater runoff from clean areas of the site will be collected and routed through ditches to a detention storage pond. The location, the estimated flow to the pond, and the capacity of the pond are not stated. It is also not clear whether the costs for the excavation and construction of this pond are included in the Appendix D, Work Breakdown Structure/Cost Estimate. These omissions should be corrected.

Section 5.1.2.1, page 14, paragraph 4. Contaminated stormwater is to be collected, stored, sampled, and treated if necessary. Expeditious handling of the 25 year - 24 hour storm event is required to collect additional runoff from later storm events.

Recommendation: Since first flush storm runoff will likely contain greater quantities of pollutants and the tanks may not provide adequate detention time and treatment for the contaminants present, a diversion structure to bypass the filled tanks may be a good management practice to handle storms of greater magnitude.

Section 5.1.2.1, page 14, paragraph 5. This paragraph addressed radioactive contamination only. Chemical contamination is also a potential concern.

Recommendation: The paragraph should address chemical contaminants potentially released to the environment from fuel and chemical dispensing facilities, parking lots, maintenance activities, etc. Drawing ES-296-03 should be changed appropriately.

Section 5.2.2.2, pages 29 and 30. This section estimates that 886,000 gallons (correct value 860,000 gallons) of water will be needed per year as makeup water, based on 10 gallons per container. This is the total volume of makeup water for both rinses (DOE 1993). The text in this section states that the makeup water required for the second rinse cycle will come from either the proposed ERDF raw water supply system or from the wastewater treatment system. The source of makeup water required for the first rinse, however, should also be provided.

Section 5.3.5, page 40, paragraph 1. When discussing sanitary wastewater, there is not mention of sanitary wastewater generated from personnel decontamination or from dedicated facilities.

Recommendation: Personnel decontamination wastewater should be treated prior to disposal. A system is needed to convey and treat or store and sample this potentially contaminated wastewater. If other potentially contaminated wastewaters are generated within the dedicated maintenance facilities, this wastewater will also require treatment.

Section 5.3.6, page 40, paragraph 1, sentence 2

When discussing the use of raw water for decontamination make-up, batch plant, and other non-potable water uses, the treatment or conditioning of this water is not mentioned.

Recommendation: Does this water require corrosion inhibitors or other conditioning to prolong the life of the mechanical components in the decontamination bays, wastewater plant, etc? If needed, a system should be included for those units requiring conditioned water.

Section 5.3.7, page 43, fifth paragraph. Eight evaporation tanks occupying an area of 133,100 ft^2 (approximately 3.1 acres) are proposed to evaporate the treated wastewater from the package wastewater treatment plant (PWTP). However, the PWTP with reverse osmosis is supposed to produce an effluent meeting the regulatory requirements for discharge into natural drainage channels or for reuse in the ERDF operations. The text should explain why evaporation tanks are required for the treated wastewater.

Section 5.4.3.1, page 45, paragraph 3, sentence 4. The document states that stockpiles of soil will be established over the closed portions of the trench. How will this be accomplished without damaging the interim cover (asphalt or HDPE)? Or, are portions of the trench to be closed with placement of modified Hanford Barrier while trench is still active? Need clarification.

Recommendation: Stockpiling should continue at the shown location if portions of trench are not covered with modified Hanford Barrier. Backhaul of material and placement of soil for Hanford Barrier will provide the additional required space needed to store excavated soil in the existing location.

Section 5.4.3.3, page 47, first paragraph. The expected leachate generation is estimated as 800,000 gallons. Sample calculations or reference sources should be provided for the estimated value.

Section 5.4.3.3, page 47, second paragraph. The text stated "The tanks will be the same type as used for the decontamination wastewater (see Section 5.3.7)." The type of tanks used for the decontamination wastewater, however, is not described in Section 5.3.7 and should be.

Section 5.4.3.3, page 47, paragraph 2, sentence 4. Tank 3 is ineffective as a spare for cleaning Tanks 1 and 2 if valving is not provided to bypass Tank 2.

Recommendation: Provide additional valving so tank combinations of Tank 1 and 2, 2 and 3, or 1 and 3 can be used to store leachate. These combinations will ensure cleaning of any tank can take place.

Section 5.4.3.3, page 47, paragraph 3. Pumping leachate from the storage tanks caused by a 25 year storm event over 60 days may not provide needed capacity if secondary storms of lesser magnitude are experienced within this 60 day timeframe. The extra tank does provide excess storage capacity and may provide the needed storage capacity to supplement the low pumping and treatment rates.

Recommendation: Determine the magnitude of storms experienced within 60 days following the 25 year storm event and the typical wettest 60 day period. The pumping system or storage capacity should be sized to accommodate anticipated volumes.

Section 5.4.3.4, page 47, paragraph 1, sentence 4. The Trench Operations Sequence Engineering Study is referenced in the text, however, this document is not listed as a reference on page 2. Is this document draft or final?

