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0063436

JAN 19 2005

05-AMCP-0116

Mr. John B. Price, Project Manager  
Nuclear Waste Program  
State of Washington  
Department of Ecology  
3100 Port of Benton Boulevard  
Richland, Washington 99352

RECEIVED  
JAN 25 2005

EDMC

Dear Mr. Price:

200-UR-1 UNPLANNED RELEASES OPERABLE UNIT REMEDIAL INVESTIGATION/  
FEASIBILITY STUDY (RI/FS) WORK PLAN

63169

In response to your letter to Larry Romine, dated December 1, 2004, requesting a revised set of comment responses, the U.S. Department of Energy, Richland Operations Office has prepared an updated comment resolution form (attached) for the 200-UR-1 Unplanned Releases Operable Unit Remedial Investigation/Feasibility Study (RI/FS) Work Plan.

If you have any questions, please contact me, or your staff may contact Matt McCormick, Assistant Manager for the Central Plateau, on (509) 373-9971.

Sincerely,

Keith A. Klein  
Manager

AMCP:SLB

Attachment

cc w/attach:

D. B. Bartus, EPA  
R. G. Bauer, FHI  
L. D. Crass, FHI  
L. J. Cusack, Ecology  
S. Harris, CTUIR  
J. S. Hertz, FHI  
R. Jim, YN  
T. Martin, HAB  
K. Niles, ODOE  
R. E. Piippo, FHI

L. Seelatsee, Wanapum  
J. P. Shearer, FHI  
P. Sobotta, NPT  
J. R. Stults, Ecology  
M. A. Wilson, Ecology  
Administrative Record (200-UR-1)

## ATTACHMENT

**RESPONSES TO ECOLOGY COMMENTS ON THE 200-UR-1 RI/FS WORK PLAN, DRAFT A RE-ISSUE  
(DOE/RL-2004-39)**

Comment Number	Page	Comment	Response
1.	Title	Delete "and Engineering Evaluation/Cost Analysis" from the title.	Comment acknowledged. RL considers work plan Section 5 an "EE/CA" and an important part of the document. The title will therefore be retained
2.	Page iii Executive Summary 1 <sup>st</sup> paragraph	Could probably discuss wind-blown contamination as a causal factor in last sentence. I think one of the largest URs, several square miles from a burial ground, was exacerbated by airborne dispersal.	Comment accepted. Will include statement that redistribution of radiologically contaminated particulates by the wind and/or animal intrusion has occurred at some locations.
3.	Page iii 1 <sup>st</sup> paragraph	Change to "The 200-UR-1 OU consists of 148 waste sites" with the addition of West Lake site.	Comment accepted.
4.	Page iii 2 <sup>nd</sup> paragraph	Delete 2 <sup>nd</sup> paragraph and replace with: "The U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology agreed that the nature and extent of environmental contamination at many of the 200-UR-1 waste sites could be characterized using the "Observational Approach." That approach was previously described in the <i>200 Areas Remedial Investigation/Feasibility Study Implementation Plan -- Environmental Restoration Program</i> , DOE/RL-98-28. It is a method of planning, designing, and implementing a remedial action that uses a limited amount of initial field characterization data to generate an understanding of field conditions. Then, additional information is gathered during remedial actions to make "real time" decisions in the field to guide the direction and scope of actions, based on contingency planning performed before mobilization to the field. Sites identified for the	Comment accepted with Modifications. The last two sentences of the original paragraph will be retained.



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	2 <sup>nd</sup> paragraph	candidate RTD sites resulted in selecting the remedy of" to "Evaluation of alternatives for the 52 candidate RTD sites resulted in the recommended response of".	to comments #1 and #10 above.
13.	Page v 2 <sup>nd</sup> paragraph	Change "The removal remedy was identified for 52 sites" to "Excavation and disposal was recommended for 52 sites."	Comment accepted. ..
14.	Page v 2 <sup>nd</sup> paragraph	Delete the last sentence. There is probably no greater uncertainty about removal costs than there is for maintaining the existing soil cover/institutional controls/and monitored natural attenuation.	The unit costs for surveillance and maintenance are assumed the same as the current unit cost for these activities done annually on the sites. Additional discussion concerning the cost basis for this alternative is provided in Appendix C in Section 2.2. More uncertainty is associated with removal costs because the actual removal volumes will be determined using the observational approach. Required removal volumes drive the costs of many associated actions such as mobilization/demobilization, excavation, loading, transportation, disposal costs, decontamination, backfill, and revegetation. The cost basis for RTD sites is discussed in section C3.1.1.
15.	Page v 3 <sup>rd</sup> paragraph	Delete "The DQO also addressed waste characterization requirements" This sentence does not add anything to the paragraph that the first sentence had not already stated. If it is implying something different, change sentence to further explain the meaning.	Comment accepted with modifications. Text will be changed to indicate the DQO process addressed the identification of characterization objectives for determination of contaminant distribution, verification of

