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Department of Energy
Richland Operations Office
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APR 16 1998

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Blvd., Suite 5
Richland, Washington 99352

Mr. E. R. Skinnarland
200 Area Section Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. 4th Avenue
Kennewick, Washington 99336



Dear Messrs. Sherwood and Skinnarland:

TRANSMITTAL OF THE PHASE I FEASIBILITY STUDY FOR CANYON DISPOSTION
INITIATIVE (221-U FACILITY), DOE/RL-97-11, REV. 1

Attached for your approval is the subject document. The document incorporates, as appropriate, public comments. Responses to public comments have been coordinated with your staff. Draft letters to the public comments are attached for your information.

Please contact me on 372-2282 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "John P. Sands".

John P. Sands, Project Manager
Decontamination and Decommissioning Project

DDP:JPS

cc w/attachs:
P. S. Innis, EPA
S. Mohan, Ecology

Attachment 2

Mr. Jay L. McConnaughey, Habitat Biologist
State of Washington
Department of Fish and Wildlife
c/o Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr McConnaughey:

PUBLIC COMMENTS ON DOE/RL-97-11, REV. 0, *PHASE I FEASIBILITY STUDY FOR THE CANYON DISPOSITION INITIATIVE (221-U FACILITY)*

The U.S. Department of Energy, Richland Operations Office (RL) values your concurrence with the recommendations provided in the Phase I Feasibility Study for the Canyon Disposition Initiative (221-U Facility).

In regard to your recommendation to revise alternative one to consider future waste management activities, RL has received similar public comments and may revise alternative one to reflect cleanup to industrial land use. In RL's opinion, this would allow future waste management activities to proceed and would provide significant cost savings. RL appreciates your concurrence with elimination of alternatives 2 and 5.

Thank you for your time and valuable input. The U.S. Department of Energy, in combination with the U.S. Environmental Protection Agency and the State of Washington Department of Ecology, will continue to keep your office informed as the *Comprehensive Environmental Response, Compensation, and Liability Act* process proceeds.

Mr. J. L. McConnaughey

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If you have any questions or require additional information, please contact me on (509) 372-2282.

Sincerely,

J. P. Sands, Project Manager
Restoration Projects Division

RPD:JER

cc: J. W. Donnelly, Ecology
R. P. Henckel, BHI
P. S. Innis, EPA
J. J. McGuire, BHI
Administrative Record File for 221-U Facility

Mr. Leslie C. Davenport, Senior Engineer
Nuclear Safety (Retired)
1922 Mahan Avenue
Richland, Washington 99352

Dear Mr. Davenport:

PUBLIC COMMENTS ON DOE/RL-97-11, REV. 0, *PHASE I FEASIBILITY STUDY FOR THE CANYON DISPOSITION INITIATIVE (221-U FACILITY)*

The purpose of this correspondence is to confirm that your comments on the Phase I Feasibility Study for the Canyon Disposition Initiative (221-U Facility), have been received by the U.S. Department of Energy, Richland Operations Office (RL).

Comments received regarding your preference to alternative 6 are appreciated; however, the Phase I Feasibility Study is not a final decision. Further, detailed analysis is required and will be documented in a Final Feasibility Study for the 221-U Facility and an alternative will then be recommended.

Comments provided do not require the feasibility study to be revised; however, the comments will be provided in the administrative record file for the 221-U Facility. The suggestion regarding a *Resource Conservation and Recovery Act* permit for the disposal facility will be pursued if an entombment option is selected. Your comments provide valuable input in recognition of the options for disposition of the 221-U Facility.

Mr. L. C. Davenport

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Thank you for taking the time to review this feasibility study. If you have any questions or require additional information, please contact me on (509) 373-2282.

Sincerely,

J. P. Sands, Project Manager
Restoration Projects Division

RPD:JER

cc: J. W. Donnelly, Ecology
R. P. Henckel, BHI
P. S. Innis, EPA
J. J. McGuire, BHI
Administrative Record File for 221-U Facility

Mr. Dirk C. Dunning
P. O. Box 2356
Gresham, Oregon 97030

Mr. Dunning:

PUBLIC COMMENTS ON DOE/RL-97-11, REV. 0, *PHASE I FEASIBILITY STUDY FOR THE CANYON DISPOSITION INITIATIVE (221-U FACILITY)*

The U.S. Department of Energy, Richland Operations Office (RL) acknowledges receipt of public comments submitted by you on November 18, 1997. A copy of your comments and the responses to those comments will be recorded in the Administrative Record file for the 221-U Facility.

