



**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
**HANFORD PROJECT OFFICE**  
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November 23, 2015

John Sands  
Remedial Project Manager  
Richland Operations Office  
U.S Department of Energy  
P.O. Box 550, M/S A5-11  
Richland, WA 99352

Dear Mr. Sands:

The U.S. Environmental Protection Agency has reviewed the *Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units* (DOE/RL-2010-49, Draft B). We have enclosed our agency's comments on the draft work plan and its appendices. We appreciate the opportunity to review and comment on the work plan and also to collaborate during the Data Quality Objectives process. Implementation of this work plan will increase our knowledge of the nature and extent of contamination at the waste sites in these OUs.

As you will see in our global comments, we do not believe that the 200-BC-1 OU waste sites belong in the Inner Area and that two treatability tests have evaluated the technical feasibility of removing contaminants from these sites to the point where no long-term monitoring or institutional controls may be necessary. Or at the very least, these sites can be remediated consistent with the Outer Area and the cleanup performed on the River Corridor. However, we support the characterization planned under this RI/FS work plan and do not believe that the OU needs to be packaged separately from the 200-WA-1 OU now, or in the future. We agree that the 200-WA-1 OU waste sites are within the Inner Area and that the anticipated land use is industrial.

There are several other important global comments and numerous page specific comments in the enclosed comments that we expect will be addressed before finalization of the document for our approval. Several are related to the potential ARAR and TBC tables which are a departure from previously approved ARARs in Hanford CERCLA decision documents.

We expect DOE to follow the Tri-Party Agreement and provide a draft milestone change package with the final draft that contains milestones for implementation of the RI/FS. We recognize that some early milestones have already been proposed in the larger TPA milestone change package out for public comment.

Please let us know if you need additional information. Craig can be reached at 509-376-8665 or [cameron.craig@epa.gov](mailto:cameron.craig@epa.gov) and Rod at 509 376-3749 or [lobos.rod@epa.gov](mailto:lobos.rod@epa.gov).

Sincerely,



Craig Cameron  
Project Manager  
200-WA-1 OU



Rod Lobos  
Project Manager  
200-BC-1 OU

Enclosure: EPA comments on the draft B RI/FS work plan for 200-WA-1 and 200-BC-1 OUs

cc: Ray Cory, DOE-RL  
Jane Hedges, Ecology  
Steve Hudson, HAB  
Ken Niles, ODOE  
Rod Skeen, CTUIR  
Gabriel Bohnee, Nez Perce Tribe  
Russell Jim, Yakama Nation  
Administrative Record files for the 200-WA-1 and 200-BC-1 operable units.

U.S Environmental Protection Agency Comments on the  
“Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units” -  
DOE/RL-2010-49 Draft B

November 20, 2015

General or global comments

1. Thank you for providing the work plan for review. We appreciated the collaboration during the DQO process and believe that we have a very thorough characterization program to carry out once this plan is finalized.
2. The work plan needs to more prominently feature the field sampling plans for each waste site receiving characterization under the work plan. Even the name of the appendix that contains them does not imply that the field sampling plans are included. Also, the document needs to include a more defined process for including additional field sampling plans as addenda to the work plan, if necessary. Finally, the work plan needs to specify that any stand-alone SAPs developed for the U Plant or PFP areas (through separate DQO processes) are part of this work plan and those SAPs also need to say that.
3. Do not reference other plans and documents without giving the pertinent information, such as (paraphrasing) - will follow what was done in the River Corridor.
4. The work plan, in order to be complete, cannot have a placeholder for the process being developed for the pipelines under the 200-IS-1 OU to divvy up parts of the pipelines and other structures for future remediation and to logically characterize them. The process has to be described in detail and be provided in this work plan when finalized. Both EPA and DOE project managers were dismayed to discover that there are numerous small pipelines in the U Plant area that were not placed into the 200-WA-1 OU. A separate DQO process, maybe borrowing from the 200-IS-1 effort, needs to be completed by the 200-WA-1 project to assess the data gaps for these sites. The U Plant area SAP would be the place for this to be rolled up. It is understood that an ESD may be necessary for the 221U Facility ROD so that the cap for the canyon can serve as the remedy for sites where that remedy will be protective. We also understand that a non-time critical removal action may be necessary for waste sites that require more than just the U Canyon cap (likely to include the sand filter and Thorium Vault).
5. We agree that the Inner Area should not be shrunk unless it is warranted. We believe that the choice to include the BC Cribs and Trenches (200-BC-1 OU) in the Inner Area was arbitrary. The BC Cribs and Trenches are the source of the larger BC Control Area which is clearly outside of the central industrialized area of the 200 Area NPL site. The BC Cribs and Trenches are south of