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			completeness of a removal response, and the waste characterization requirements needed for disposal of removed material.
16.	Page vii 1st paragraph	In last full bullet, change "The direct exposure pathway has been eliminated at many of these surface release sites." to "The short-term threat from the direct exposure pathway has been abated at many of these surface release sites." Please note that according to WAC 173-340, it isn't eliminated unless there's 15 feet of clean fill. Also, the pathway is not eliminated; it's being mitigated by ongoing maintenance including application of pesticides.	Comment accepted with modifications. Text will be changed to state that the short-term threat from the direct exposure pathway has been abated at many of these surface release sites. Placement of a cover soil on the site, in conjunction with ongoing maintenance activities, such as application of pesticide/herbicides, have mitigated direct exposure. These maintenance activities eliminate plant uptake and disturbance of the soil cover.
17.	Page vii 2nd paragraph	Change "The most significant of these exceptions is the BC Controlled Area." to "The largest and most complex of these exceptions is the BC Controlled Area and the West Lake."	Comment accepted with modifications. Will be restated as "Two of the largest sites, the BC Controlled Area and the West Lake, are located outside the core zone."
18.	Page vii 4th paragraph	Change "The data collected during the BC Controlled Area RI/FS" to "The data collected during the RI/FS for the BC Controlled Area and the West Lake".	Comment accepted.
19.	Page 5-5	Change Section 5.3 title to "Response Action Objectives".	Comment accepted.
20.	Page 5-5	Change Section 5.4 title to "Identification of Response Action Alternatives".	Comment accepted.
21.	Page 1-1 1 <sup>st</sup> paragraph	Add location of BC controlled area and west lake after the discussion of the site locations. Since these are the	Comment accepted.

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		candidates for RI/FS studies, they should specifically be noted their location.	
22.	Page 1-2, 1 <sup>st</sup> paragraph	Change "unique" to "additional".	Commented accepted.
23.	Page 1-2 2 <sup>nd</sup> bullet	Change "EE/CA" to "equivalent of an EE/CA".	Comment acknowledged. Please refer to response to comments #1 and #10.
24.	Page 1-3 1 <sup>st</sup> paragraph	Change 147 to 148.	Commented accepted.
25.	Page 1-3 4 <sup>th</sup> bullet	Change "Presents an EE/CA" to "Presents the equivalent of an EE/CA".	Comment acknowledged. Please refer to response to comments #1 and #10.
26.	Page 1-4	In #3, change "removal" to "response" – each occurrence.	Commented accepted. .
27.	Page 1-4 Section 1.2.2	<p><b>1.2.2 RI/FS Streamlining</b></p> <p>The Implementation Plan (described in Section 1.1.1 of this work plan) established the Observational Approach as one of five approaches for streamlining the assessment and remediation of 200 Area past practice sites:</p> <p>“The ‘observational approach’ is a method of planning, designing, and implementing a remedial action that uses a limited amount of initial field characterization . . . additional information gathered during remedial actions is used to make ‘real time’ decisions in the field to guide the direction and scope of remedial actions.”</p>	Comment Acknowledged. At this time, DOE does not see the advantage of completing interim clean up actions under an Action Memorandum. DOE is open to further discussions with Ecology to explore expedited final remedies using a ROD based strategy and potential contractual incentives to FH to identify and complete clean up of the UR-1 waste sites on a contingency basis

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		<p>Remedial actions and removal actions are two types of response actions defined in the CERCLA regulations (40 CFR 300.5). The Implementation refers to remedial actions, but US DOE is proposing to use removal actions as the initial response for some of the waste sites in this work plan. DOE is required to "an engineering evaluation/cost analysis (EE/CA) or its equivalent" for sites proposed for removal (40 CFR 300.415(4)). This work plan presents the equivalent of an EE/CA.</p> <p>DOE proposes to prepare an Action Memorandum following publication and public comment on this work plan. The Action Memorandum will document the need for a removal response, identify the proposed action, and explain the rationale for the removal. It will also document community relations activities, and include a schedule for the removal action.</p> <p>A record of decision will also be prepared for the waste sites in the 200-UR-1 operable unit. The removal action for waste sites in the 200-UR-1 operable unit must, "to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action" (40 CFR 300.415(d)). If the removal action abates the threat to human health and the environment, then the ROD can document a "no action" decision for those waste sites.</p>	