Below are your comments with the RL response in Italics.

COMMENT 1: Disposition (cleanup and dismantlement) of the canyon facilities at Hanford is a key part of cleanup. This phase I disposition initiative is intended to be the prototype for the remaining canyons. However, the hazards and problems at the U canyon are not as severe as at other canyons and analysis of U canyon should not be taken as the only input into the decisions on the rest of the canyons.

The canyon facilities were engineered to contain the hazards presented by the dissolution of radioactive nuclear fuel. The facilities were designed to meet typical design standards for the 1940's and 1950's. Even then, they were exempted from complying with the laws that applied to construction of other structures in Washington State by the invocation of the *Atomic Energy Act* and National Secrecy. These facilities are not seismically sound to standards for new buildings. In many cases, standards and procedures were waived during the construction of tanks and buildings at Hanford due to limitations on time, available supplies and labor.

RL Response: *The study only applies to the 221-U Facility. Disposition of the other Hanford Site canyons is not addressed in the feasibility study (FS). A structural (including seismic) analysis will be performed to determine if the existing U Plant Facility can withstand the stresses of being utilized as a disposal facility.*

COMMENT 2: When the canyon initiative was proposed, it was envisioned as a way to dispose of high-level nuclear waste within the bodies of the canyons and low-level nuclear waste packed around the outsides. This was then and is now a foolhardy proposal. It should have been rejected when it was proposed. It should be rejected now.

RL Response: High-level waste is not proposed to be disposed at the 221-U Facility in this FS. The FS showed that each entombment alternative had the potential ability to meet applicable or relevant and appropriate requirements (ARAR) and protect human health and the environment. Quantitative data and analysis will be obtained and documented in a future final FS to determine if entombment alternatives are viable.

COMMENT 3: The proponents argue that the canyons are “engineered structures.” This is true, however, what they fail to point out is what they were “engineered” to do. They were engineered to contain the processing of nuclear fuel to separate uranium and plutonium from fission products. They were engineered to resist the buoyancy forces of the earth lifting the canyon bottom. They were NOT engineered to be filled with waste. Doing so puts enormous outward stresses on the canyon walls. They were not designed for this. Doing so puts enormous downward stresses on the canyon floor, including the bottoms of the dissolver cells. They too were not designed for this. If the canyon is buried under twenty feet of earth and cap as has been proposed, the downward forces on the roof structures will tremendously exceed the design support strength of the canyon top. It was not designed for this it will collapse.

RL Response: A structural analysis is currently being conducted to determine the ability of the canyon to endure stress from internal disposal. Results of the structural analysis will be documented in a future final FS for the 221-U Facility. Public review of the final FS will be conducted.

COMMENT 4: The proponents responded to this criticism by proposing that holes be cut in the canyon roof and that waste be dumped into the top to fill it to the brim, then that grout be injected to fill it completely to support the roof. This is a foolish suggestion. First, if any holes are cut in the structure, or if the roof can reasonably be forecast to collapse, the canyons cannot be considered for disposal of high-level nuclear waste of any kind. They will not meet the legal requirements to do so.

RL Response: High-level waste is not proposed to be disposed at 221-U Facility in this FS. See response to comment #3 above for structural concerns.

COMMENT 5: Second, even if the grout were injected, over time, differential settling of the waste would lead to void formation which would remove the support this grout provided for the roof. The roof would collapse under the weight of the soils above. The result in any case is a large rectangular bowl with a leaky and holed roof, a subsiding cap and a leaky bottom. Rain

water would accumulate in the depression formed in the clay cap and be directed into the canyon. It would leach the radioactive and toxic components from the waste and transport these through the holes formed by the former dissolver cells where the weight of the waste in the canyon will have blown out the bottoms.

I cannot image a worse way to design a disposal facility. Engineers, scientists, the public and the congress will look back on everyone involved in disgust and wonder how they could have been so stupid.