the main road leading to the 200 Areas and away from the other waste management areas. The two treatability tests (one for excavation and one for addressing deep technetium-99 contamination) were mentioned, but the results were nowhere to be found in the work plan. Any decent summary of the existing data needs to expound on things as important as two treatability tests! These test showed that materials could be excavated safely and disposed of in ERDF and that not only can the areas of deep vadose zone be dried out but that the mobile technetium-99 could be ripped out of the ground along with the pore water making a permanent remedy. We strongly advocate that DOE considers this information when developing the RI/FS report and take advantage of the opportunity to free up this large area from the need to have long-term monitoring and institutional controls. Also, revise this work plan to include a decent summary of the treatability tests so that the reader has more context on previously gathered and analyzed characterization information.

6. The work plan represents a slight shift away from using the observational approach (such as during excavation of shallow sites) and includes more shallow zone characterization. This is in part due to DOE's desire to evaluate a conditional point of compliance. We have accepted this additional characterization with the agreement that the standard point of compliance of 15' will be evaluated and presented in the RI/FS report.
7. Along the lines of conditional points of compliance, we continue to believe that the attempt by DOE to develop and evaluate a conditional point of compliance for groundwater protection is not a good use of resources.
8. We expect DOE to follow the Tri-Party Agreement and provide a draft milestone package with the next submittal of this work plan prior to finalization. The milestones would provide the implementation schedule for the RI/FS. It is understood that some milestones have been proposed for early characterization work in the larger Hanford change package that is out for public comment. The schedule in the work plan needs to not just contain durations but real dates which will coincide with the milestones. We would be glad to work with DOE to develop the draft milestones for implementation that have not been already proposed.
9. EPA strongly prefers not to have the Comprehensive Land Use Plan EIS (CLUP) as a potential TBC listed in the ARARs table. We have always just mentioned the CLUP along with the Future Site Uses Working Group (FSUWG) when describing sources of information that inform the anticipated future land use and exposure scenarios. If DOE insists on the CLUP being listed as a potential TBC, then the FSUWG as well as advice from the HAB and others must also be listed as TBCs. Even the EPA-Ecology 200 Area white paper could be added to the list.
10. Preliminary site investigations and field reconnaissance prior to sampling need to be described in the field sampling plans so that EPA can be informed and involved in the approval of these activities.
11. The work plan mentions sampling and analysis aimed at helping develop remedial design after the ROD. We believe that the description needs to also include the subjects of confirmation and

verification sampling which will be necessary for similar sites or sites that have undergone Remove-Treat-Dispose (RTD) after the ROD.

12. EPA reminds DOE that more data is required to understand a site that may have a containment remedy or leave residual contamination behind than one that is fully RTDed. Besides contaminants, we believe that the structural stability of cribs containing wooden structures, and any structures with large void spaces, needs to be evaluated, potentially with physical sampling.
13. DOE should consider additional surface sampling, where appropriate, using Incremental Composite Sampling aimed at the evaluation of ecological protection.
14. The Central Plateau Ecological Evaluation report was not included in the discussion or references. It needs to be factored in and added to the references.
15. There are several contractor references (for example one on ecological depth) that EPA has not approved. The specifics of these references and how they apply to the RI/FS need to be described in the work plan so that EPA can evaluate whether or not to agree or approve of the specifics or to limit their applicability to the 200 Area.
16. We disagree with the idea that the sand filter doesn't need to be physically sampled. However, we are willing to consider information presented during the DQO process that would limit sampling prior to an EE/CA and action memorandum. The Thorium Vault and its tanks are going to have to undergo thorough characterization and the DQO process needs to commence soon in order to get the ball rolling since there are several safety basis and other readiness review related things that need to be accomplished prior to characterization.
17. EPA looks forward to the inclusion of PFP sites in the next draft of the work plan as agreed to in the meeting on September 14, 2015, that included Dennis Faulk, John Sands and Al Farabee. We also suggest that any building slabs or former building locations left after the U Plant Ancillary Facilities removal action was completed be added to the work plan. Field sampling plans should be developed for these sites as part of the SAP for the U Plant area waste sites.
18. Previous documents have calculated the costs of characterization to be higher than remediation using RTD (e.g., 200-E-114 pipeline and siphon tank). Consider this in the scope of the work plan.
19. Global comments will not be repeated in the specific comments below but will need to be addressed wherever necessary in the document and appendices.