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		<p>A remedial design/remedial action work plan (RD/RAWP) will be prepared following issuance of the Action Memorandum. It will include the Sampling and Analysis Plan that is required for removal action sites and remedial response sites.</p> <p>In summary, DOE's proposed sequence of actions is:</p> <ul style="list-style-type: none"> <li>• Prepare the equivalent of an EE/CA (this RI/FS work plan presents the equivalent information)</li> <li>• Prepare an Action Memorandum for some of the 200-UR-1 waste sites (additional Action Memorandums may be completed for some or all of the remaining 200-UR-1 waste sites)</li> <li>• Prepare an RD/RAWP</li> <li>• Complete removal actions for any of the 200-UR-1 waste sites named in Action Memorandums</li> <li>• Complete the RI/FS for two of the 200-UR-1 waste sites (West Lake and the BC Control Zone)</li> <li>• Prepare a ROD for the entire 200-UR-1 operable unit</li> <li>• Complete remedial actions (including the "no further action" alternative, as appropriate) for all 200-UR-1 waste sites, including those previously addressed by removal action(s)</li> </ul>	
28.	Page 2-7 3 <sup>rd</sup> paragraph	Tank farms in 200 West Area also include S, SX, and SY.	Commented accepted.
29.	Page 2-13 1 <sup>st</sup> paragraph	Change 147 to 148 waste sites (2 sentences in paragraph).	Commented accepted.
30.	Page 2-13 4 <sup>th</sup> paragraph	Change "candidate RI/FS site" to "candidate RI/FS sites".	Commented accepted.
31.	Page 2-14	Is "radiolometric" a typographic error? If not, it should	Comment accepted with modifications.

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		be defined in a parenthetical.	Term should be "radiometric".
32.	Page 2-14 Section 2.2.3.2	Add characteristics of west lake site as well, or alternatively add a section 2.2.3.3. Waste Site Characteristics of the West Lake area.	Commented accepted.
33.	Page 2-20 and other site tables	The order of the sites listed does not make sense—it does not appear to be numerical, as 200-E-26 is down near the end of the list instead of before 200-E-29, and so on. A listing strategy should be applied to this table and all other tables (including tables 5-6 and 5-7) so that site code numbers are easier to look up.	Commented accepted.
34.	Page 2-20	Add west lake WIDS site code.	Commented accepted.
35.	Page 3-3	4 <sup>th</sup> sentence in §3.2.3, please delete sentence "As a result . . . and the environment." and replace with "Although sampling and long-term monitoring of sites in the 200 Areas has generally focused on larger and more contaminated waste sites, there is substantial data related to many of the small UPRs because of the mode of contaminant release (often through biological transport)."	Comment accepted with modifications. Proposed wording will be revised to state "Although sampling and long-term monitoring of sites in the 200 Areas has generally focused on larger and more contaminated waste sites, there is data related to small UPRs because of the mode of contaminant release (often through biological transport)."
36.	Page 3-3 Section 3.2.3	The unplanned releases are relatively important in the Hanford environment: e.g., contamination is relatively more bio-available if relatively less concentrated/radioactive: but that sense doesn't come through in this discussion. Also, given there importance, I suspect that there is relatively more bio-monitoring data for these sites than for any other OU, but that sense doesn't come through either. Add some text to emphasis these points.	RL is not aware of a data source that supports the statement that there is more bio-monitoring data for these sites (UPRs) than for any other OU. Bioavailability to contamination at UPR sites that have a soil stabilization cover is limited. Further discussion is needed with Ecology concerning data sources before making these statements in the