***RL Response:** Structural analysis and a performance assessment will provide technical answers to determine the viability of the 221-U Facility to operate as an effective disposal facility. Review of the analyses will be performed by the regulators, stakeholders, and the public. Furthermore, the regulatory agencies will approve the appropriate model to conduct the performance assessment.*

COMMENT 6: In addition to these problems, the initiative proposes to leave in place many wastes and to dispose of wastes by piling them against the building. This completely disregards the requirements for liners in RCRA disposal facilities. It also disregards the requirements under RCRA, CERCLA and the AEA to protect public health and safety. Under RCRA and CERCLA, a risk assessment is required to close these facilities. In the past year, we have learned that the computer models and data used by DOE at Hanford are grossly invalid. Data on the magnitude of the source of the waste is poorly understood. Data on soil properties and transport mechanisms are nearly non-existent for Hanford's soils. Lacking these important pieces of information, it isn't possible to produce an estimate of the risk to the public and the environment, let alone assure the public that these risks are acceptable.

In addition, DOE is required to limit exposure to the public to no more than 100 millirem per year from all sources. Lacking this information, DOE cannot begin to do the calculations needed to assure compliance with this requirement.

***RL Response:** If waste is disposed to the external portions of the 221-U Facility, a RCRA liner will be utilized. See first bullet on page 3-33 under section 3.1.2.4 and on pages 3-36 and 3-37. An assessment of protection of groundwater will be conducted through implementation of an appropriate model selected by RL, the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology). The model will be run with input from quantitative data obtained through characterization.*

COMMENT 7: The initiative offers seven alternatives for consideration and proposes limiting consideration to our alternatives. The initiative ignores the most viable alternative. Following are the eight alternatives and a discussion of the merits or problems with each. The last alternative which I have added was excluded or ignored by the proponents. It should be added and should be the preferred alternative.

No Action. - Required for CERCLA, RCRA and NEPA analysis - not a viable option. The risks for workers, the public, and the environment are grossly unacceptable.

Full Removal and Disposal. - This is a viable option and should be considered. The costs of full dismantlement and disposal at ERDF are likely to be unacceptable. The habitat and environmental destruction at the ERDF site weigh heavily against this alternative.

Decontamination and Leave in Place. - This is not a viable option due to the high risks to workers and the public over the long term as the structure degrades and collapses. This is a high safety risk.

Entombment with Internal Waste Disposal. - As discussed above this is a foolhardy proposal which is not viable. The canyons were never designed to be containment structures. The floors, walls and roofs are not designed for the weight loadings which the structures would be subjected to. The result will in all probability be the failure of the canyon floors, walls and roofs over time. This will lead to failure of the surface cap and preferential inflow of water through the waste. The worst case would occur if the roof was holed or failed first, leading to water flow into the building over time, with later failure of the floor and/or walls. This could result in a catastrophic collapse of the disposal site. Internal disposal of high level waste would require that the facility be engineered to contain this waste for so long as it is dangerous. This is not within the realm of possibility for the canyons. This alternative is not viable or selectable and should be discarded outright.

Entombment with Internal/External Waste Disposal. - See Entombment with Internal Waste Disposal and additional discussions above concerning RCRA lined facilities. This alternative is not viable or selectable and should be discarded outright.

Close in Place - Standing Structure. - See discussion above. This alternative combines bad aspects of the Decontaminate and Leave in Place alternative with bad aspects of the Internal Waste Disposal alternatives. The only advantage to this is that the canyon would be clean and would not contain contaminants. The collapse of the canyon floors, walls and roofs would proceed as described above, and subsidence would lead to water infiltration through the canyon. However, since no contaminants remain to be mobilized, the only significant hazard is from the movement and disturbance on the surface. This is not a good option and probably should receive no further analysis.

Close in Place - Collapsed Structure. - This alternative envisions using a portion of the structure for waste disposal. Continued subsidence of the structure and soils is likely though less severe than for the Internal Waste Disposal alternatives. Failure of the cap with preferential inflow of water through the waste is still a significant risk. This option should not be studied farther due to this risk.

Close in Place - Collapsed Clean Structure - No Waste Disposal. - The initiative fails to consider this alternative. This is the single most viable alternative with the lower risks to the environment and public health and safety. It is also likely to be the least costly of all of the alternatives when full life cycle costs are analyzed. This option should be the preferred alternative.

Only three of these alternatives should go forward for further analysis:

1. ***No Action.***
2. ***Close in Place - Collapsed Clean Structure - No Waste Disposal.***
3. ***Full Removal and Disposal.***

All of the alternatives for disposal with internal waste disposal should be dismissed outright.