Recommendation: Change text appropriately. If draft document, delete reference to document and change last sentence to, "A more detailed description of the proposed waste placement sequence is being developed." If final, add reference to page 2 list.

Section 5.4.3.6, page 48, paragraph 1, sentence 4. It is stated that the daily operational cover will control vectors and minimize infiltration. The daily operational cover does not provide vector control or minimize infiltration for that portion of the trench which is not covered with soil.

Recommendation: Delete sentence referencing vector control. Replace this sentence by stating that exposed waste on the trench face will be sprayed with a fixative in lieu of daily cover. This will save landfill space. Based on the waste expected, vector control will not be necessary.

Section 5.4.3.6 and 5.4.3.7, page 48. The use of the term "low permeability layer" is confusing. In the last sentence of Section 5.4.3.6, the daily operational cover includes a low permeability layer in completed portions of the trench prior to installation of interim cover. Then in the second sentence of Section 5.4.3.7, the low permeability layer is defined as a layer of asphalt.

Recommendation: Differentiate between the low permeability layers by changing the low permeability soil layer to the daily operational cover with greater silt content to limit infiltration. The low permeability layer remains as the asphalt layer within the interim cover.

Section 5.4.3.7, page 48. The text states "The daily operational cover will include a low-permeability layer to limit leachate production in the completed portions of the trench." The hydraulic conductivity and the thickness for the proposed low-permeability layer, however, are not identified and should be.

Section 5.5.11, page 53, paragraph 4. It is mentioned that a specified dust suppressant material may be used. There is no further mention of this specified dust suppressant.

Section 5.5.23, page 55, paragraph 1. It is stated that containers will be provided as part of the ER project and generally specifies and describes them. To ensure facility testing and personnel training before active operations, some containers will be required. Additional containers will be necessary to meet cycle times and prevent delaying ER site remediation or requiring excessive resources at individual operable units.

Recommendation: Provide a minimum number of containers to test facility operations and train operating personnel. The number of containers provided should be adequate to fulfill cycle time requirements without delaying operable unit tractor/trailers or railcars from returning to the Site.

Section 6.4, page 61. This section lists the tasks of the off-site contractor for construction work. The list does not include construction of ditches and detention storage ponds for stormwater runoff from clean areas and RCRA compliant tanks for stormwater runoff from potentially contaminated areas. This discrepancy should be clarified.

Section 6.4, page 62, fifth bullet. Construction of the decontamination facility and wastewater treatment building is included in the third bid package tasks. It is not clear whether this task includes supplying equipment necessary for the decontamination and wastewater treatment plant operations (for example, the conveyor system for containers, dryers, and the automatic radiation monitoring system in the decontamination building; the package wastewater treatment plant in the wastewater treatment building).

Section 7.3.2, page 67, paragraph 1, sentence 2. Disposal of ERDF site facilities at the end of their useful life may or may not be allowed in the ERDF CAMU.

Recommendation: Change text appropriately.

Section 7.5.1.4, page 68. Single-use containers are used for disposing certain wastes. The construction materials for these containers should be specified.

Section 7.5.2.2.6, page 72, paragraph 3, sentence 5. The Source Inventory Development Engineering Study is referenced. This document is in draft form and has not been reviewed.

Recommendation: Delete reference and change sentence to, "Wastes that will be handled through bulk operations will be controlled and will not have any adverse effects on worker health or safety."

Section 7.5.2.2.8, page 73. This section addresses transport and placement of daily operational cover including materials, equipment, and personnel required. The materials, equipment, and personnel required for the low-permeability cover in the completed portions of the trench, however, should also be included.

Section 7.5.2.2.14, page 75. If back-haul will accompany waste placement in the ERDF then provisions for equipment to do the tasks necessary for back-haul should be taken now. Lists of required equipment, performance requirements, and costs should be developed as a part of this CDR.

Section 7.5.2.2.14, page 75, paragraph 1. It is stated that a rail siding will be installed but that no other equipment for backhaul operations is to be provided. How are backhaul operations to be performed? Who is the responsible entity?

Recommendation: The ERDF Facility should be equipped and staffed to provide for backhaul operations. All equipment (railcars and loaders) should be provided. Offloading of backhaul may be provided by the operable unit.

Section 7.8.1, page 78, paragraph 1. Is the strategy to acquire permits to be included as part of CDR or is it to be provided in a different document? Clarify or add text.

Appendix A, page A-1, fifth bullet. The text states that "no waste containing decomposable material in concentrations greater than 10 percent of the waste volume will be accepted." The basis for this 10 percent criteria should be provided, as well as a definition for decomposable material.

Appendix D, Detail page 13. The railroad yard switcher engine is rated for 100 cars at 100 tons each. This is oversized based on Appendix E, Outline Specification, Section 14760, page E-21. Review engine size needs and change specification or cost estimate accordingly.