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			work plan.
37.	Page 3-3 Section 3.2.3	Add west lake information to section (specifically 1 <sup>st</sup> paragraph section).	Commented accepted.
38.	Page 3-7 Section 3.4 paragraph	The thin stabilization cover is an important part of the physical conceptual model for many of these sites. Also, the shallow depth of the contamination is an important aspect of the "nature" of contamination. Add supporting text to that effect.	Commented accepted. The first and second sentences in the central paragraph on page 3-8 will be added to the bullets on page 3-9.
39.	Page 3-7	Change "Point of release: surface or subsurface release." to "Point of release: surface or subsurface release, and thickness of interim stabilization cover compared to 15 foot standard point of compliance in WAC 173-340."	The bullet list of factors presented in the beginning of section 3.4 are the general <u>physical parameters</u> that are taken into consideration when developing a contaminant distribution model. Regulatory compliance requirements are not one of the physical properties considered in development of the contaminant distribution models. Specific attributes of the UPR contaminant distribution models are discussed on pages 3-8 and 3-9.
40.	Page 3-9	Change last bullet from "Approximately one-half of the sites identified for a removal action have been stabilized and covered with clean soil/material reducing the potential for direct exposure." to "Approximately one-half of the sites identified for a response action have been stabilized and covered with a thin (compared to 15 ft thick) clean soil/material reducing the short-term potential for direct exposure."	Comment accepted with modifications. The wording will be revised to state, "Approximately one-half of the sites identified for a response action have been stabilized and covered with less than 15 ft of clean soil/material, reducing the short-term potential for direct exposure."
41.	Page 3-10	Add to the bullets another one that says: <ul style="list-style-type: none"> <li>• Plant and animal uptake and transport to other</li> </ul>	Commented accepted.

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42.	Page 3-10 Section 3.5.2 and page 3-17 Figure 3-5	<p align="center">biological receptors or humans.</p> <p>The leaching pathway to groundwater has been dismissed for contamination at depths less than 15 feet. The regulations in WAC 173-340 require consideration of this pathway, regardless of depth. It is extremely important that if there is justification for dismissing this pathway that it be provided in detail using a quantitative basis. Prepare one or more paragraphs that describe in detail why this pathway was dismissed. Also provide appropriate calculations that support dismissing this pathway. Insert the paragraphs and calculations in section 3.5.2. Ecology must approve dismissal of this pathway and cannot do so without complete and accurate justification.</p>	<p>Comment accepted in part. The conceptual model is considered to be accurate as provided in the work plan. Nevertheless, the groundwater protection PRGs have been added to the work plan as requested in other comments for use in waste site closeout.</p>
43.	Page 3-12 Section 3.6, general	<p>In this section insert a table of all contaminants on the initial list, the facility that generated each contaminant, and the reason for elimination of each contaminant, instead of the bullets on p. 3-12. In the table define words such as "minor quantities" and "mobility".</p>	<p>As discussed in Section 3.6, the DQO assessment process for determining the COCs for 200-UR-1 waste sites was completed and presented in WMP-19920 (pending). A general discussion of the exclusion rationale presented in the DQO is shown in the Work Plan. The 200-UR-1 DQO incorporated the completed COC assessment process and elimination rationale developed and presented in other 200 Area OU DQO documents. Meaning of "minor quantities" and "mobility" will be provided in the text. Please note, a CD was provided to Ecology containing the current draft of the 200-UR-1 DQO document during Ecology's review of</p>

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			the Draft A Work Plan.
44.	Page 3-15, 3-16 Figures 3-3 and 3-4	The figure is misleading because it does not depict the lateral spreading that occurs at textural change boundaries in the subsurface. The spreading must be considered in the conceptual model. Please revise the figures to indicate lateral spreading.	Comment accepted with modifications. Lateral spreading would extend out further in layered alluvial deposits with pronounced grain size heterogeneity in depositional bedding. Sedimentary deposits with these characteristics could be present at some locations in the Hanford FM sands but probably not in gravel deposits. The lateral extent of the spreading would be related to the volume of a liquid release and the lateral continuity of the layers/strata. Additional lateral spreading will be shown in Figures 3-3 and 3-4.
45.	Page 3-18 Table 3-1	Dermal absorption for semi-volatile organic compounds should be evaluated. Dermal absorption fractions are relatively high for these compounds – refer to WAC 173-340 equations 740-4 and 740-5 to determine soil cleanup levels based on direct contact including dermal contact for semi-volatile organic compounds.	This is an incorrect application of the WAC requirements, as only <u>Modified</u> Methods B and C include dermal absorption. The 200-UR-1 Work Plan uses <u>Standard</u> Method C (inside the Core Zone) and B (outside the Core Zone) calculations for determination of PRGs. Dermal absorption <u>is not</u> included in either <u>Standard</u> Methods B or C.
46.	Page 4-1 Section 4.0	Replace 1st paragraph with the replacement paragraph provided for the Executive Summary:  “The U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology agreed that the nature and extent of	See response to comment 4. Text in both sections of the document will be changed for consistency.