RL Response: *In regard to your comments on the proposed alternatives, it is agreed that the "Decontamination and Leave in Place" and "Close in Place Standing Structure" are not viable. However, it is too premature to dismiss the viability of any entombment option with waste disposal. The FS showed that each entombment alternative had the potential ability to meet applicable or relevant and appropriate requirements (ARAR) and protect human health and the environment. Quantitative data and analysis will be obtained and documented in a future final FS to determine if entombment alternatives are viable. The recommendation to include a "Close in Place - Collapsed Structure - No Waste Disposal" will be considered for inclusion in the final FS for disposition of the 221-U Facility.*

COMMENT 8: The Recommendations section suggests issues to be used for selecting the alternatives to use. These need to be changes as well. These issues should be used in weighing the alternatives.

1. Compliance with legal requirements in RCRA, CERCLA, AEA, other Federal laws and Washington Laws, including the Dangerous Waste regulations. (Protections for worker and public health and safety and for the environment.)
2. Compliance with Treaty Rights and obligations.
3. Complete Life Cycle Cost Analysis of each option, including a costed comparison of the value of land lost from use for its most highly valued potential purpose (Tribal or Agricultural) and the contingent valuation for lost natural resources and habitat at all affected sites, including the canyon facilities, the "borrow" or source material sites, disposal sites (ERDF area), and transport routes (where or improved routes are needed).
4. Detailed QUANTITATIVE - *not* - qualitative *validated* groundwater modeling and analysis - proceeded by a detailed data acquisition effort on the vadose zone and existing wastes.

5. Analysis of availability of fill and cover materials - in full compliance with Tribal Treaty Rights and obligations. (Don't even think about using Gable Mountain or Gable Butte as sources of fill or cover materials.
6. Analysis of residual risk from each alternative and potential impacts on requirements for cleanup at other Hanford sites to assure compliance with State and Federal laws.
7. Detailed structural analysis of the buildings for any consideration of leave in place options.
8. Overall impact on other Hanford cleanup activities.

Absolutely no consideration should be allowed for disposal of any waste from any site other than Hanford in any case.

RL Response: Your suggestions for issues that need to be addressed to determine viability of entombment is covered on page 5-2. The issues will be resolved and documented in the future final FS for the 221-U Facility.

COMMENT 9: The U.S. government signed treaties with the Yakama Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation and the Nez Perce Tribe. It is my opinion that USDOE has consistently failed to meet their trust duties to these tribes in the actions they have taken at Hanford, including their actions involving disposition of the Canyon.

RL Response: RL in coordination with state and federal regulatory agencies has involved the Indian Nations in the canyon disposition initiative. RL has offered briefings to all tribes and have conducted briefings with representatives from the Nez Perce and the Yakama Indian Nations. Additionally, RL will seek to coordinate up-front input prior to conducting future detailed analysis for the canyon alternatives. RL, EPA, and Ecology will continue to work with each Indian Nation, as appropriate, to address all concerns associated with disposition of the 221-U Facility.

COMMENT 10: The Canyon Initiative is prime example of how not to look at waste disposal. The engineers involved have described these facilities as engineered structures while completely disregarding the immense change in use they propose as a factor affecting the engineering design required. These structures are not engineered disposal facilities. It was stupid idea when it was proposed. It remains a stupid idea today.

The canyons should be cleaned out to the greatest degree possible. The waste sites surrounding the facilities should be analyzed in detail to determine the risks they pose. Many may need to be exhumed and the waste disposed in appropriately designed and engineered disposal facilities. Upon completion of this work, the canyons should be collapsed in place and buried to minimize the disturbance of habitat at the site. In so far as waste remains at or around the basins, appropriately designed barriers should be put in place to limit the migration of those wastes -

recognizing that subsidence of the structures will require long term monitoring and maintenance of the barriers. And, recognizing that man has never built a structure or barrier with a proven life as long as is needed for disposal of radioactive wastes.

A true understanding of the fate and transport of waste is needed throughout the 200 area and across the Hanford site. This requires a much better understanding of the amounts and location of the wastes already in the ground at Hanford than exists today. 1.522 tons of plutonium is unaccounted for at Hanford. This level of uncertainty is grossly unacceptable.

Understanding the vadose zone is key to all of the decisions involving waste disposal and site closure. It is clear from comparison of DOE's projections of waste movement under the tank farms to the actual movement of these wastes that DOE has a very poor understanding of the transport of these wastes through the vadose zone. Likewise, the data for plutonium below the Z-9 crib show a similar lack of understanding of the transport of plutonium and actinides through Hanford's soils. Falsification of data for plutonium released to the environment as evidenced in Table 2T-5 of the 200 West Aggregate Area Management Study Report is equally unacceptable. (Simple data analysis of the data presented in the table is sufficient to reveal that this data is manufactured. As a consequence, the database it came from cannot be trusted. This was reported to EPA three years ago.)