## Comments on specific pages

1. Title Page. Please fix the title so that there is a better connection between “Plan” and “200-WA-1...”
2. Section 1, page 1-1, lines 17 through 19. It is not clear what is meant by this sentence about reducing the active cleanup footprint to the Central Plateau. Please explain.
3. Section 1, page 1-1, last bullet of section. EPA does not recognize, nor has it approved the use of, DOE/EH-94007658 as guidance for developing this work plan. Remove the bullet that references this plan and remove it from the references section.
4. Figure 1-1. This map is not detailed enough to be very helpful.
5. Section 1.1, page 1-3, bullet on line 10. Delete this bullet. We don’t agree that incorporating the inner area principles should be called out formally as an objective.
6. Section 1.1.1, page 1-4, line 2. Please insert “Tri-Party Agreement” or “TPA” between “the” and “dispute.”
7. Section 1.2, page 1-4, first paragraph. This paragraph should be replaced with one that cites the TPA, specifically one should look to Paragraph 50 on page 33 of the TPA (2011 hard copy version pagination).
8. Section 1.2, page 1-5, lines 4 and 5. Delete “the technical requirements of the Resource Conservation and Recovery Act (RCRA) corrective action process be fulfilled” and connect with the next sentence as one sentence.
9. Section 1.2, page 1-5, line 8. Delete “and closure.”
10. Section 1.2, page 1-5, several bullets. Delete the word “final” from the bullets.
11. Section 1.2, page 1-5, bulleted section. Insert a bullet for adding any necessary institutional controls to the Sitewide Institutional Controls Plan.
12. Section 1.2, page 1-5, lines 23 and 24. Delete reference to the systematic planning process from the sentence.
13. Section 1.2, page 1-5, line 26. Add “cleanup” before “alternatives.”
14. Section 1.3.1, page 1-5 and 1-6. We disagree with the inclusion of the discussion on DOE’s Hanford Site Cleanup Completion Framework. Delete it. We don’t agree it provides the context for cleaning up the 200 Area, rather previous remedial and removal actions within the Hanford

NPL sites provides the framework and experience necessary to put the work described in this plan in context.

15. Section 1.3.2.2, page 1-8, line 3. Add “considered in the risk assessment” between “control” and “is.”
16. Section 1.3.2.4, page 1-8, lines 25 and 26. Delete “first Inner Area.”
17. Section 1.3.2.4, page 1-8, line 29. Replace “the first” with “this.” If DOE wants to evaluate a conditional point of compliance it needs to do so in this FS.
18. Section 1.3.2.5, page 1-8, line 36. Delete “first Inner Area.”
19. Section 1.4.3.2, page 1-13, lines 4-6. Good, we agree with the plan to update and redefine the WIDS site descriptions. This could be accomplished prior to finalizing the work plan so any reference to this activity should be updated in the plan if that occurs in time.
20. Section 1.4.3.4, page 1-13, lines 29 and 30. EPA does not agree with the portrayal of the influence of excavation or a barrier being only down to 15’. Revise the language.
21. Section 1.4.5, page 1-14, line 16. Please add “western portion of” after “within.”
22. Section 1.4.5.1, page 1-14. Please clarify that the waste sites around the U Plant were not included in the remedy whereas the waste sites near to the other decommissioned canyons were included within their OUs.
23. Section 2.1, page 2-1, last line. Should be “200-BC...”
24. Section 3.3.1.2, page 3-15, line 17. The word “effect” should be replaced with “contamination.”
25. Section 3.3.1.4, page 3-27, line 18. Seems like something is missing between “from” and “and.”
26. Figure 3-10. This figure and ones like it need to be full page so that one can read them.
27. Section 3.3.1.5, page 3-31, line 16. Since this is a septic system, it is a given that a release has occurred because that is how they are designed.
28. Section 3.3.1.5, page 3-34, lines 5 and 6. So why is the site in the intermediate vadose zone depth grouping if it may exhibit full thickness vadose zone contamination?
29. Section 3.7.1, page 3-38. DOE agreed with EPA to run Tribal scenarios. Please update this section accordingly.