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		<p>environmental contamination at many of the 200-UR-1 waste sites could be characterized using the "Observational Approach." That approach was previously described in the <i>200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program</i>, DOE/RL-98-28. It is a method of planning, designing, and implementing a remedial action that uses a limited amount of initial field characterization data to generate an understanding of field conditions. Then, additional information is gathered during remedial actions to make "real time" decisions in the field to guide the direction and scope of actions, based on contingency planning performed before mobilization to the field. Sites identified for the application of the observational approach would be candidates to excavate contaminated soil for disposal at the Environmental Restoration Disposal Facility."</p>	
47.	Page 4-1 Section 4.0	<p>The text states that during the DQO process the 200-UR-1 waste sites were identified for four proposed future actions:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Rejection or no action</li> <li><input type="checkbox"/> Reassignment to another OU.....</li> <li><input type="checkbox"/> Use of the observational approach to conduct RTD</li> <li><input type="checkbox"/> Completion of an RI/FS</li> </ul> <p>Later in the text monitored natural attenuation is listed as the proposed remedy for some of the waste sites. Where did this option come from? Please document the source in the text in the appropriate places.</p>	<p>Comment accepted. Sites identified as candidates for MESC/IC/MNA were presented in Section 5 as part of the alternative analysis for a response action. Text will be modified in appropriate places to clarify how the process was conducted to identify the two preferred remedies (RTD and MESC/IC/MNA).</p>
48.	Page 4-1	Change "streamlined removal action" to "streamlined	See response to Comment 8. Text

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Comment Number	Page	Comment	Response
	2nd paragraph	response action." Note that the observational approach is a streamlining approach.	changes will be made throughout the document when concurrence is established concerning the appropriate terminology.
49.	Page 4-1 3 <sup>rd</sup> paragraph	Change "one 200-UR-1 site (BC Controlled Area)" to "two 200-UR-1 sites (BC Controlled Area and West Lake)".	Comment accepted.
50.	Page 4-1 Last paragraph	Change <ul style="list-style-type: none"> <li>• "The EE/CA was prepared" to "The alternatives evaluation and cost analysis was prepared" and</li> <li>• "The EE/CA identifies" to "The evaluation identifies" and</li> <li>• "Thus the EE/CA serves as" to "Thus the evaluation, which is the equivalent of an EE/CA, serves as".</li> </ul>	Comment acknowledged. See responses to comments #1 and #10.
51.	Page 4-1	Delete last 2 sentences on page and replace with "Section 5.0 recommends the preferred response for the candidate sites."	Comment acknowledged. See responses to comments #1 and #10.
52.	Page 4-2 to 4-5 Section 4.1.1 to 4.1.4	No section is included for criteria for selection sites for MESC/IC/MNA. Add a section to discuss this, separate from the RTD section.	Criteria for selection of sites for MESC/IC/MNA is presented in Section 5.0 as part of the alternatives analysis for candidate RTD sites. Additional text will be added in Section 4.0, explaining the next step in the regulatory process in which an alternative analysis is performed.
53.	Page 4-2 Section 4.1	Provide a reference for the DQO document. It is difficult to review this document without the DQO.	Comment accepted. Please note that a CD was provided to Ecology containing the current draft of the 200-UR-1 DQO