A fairly precise knowledge of the amount and location of the wastes and the paths and rate of the waste movement through the oil and ground water is a prerequisite to any analysis of the risks these wastes pose to the public or to the environment. Both CERCLA and Washington States dangerous waste regulations are risk based laws. They require that cleanup be performed to meet certain risk standards. Lacking the real validated data and validated computational models for the fate and transport of waste, these risks cannot be calculated.

The Hanford Remedial Action EIS and the Tank Waste Remediation System EIS both attempted such computations. Both relied on bad data, bad models and bad assumptions to perform their calculations. The authors expressed the opinion that they compensated for this by using conservative parameters in the models. Unfortunately, using conservative parameters in non-conservative models cannot be assured to result in conservative results. Or said more simply - garbage data applied to garbage models yields garbage results. The EIS's clearly showed how poor these analysis are and how unreliable they are by the graphic display of their results. Despite their being performed at the same time, they predict waste moving in radically different directions from the same geographic source area. This is unacceptable and must be corrected.

RL Response: *RL acknowledges your opinion. RL, EPA, and Ecology will follow the CERCLA process to determine appropriate disposition of the 221-U Facility in a manner protective of human health and the environment. Quantitative data will be obtained and utilized to make defensible decisions based on technical information.*

COMMENT 11: Finally, the Canyon Initiative is an engineering document. Washington State law requires the cognizant engineers that prepared the document to affix their engineering stamps and signatures to the document to certify that the designs of the disposal meet the requirements of the law and are sound engineering designs.

RL Response: *The phase I FS is not an engineering document requiring signature by a registered professional engineer. Future documentation may require such approval and RL will comply with all applicable or relevant and appropriate requirements as required by CERCLA.*

Thank you for taking the time to comment on the subject document. If you have any questions or require additional information, please contact me on (509) 372-2282.

Sincerely,

J. P. Sands, Project Manager
Restoration Projects Division

RPD:JER

cc: J. W. Donnelly, Ecology
R. P. Henckel, BHI
P. S. Innis, EPA
J. J. McGuire, BHI
Administrative Record File for 221-U Facility

Mr. Vince Panesko
1114 Marshall Avenue
Richland, Washington 99352

Dear Mr. Panesko,

PUBLIC COMMENTS ON DOE/RL-97-11, REV. 0, *PHASE I FEASIBILITY STUDY FOR THE CANYON DISPOSITION INITIATIVE (221-U FACILITY)*

The U.S. Department of Energy, Richland Operations Office (RL) acknowledges receipt of the public comments submitted by you on November 18, 1997. A copy of your comments and the responses to those comments will be recorded in the Administrative Record file for the 221-U Facility.

Below are your comments with the RL response in Italics.

COMMENT 1: Page 1-3, Section 1.2.1, No Action Alternative

The statement is made that the no action alternative is included in all CERCLA documentation as a baseline to determine the appropriateness of conducting a remedial action. A more correct baseline without remedial action is to maintain the building in a status quo which DOE has incorrectly interpreted as walking away from the building with no future surveillance and maintenance. That is a ludicrous alternative.

A true baseline without remedial action is to maintain the building and conduct surveillance as required to ensure public safety. DOE cannot select a baseline which endangers workers and the environment. That is ludicrous.

DOE has chosen the words, "CERCLA requires us to do it that way." CERCLA does not require DOE to select an unsafe option. CERCLA does not force DOE to exclude maintenance in the NO REMEDIAL ACTION option.

DOE has chosen to take interpret the NO ACTION option as no action, i.e., walk away leaving it sit. The CERCLA intent was to have a NO REMEDIAL ACTION option which includes all of the routine actions DOE normally performs to keep their facilities safe.

DOE needs to include surveillance and maintenance in Alternative 0. Then alternative 2 would contain only minimal remedial actions of decontaminating (all or some?) Of the radioactive material and sealing the building to prevent intrusion.

RL Response: The significance of the no action alternative in a phase I feasibility study (FS) is negligible in that alternatives are merely screened for a future final FS. Comparison to the no action alternative is not a critical item at this time. The suggestion to include a no action "to maintain the buildings in a status quo" mode will be implemented in the final FS for the canyon disposition initiative.