30. Section 3.7.1, page 3-38, lines 23-26. There isn't enough information here to understand what is meant by the content of these lines. Please explain in more detail and give some examples.
31. Table 3-7, exposure duration for construction worker. Is 1 year enough for this since such workers may work at other locations on Hanford? It is doubtful that the OSWER guidance was developed with such a megasite as Hanford in mind.
32. Section 3.9, page 3-45. Note that RL-2004-69 Draft A uses the term "lethal to intruder." Thought should be taken in deciding how to address statements and conclusions reached in previous documents.
33. Table 3-8. The footnote on background values only applying to the upper 15' doesn't make sense to us. Please explain.
34. Section 3.9.1.3, page 3-52, bullet on line 7. Make sure we don't weed out thorium isotopes that should be COCs for the Thorium Vault.
35. Section 3.9.1.4, page 3-53. Keep in mind that there may be other data needs for other media such as concrete that comes from the PFP sites (to be added to the work plan in the next draft). Some of the concrete may be contaminated enough to be classified as TRU (as was the case with some of the 233-S building).
36. Section 3.9.1.5, page 3-54, lines 28-32. Are these values consistent with the updated ones used for the 200-PW-1,3,6 and 200-CW-5 OUs, for example with regard to plutonium?
37. Section 3.9.1.7, page 3-54, line 39. Delete "(and RFI/CMS as applicable)." These two OUs will not be going down the RFI/CMS pathway so there is no sense in being this broad when describing.
38. Section 3.9.1.8, page 3-55. Why isn't dust ingestion and inhalation a risk when we are talking about dust on slabs? Please explain and justify if possible.
39. Section 3.9.2.2, page 3-55, lines 39-44. Were these PRGs developed consistent to work done in the River Corridor?
40. Section 3.9.2.3, page 3-56. EPA has not approved or concurred with the cited document on biointrusion depths. For it to be used to help make a case for an alternative point of compliance EPA would need to agree with the methods and conclusions documented in the paper. Also, line 6 – delete the "s" on the end of "FSs" and the parenthetical that follows are we are talking about the RI/FS for these two OUs not some general approach for the 200 Areas.
41. Section 3.9.2.5, page 3-56. Please elaborate more on what is meant by the first sentence.

42. Section 3.9.2.7, page 3-57, line 14. "Affect" should be "Effect."
43. Section 3.9.3, page 3-57, lines 34-37. What is the basis for using Kd values developed for the River Corridor on the Central Plateau?
44. Section 3.9.3, page 3-58, line 4. What is the basis for the 0.5 mm per year infiltration rate performance of an evapotranspiration barrier design?
45. Section 3.9.3.1, page 3-58, lines 10-12. Delete the last sentence in the paragraph. EPA does not agree that the WAC requirements mentioned are substantive and do not support doing what is described in this sentence.
46. Section 3.9.3.2, page 3-59, line 14. We understand there is a certain amount of basis for limiting an evaluation to 1,000 years. However, groundwater peak concentrations should be estimated even if they are beyond 1,000 year. These estimates can be framed in the uncertainty and possible model stability issues (if really far out in time) to qualify the evaluations.
47. Section 3.9.3.2, page 3-59, last bullet. Explain the approach provided in the document.
48. Section 4.2.2, page 4-3, line 30. Not sure "uncharacterized waste sites" is the best term. There is a lot of information on these sites and some have field characterization either during operation or during the Superfund era. Please consider rephrasing. Maybe "similar sites" is a better term?
49. Section 4.2.2, page 4-4, lines 1-3. Keep in mind that fine scale features may have a dramatic impact on spreading and transport of contaminants laterally and vertically. There may also be preferential pathways such as clastic dikes that need to be looked out for.
50. Section 4.2.2, page 4-4, line 31. Maybe "characterize" should be replaced with "represent"?
51. Tables 4-1 and 4-2, footnotes. Neptunium should be "237." SIM should be "Soil Inventory Model."
52. Table 4-3. Do you really have to repeat the "Sufficient soil sampling data..." sentence over and over? Also, where are "TCRA" and "VCP" used in the table?
53. Section 5.1, page 5-1, line 14. This sentence that ends "...RI/FS and proposed plan will be performed" doesn't fit together. Performing essential elements of the RI/FS makes sense but not of the proposed plan.
54. Section 5.1, page 5-2, line 1. Keep in mind that people likely won't be making entries into the 241-WR (Thorium) Vault. Just what ever probes or remote sampling equipment is necessary.