Appendix D2. This appendix includes cost estimates provided by the Westinghouse Hanford Company for work breakdown structure items CF 111 through CF 114. The cost estimate for these four items totals $24,975,535. However, no other information is provided to support these one-line cost estimates. Additional information including assumptions and cost details should be provided. This comment also applies to Appendix D3 for CF 121 title 3, Appendix D5 for the CF 123 conceptual design, and Appendix D6 for the CF 124 definitive design.

Appendix D3, Assumptions. The cost assumptions incorrectly refer to drawing number ES-296-05 for the excavation locations of the first 10 cells. The reference should be to drawing number ES-296-07.

Appendix D7, Project Time and Cost. This appendix includes descriptions of the three construction contracts planned for ERDF. Contract 3 includes roads and is scheduled to start 6 months after contract 1, site preparation, as shown on Figure 2 in Section 8.2. However, the access roads should be considered in the scope of contract 1 to support site preparation and excavation activities.

Appendix E, page E-17 thru E-23. The equipping of vehicles with HEPA filters needs to be reviewed. HEPA filters should be placed on vehicles that will encounter contaminated fugitive dust emissions.

Recommendation: Review vehicle HEPA filter requirements. Recommend that Section 14355, 14368, and 14770 incorporate HEPA filter in the specification. Section 14370, 14700, 14710, 14730, 14730, 14780, 14800, and 14820 should delete HEPA filter in their specifications. The above recommendation is based on whether the vehicle operates within a contaminated area. Operations and Safety and Health personnel should review vehicle uses to ensure each is properly equipped.

Appendix E, page E-26, Section 15500.B.1. The dedicated shop air supply system has a return air system specified. The return air system could circulate contaminated air throughout the dedicated maintenance facilities.

Recommendation: If a return air system is used within the dedicated shop supply air handling system, it should be equipped with a HEPA filter system to remove contaminants. A return air system in this environment should be further evaluated for its applicability. Exhaust fan for this system should also be equipped with HEPA filter system or the stack exhaust located away from the air intakes of other uncontaminated facilities.

Appendix G, page ES-296-02 and ES-296-04. All major facilities are not identified, (e.g., wastewater treatment and stormwater storage). Also, new facilities not previously mentioned in CDR are presented, (e.g. waste soil and gravel stockpiles).

Recommendation: This drawing is effective at displaying layout of all facilities. Topography should be lightened to make more readable. The waste soil and gravel stockpiles should be discussed in the CDR. Waste soil has the connotation of a storage site to unload contaminated soil. What is it? What need is there for a large gravel stockpile?

Appendix G, page ES-296-07. As shown, the ten cell trench terminates with an endslope of 1.5H:1V and a future trench expansion area is shown. The diagram does not clearly show an evolving trench. The diagram should be altered by removing the endslope and continuing the trench in lighter print.

Appendix G, page ES-296-08. The cross-section of the area fill shows that material placed above the upper interim cover will obstruct the drainage facilities and may impact the access road. Previously, stockpiling of soil on the closed portions of the trench was discussed. Based on this cross-section, any cover placed above the upper interim cover to protect it or by building the Hanford Barrier would impact these drainage and road facilities. A discussion of soil stockpiling and options available need to be reviewed.

Appendix G, page ES-296-10 and ES-296-11. Future expansion areas are shown on this diagram. It is unclear what these areas are. Clarify future expansion areas and need.

Appendix G, page ES-296-14. The tractor/trailer flow path is confusing.

Recommendation: Drawing ES-296-12 from the 100% DRAFT CDR includes additional schematic that clarifies confusion. Please modify.

Appendix G, page ES-296-17. It is stated that brine from reverse osmosis will be transferred to a 2000 gallon tanker and placed in a trench. The brine will have to be solid waste and will not be accepted if liquid. It has not been determined if the resulting brine will be classified as remediation waste.

Recommendation: Drawing should be clarified and a facility to dewater the brine included as stated in Section 5.3.7. A tanker is not the appropriate vessel to transfer and dispose of solids (dewatered brine) in the ERDF. Show that dewatered brine may be accepted at the ERDF.

ADMINISTRATIVE COMMENTS

Section 5.3.7, page 43, paragraph 4, sentence 1. It is stated that the reverse osmosis process will be used. Throughout the rest of the text and engineering drawings, reverse osmosis is only to be used if necessary. This sentence should be changed.

Section 5.4.3.5, page 48, paragraph 1, sentence 3. Text states that the first four cells will be lined. This sentence suggests that the next six will not be. Clarify text by stating that the other six will be lined later prior to accepting waste.

Section 5.5.1, page 50, paragraph 3, sentence 2. In discussing the benefits of adding fly ash to grout, reduced strength is mentioned as a benefit. Should state "increased" strength.

Section 7.5.1.9, page 69, paragraph 1. Definition of "Interim Cover" does not match that given on page 74, Section 7.5.2.2.11.

Section 7.7, page 77, paragraph 2. Delete statement on NEPA. Change start of construction date to 1994 and rewrite sentence to, "All environmental compliance requirements are scheduled to be in place prior to start of construction in 1994."