COMMENT 2: Page 1-7, Section 1.3.1.3, 292-U Filter Building

While the Section title uses the number 292-U, the following text uses 291-U for the filter building. The discrepancy should be corrected.

RL Response: Agree, text will be change to "292-U Filter Building."

COMMENT 3: Page 1-7, bottom line on page

The last sentence on page 1-7 states that a tank farm is physically located with UO-3 Plant. Since the words "tank farm" are usually reserved for underground tanks with capacities of 500,000 to 1,000,000 gallons, perhaps the wording could be altered to avoid confusion. Maybe the term, "above ground tanks" would be more appropriate.

RL Response: Agree, "a tank farm" will be replaced with "above ground tanks."

COMMENT 4: Page 1-8, Section 1.3.1.6, 3rd paragraph.

The first word is "Aliases" for the 241-WR Vault. This is a poor choice of word insomuch as it reflects an attempt to hide the original identity. That meaning does not apply here. A better choice of words might be, "Other names used for the 241-Vault."

RL Response: Agree, "Aliases" will be replaced by "Other names."

COMMENT 5: Page 1-8, Section 1.3.1.8, 275-UR Warehouse.

This building as well as the 222-U Lab are not labeled on Figure 1-8. While these buildings may not matter much, there is no description of where the building is located nor what potential hazards may be involved. For example, this is called a chemical storage warehouse. A similar building east of REDOX received a great deal of attention and the entire building, concrete pad and soil underneath the pad were shipped out of state to meet requirements for proper disposal. All buildings/waste sites discussed in Sections 1.3.1 and 1.3.2 should be shown on Figure 1-8. The condition of 275-UR as a potential source term should be addressed.

RL Response: Agree, location of buildings and waste sites mentioned in the FS will be added to Figure 1-8. Inclusion of source terms and other hazards specific to waste sites and facilities is generalized in section 3.0 of the FS. Detailed hazard information is not available at this time. Efforts are currently underway to obtain data for input to a future final FS for the canyon disposition initiative.

COMMENT #6: Page 1-8, Section 1.3.1.9, 2714-U Storage Facility

The reader is not given the location or the description of 2714-U. Both should be added together with source terms which must be addressed.

RL Response: Please see response to comment #5.

COMMENT #7: Page 1-9, Section 1.3.2, Waste Sites.

Sentence #3 states, "The exact number of sites will be determined based on the actual size of the barrier and are discussed in Section 3.0 of this FS." The uncertainty of the barrier should be made more clear. I could not locate a discussion of the exact number of sites in Section 3.0. Please add the subsection number of this discussion.

RL Response: Agree, locations will be provided in Figure 1-8. The third sentence of section 1.3.2 will be revised to read "...size of the barrier."

COMMENT #8: Page 1-9, Section 1.3.2, Waste Sites.

Without the location of the U-1, U-2 and U-8 Cribs being given, the reader is not able to agree on whether these cribs should be part of this FS, or whether it is acceptable that they are part of another FS. The locations of these cribs should be provided.

RL Response: Agree, the approximate location of waste sites will be included in Figure 1-8.

COMMENT #9: Page 1-9, Section 1.3.2.

The 216-U-4 Reverse Well and the 216-U-4A French Drain are stated to be included in the Focused FS for the 200-UP-2 Operable Unit. Since they are located within the 221-U entombment footprint, these sites should be addressed in this FS. The random intermingling of sites between FSs is not an acceptable practice.

RL Response: Agree, descriptions of the 216-U-4 and U-4A sites will be included in section 1.3.2.

COMMENT #10: Page 1-9, Section 1.3.2.

The statement that the 216-U-10 Pond (located over a half-mile away) is included in another FS appears to have little value. Please consider deletion, or if there is a significance of facilities located over a half-mile away, please explain it.

RL Response: Agree, sentence will be revised to read "...are not included in this FS due to location outside the 221-U complex; instead...."

COMMENT #11: Page 1-9, Section 1.3.2.

The original ditch to U Pond begins outside of the entombment footprint; however, the piping to the ditch begins underneath the planned footprint. Actions necessary to seal the underground waste lines need to be addressed in Section 1.3.10. While great effort appears will be taken to seal the aboveground portion of the entombment, the below ground portion has not received a great deal of attention in this FS and appears to be an Achilles heel.