55. Section 5.1, page 5-2, lines 4 and 5. A SAP rather than a SAP amendment could be provided or even a Field Sampling Plan if the SAP in the work plan is sufficient to cover the field sampling plan. Replace “regulatory agencies” with “EPA.”
56. Section 5.2, page 5-2, line 11. Again, delete references to RFIs or CMSs since this is not the path for these two OUs.
57. Section 5.2, page 5-2, lines 15-16. Delete the last sentence. This is not the case when EPA is involved. For one thing, we also have a Government to Government relationship with the Tribes. If anything is included, one should stick to statements that are consistent with the Community Involvement Plan and the TPA.
58. Section 5.2.1, page 5-2. Since EPA is approving this work plan, this section should include mention of EPA’s Government to Government relationship with the Tribes along with talking about DOE’s.
59. Section 5.2.2, page 5-2, line 39. The wrong OU is listed.
60. Section 5.2.3, page 5-3, lines 9-12. Delete the last sentence. Consider revising this section besides the deletion.
61. Section 5.3, page 5-3, line 24. Add “or removal” between “remedial” and “actions.”
62. Section 5.6, page 5-5. “Report” should probably be replaced with “work plan.”
63. Section 5.7, page 5-6. Again, this is really short shrift paid to the two completed treatability tests for 200-BC-1. Please provide a summary of the results of the treatability tests.
64. Section 5.12, page 5-8, line 15. Actually, legally they are the administrative record files for the 200-WA-1 and 200-BC-1 OUs which are within the 200 Area NPL site, not the TPA. If you get there through the TPA website, then clarify that.
65. Section 5.12.1, page 5-8. Should include that the folks can also comment on the RI/FS report.
66. Section 5.12.3, page 5-9, line 3. Replace “may” with “will.”
67. Section 5.12.3, page 5-9, lines 3 and 4. Please don’t oversimplify the 5YRR requirement. It isn’t so much waste but contaminants remaining above levels that allow for unlimited use and unrestricted exposure.
68. Section 5.12.3, page 5-9. Talk about the RD/RA work plan and draft change package for implementation milestones.

69. Section 6. Needs real dates consistent with milestones and also a discussion on coordination with other remedies and removal actions such as the 221U Facility and PFP D&D.
70. Section 7.1, page 7-1, line 7. Consider replacing the first sentence with something about how DOE is the lead agency at this federal facility.
71. Section 7.1.2, page 7-1. Also include EPA's statutory role with regard to approving SAPs.
72. Section 7.1.2, page 7-2. Add that the State provides the State ARARs later in the process.
73. Appendix E, page E-9, last sentence. Missing "site."
74. Appendix E, Section E1.4, page E-12, first paragraph. Might be good to mention that besides the DQOs for the Supplemental Characterization Work Plan, actual field investigations were completed for some waste sites (albeit many were in the East Area).
75. Appendix E, Section E1.4, page E-13. Where is the ecological (or environmental) part of being protective factored in to this section? Please revise.
76. Appendix E, Section E2.1.2, page E-18, line 20. Add a "d" to "contaminate."
77. Appendix E, Section E2.1.3, page E-18, last sentence. Don't need to put the section number for the QAPjP as this subsection is part of the QAPjP.
78. Appendix E, Table E-9. Under minor change the word "filed" needs to be "field."
79. Appendix E, Table E-9. Keep in mind that currently the 200 Area Project Manager Meeting (for some reason we don't call them Unit Manager meetings anymore) is only held every other month. We shouldn't restrict ourselves to concurring at these meetings but rather just say we will concur and document it.
80. Appendix E, Section 2.2.1, footnote. This definition of a screening level doesn't look right.
81. Appendix E, Section 2.2.4, page E-35, line 28. Are any nonstandard methods being proposed for use?
82. Appendix E, Table E-12, 200-E-14. EPA believes the cost of characterization to exceed the cost of remediating the site using the observational approach. Also, again, we are not waiting for the 200-IS-1 project to come up with the specifics of how we sample and address pipeline segments that must be addressed under the 200-WA-1 and 200-BC-1 OU RI/FS and remedies.
83. Appendix E, Table E-12, page E-67, 216-B-52. Why is this site an intermediate depth site if the pore volume is over 0.5? Please explain.

84. Appendix E, Table E-12, page E-68, 216-B-53A. Missing the "1" on cesium-137.
85. Appendix E, Table E-12, page E-72. This may apply to other sites, but why would shallow borings stop at 15'? Direct push technology can go deeper. Why wouldn't we try to see if the spread of the plume can be intercepted at some distance from a crib or trench at an intermediate depth while we are going to the trouble of poking holes in the ground? Why come back with design or confirmatory sampling if we can get it all at once?
86. Appendix F. Guidance should not be included as TBCs.
87. Appendix F. Some of the State regulations are listed as TBCs rather than ARARs. Check for consistency with approved RODs to see how these should be listed.
88. Appendix F. Some of the text looks like it was cut and pasted out of a 300 Area document. Please revise.
89. Appendix F. See the global comment about TBCs and revise Appendix F accordingly.