RL Response: Piping is addressed in sections 3.1.2.1, 3.1.2.2, 3.1.2.3, 3.1.2.4, 3.1.2.5, and 3.1.2.6. In general, piping systems will be removed for the full removal alternative and isolated and sealed for entombment alternatives.

COMMENT #12: Page 1-11, Section 1.3.2.8, Unplanned Release Sites.

A historical document written by Harold Maxfield in 1977-78 may contain information about the UPRs which could be included here. These sites appear to contain radioactivity which seeped into the ground. The question as to whether these sites will be dug up or stabilized in place is not answered. There is no information provided in this FS about stabilizing such sites. The reader should be given enough information to understand how the UPR sites will be handled in this FS.

RL Response: The intent of the phase I FS is to screen potential alternatives for final disposition of the 221-U Facility. A future final FS will provide more detailed information based on future acquired data. The phase I FS does not select a final alternative; it merely identifies alternatives for future consideration. The final FS will identify in detail, how waste sites and associated buildings will be remediated based on the disposition of the 221-U Facility consistent with decisions in applicable operable units. Final disposition of the canyon will provide the presumptive remedy for associated waste sites and facilities (i.e., if the canyon is entombed, waste sites will be left in place dependent on the size of the barrier. It is unknown at this time how associated waste sites will be prepared for entombment).

COMMENT #13: Page 1-11, Section 1.3 Conclusion.

While the title of this FS is 221-U, there are a large number of facilities and waste sites involved in this FS. There are 9-10 buildings, 10 waste disposal sites and 7 UPR sites involved in this FS. That complexity should be made clear up front. The disposition of these facilities should also be made clear, i.e. it appears that their destiny is essentially unknown in all of the alternatives. I am quite uncomfortable in the knowledge that this FS addresses 27 plus sites with limited knowledge of each site, and limited understanding how each site will be addressed in each of the scenarios. Perhaps a table showing how each of these sites would be addressed in each of the alternatives would provide a better overview.

RL Response: See response to comment #12.

COMMENT #14: Page 2-19, Section 2.6.1, last sentence.

The last two sentences of Section 2.6.1 appear they should be combined.

RL Response: Agree, sentences will be combined.

COMMENT #15: Page 2-20, Figure 2-1, Conceptual Model.

The model has non-standard linkages. It is strange to have diverse links from 221-U such as volatilization and leaching feeding the same collector bar. The diverse collector bar feeds four Media Receiving Waste boxes. A more accurate model would have had specific links from Release Mechanisms to the Media Receiving Waste Boxes. For example, Infiltration would have linked directly to vadose zone moisture with no link to Airborne. There are many more improvements to be made about the linkages. They need to be reworked.

RL Response: Agree, conceptual model will be revised as necessary for the final FS.

COMMENT #16: Page 2-22, Table 2-1, COPC Identified.

This listing pops up in Table 2-1 without much discussion in the text. The value of the listing would be enhanced if it was (1) facility specific, (2) given a context of where it was found, and (3) provided descriptive elements such as how firmly it was emplaced.

Could water leeching through the soil move the material?

RL Response: Agree, discussion will be added as follows: "Table 2-1 provides a list of COPC which are a direct result of 221-U operations and a list of COPC discharged from 221-U to various waste site in the 200-UP-2 operable unit."

COMMENT #17: Page 3-1, Section 3.1.1.2, Functional Analysis.

The three top-level master functions shown in Figure 3-2 need to be explained in the text. The reader has to look at Figure 3-2 and imagine what the 3 boxes mean. For example, the second box, "Operate the Complex" does not apply to facilities which have been shut down.

RL Response: Agree, the following text will be added to the first paragraph of section 3.1.1.7. "The three top-level functions are a summary of the basic steps to disposition of the 221-U Facility. Prepare the complex includes activities necessary to carry out any alternative. Such 'preparation' includes characterization, mobilization, site infrastructure, and includes physical preparation of the facility for remediation activities. Operate the complex is the function to implement the actual alternative, i.e., remove and decontaminate, or 'operate' as a waste disposal facility. Close the complex is the step to 'walk away' from the site after establishing the required monitoring systems."

COMMENT #18: Page B-1.

As referenced from page 3-1, Appendix B contains the subfunctions. Subfunction 1.1 talks about establishing hazards protections when the hazards are not identified until subfunction 1.5. Hazards identification should be performed before most other work. Subfunction 1.5 should be moved earlier in the work flow.

This comment reflects a problem with the entire FS. The entire FS is very weak on identifying the source terms of radioactive and hazardous material which must be dealt with. Without a better understanding of these source terms, it appears that the FS is a superficial effort which will result in unsafe conditions and injuries to workers. The FS process appears to be driven to make decisions without understand the safety issues which are very important in shaping the decisions.

***RL Response:** As described earlier in the response to comment #12, details on source terms and other hazardous substances are not available at this time. All hazards will be characterized and analyzed for each alternative prior to recommending a remedial action.*

COMMENT #19: Page 3-2, Section 3.1.2.1.

The last bullet on page 3-2 indicates that Alternative 1 will disposition only 3 of the 27 plus facilities/waste sites/UPRs. The future of the 24 or so other facilities remains in doubt under this alternative. The FS process thus appears to be flawed. All 27 plus facilities need to be addressed. There is no reason to go through the expense of removing all of the radioactive contamination associated with the 221-U canyon and yet leave a contaminated reverse well a few feet away.

***RL Response:** Alternative 1 does not address any facilities or waste sites not physically attached to or located outside of the 221-U complex. An additional assumption will be added as follows: "Remediation of any waste sites will be addressed by the remedial action alternative selected for the 200-UP-2 operable unit waste sites."*

COMMENT #20: Page 3-3, Section 3.1.2.1.1

The paragraph entitled "Establish Hazards Protection," states that "The potential personnel and environmental hazards associated with this alternative are a combination of hazards normally encountered on the Hanford Site during routine operations, and those hazards involving the nonroutine activities of large-scale demolition operations." Such a statement that hazards will be routine and nonroutine is almost worthless.

The key point is that wide variety of unplanned events will occur as workers unfamiliar with the conditions in 221-U construction and unfamiliar with materials located in unexpected locations stumble into accident after accident. Complete demolition of a building that processed high levels of radioactive materials is extremely high risk. Hanford experience with small scale demolitions has repeatedly revealed surprise after surprise, sometimes with personal injury. The point that the operations will be high risk should be made.

RL Response: Agree, first sentence of "Environmental Hazards Protection" will be revised to read "...are a combination of high risk hazards normally encountered during routine operations...of large scale demolition operations at nuclear processing facilities."

COMMENT #21: Page 3-4, Radiological Hazards.

The statement is made that radiation exposure will be between 2 and 100 mrem/hr. It is not clear that these numbers apply to the 221-U canyon or are general numbers. The question is what is the dose in the 221-U canyon? The dose associated with contact handled equipment should be made clear.

RL Response: The exposure number is a general range that will not be exceeded. This is the estimated dose until work is more clearly defined after future design, dependent on the alternative selected.

COMMENT #22: Page 3-4, Radiological Hazards.

The statement is made that "Mitigation of airborne contamination will be accomplished with local exhaust ventilation of the decontamination equipment, etc." does not make sense when applied to a building containing radioactive cells being torn apart as the building is disassembled from one end to the other. The ventilation system ceases to function as designed once the building integrity begins to be demolished. Greater thought needs to be given to control of radioactive contamination.

RL Response: The following discussion will be included in the Radiation Hazards section, "Decontamination or fixing of loose and smearable contamination will be performed prior to any removal/demolition activities." Future best available radionuclide control technology (BARCT) will be performed as required by Washington Administrative Code 246-247 which may define additional controls for ventilation.

COMMENT #23: Page 3-8, Section 3.1.2.1.2.

The Equipment Removal section starts by stating that "Operations in the 221-U Facility galleries will begin with the removal of material and debris followed by radiological surveys to determine the extent and location of radioactive contamination." The order of work is backwards. The radiological survey should occur first. This is a major safety error which could have resulted in accidental exposure and contamination of workers.

RL Response: Agree, section will be clarified to more accurately represent sequence of activities. Noncontaminated material and debris will be removed after full surveys are conducted.

Mr. V. Panesko

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Thank you for taking the time to comment on the subject document. If you have any questions or require additional information, please contact me at (509) 372-2282.

Sincerely,

J. P. Sands, Project Manager
Restoration Projects Division

RPD:JER

Attachment

cc: J. W. Donnelly, Ecology
R. P. Henckel, BHI
P. S. Innis, EPA
J. J. McGuire, BHI
Administrative File for 221-U Facility