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Comment Number	Page	Comment	Response
			document during the Ecology review of the Draft A Work Plan.
54.	Page 4-2 Section 4.1	The text references "the characterization approach outlined in WMP-19920 (pending)." Ecology has not reviewed or approved of this WMP. Therefore, it is impossible for Ecology to determine if the 'characterization approach' developed in the DQO process was adequately captured in the WMP since Ecology has seen neither document.	Comment accepted. Please note that a CD was provided to Ecology containing the current draft of the 200-UR-1 DQO document during the Ecology review of the Draft A Work Plan.
55.	Page 4-2 3 <sup>rd</sup> paragraph	Add west lake for completion of RI.	Comment accepted.
56.	Page 4-3	Delete last paragraph on page.	Comment accepted.
57.	Page 4-4 Section 4.1.2	The text states that "As appropriate, radiometric surveys and/or samples were collected to verify the completeness of the cleanup. For releases containing radiological constituents, no radiation warning signs or postings were required following the cleanup because the actions taken resulted in acceptable exposure levels...The sites should not be considered waste management units because there is not longer evidence of an actual or potential hazardous substance release." The text provides no discussion of non-rad hazardous substances at the waste sites. Please add text to address non-rad hazardous substances.	Comment accepted. Additional text will be included to discuss in occurrence reports. These indicate that non-radiological constituents were not constituents of concern. Where a cleanup action was completed, radiological COCs were the predominant contaminant and served as target or indicator constituents.
58.	Page 4-5 Section 4.1.3	Insert text addressing how the movement of waste sites from one OU to another will be documented. The text is contradictory, in one place it discusses the 34 waste sites "inclusion with another OU for conducting remedial action" and in another place it discusses "designation of the new OU associated with the site"	Comment accepted. Text will be modified and include a discussion concerning reassignment of the 200-UR-1 waste sites to other operable units.

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Comment Number	Page	Comment	Response
		please clarify.	
59.	Page 4-5 Section 4.1.4	Please change the 3rd bullet to read "Radiological surveys and/or other non-radiological field-screening characterization techniques could will be used to determine the level and extent of contamination during the removal action."	Comment accepted with modifications. Field screening characterization techniques for organic and inorganic constituents will be used, as appropriate, at sites where nonradiological constituents may be present.
60.	Page 4-6 Last paragraph	Add West Lake for completion of an RI/FS.	Comment accepted.
61.	Page 4-7 Section 4.1.8 and Page B-3 Section B1.4.1 1 <sup>st</sup> sentence of section	These sections state that contamination located in the upper 15 ft of soil is not a threat to groundwater. Delete these sentences and replace with a reference back to Section 3.5.2, which will be amended in accordance with a comment above.	Discussions throughout the Work Plan concerning the assumptions and supporting information used to determine the potential impact to ground water from UPR sites will be made consistent. See response to comment #42.
62.	Page 4-7 Section 4.1.8	Include evidence proving the "Chemical and radionuclide contaminants from UPRs in the 200-UR-1OU.....are not a threat to groundwater."	Discussions throughout the Work Plan concerning the assumptions and supporting information regarding the potential impact to ground water from UPR site will be made consistent. See response to comment #42.
63.	Page 4-7 2 <sup>nd</sup> and 5 <sup>th</sup> paragraph	Add West lake site to completion of RI/FS.	Comment accepted.
64.	Page 4-8 Section 4.1.9	Modify text to include the use of VSP to determine the statistically adequate number of verification samples and locations. Also include text stating that verification samples will comply with requirements specified in WAC 173-340-740(7).	The sampling design and specifications for verification sample collection are presented in the SAP (Appendix B). The sampling design will be revised to implement a random multi-increment sampling concept aided by VSP.

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65.	Page 4-8 Sections 4.1.9 and 4.2	Add west lake to discussion. Need to add a characterization approach for west lake.	Comment Accepted.
66.	Page 4-9 Section 4.2.1	Modify the 4 <sup>th</sup> and 6 <sup>th</sup> bullets to read: <ul style="list-style-type: none"> <li>□ “Sampling and analysis for all potential COCs of soils at the soil location with the highest level of contamination for waste characterization and disposal decisions.</li> </ul> A verification radiological survey and subsequent verification of soil sampling and laboratory analysis for all COCs to document the successful removal of contaminated media to levels below PRGs.”	Comment accepted with modifications. Verification sampling and analysis will be performed for potential COCs on a site-specific basis. A list of the radiological and nonradiological COCs is provided in the SAP. COCs that will be evaluated at each candidate RTD site are identified using Tables B-15, B-6, and B-7.
67.	Page 4-10 Section 4.2.2	The first sentence should include a reference to Figure 2-4.	Comment accepted
68.	Page 4-10 Section 4.2.2	The text states “In Phase I, the initial site evaluation characterization objectives are developed and focus on determination of current contaminant levels, development of the preliminary CSM, and determination of initial sampling and radiological survey specifications for a limited field investigation.” This should have been completed through the DQO process and should be documented in the attached SAP. Please revise the document accordingly.	Comment accepted. The next sentence states, “The project is currently conducting Phase I activities”. Text will be revised to include a discussion concerning use of the DQO process and presentation of the scoping sampling plan in the SAP (Appendix B).
69.	Page 4-10	Delete “a unique,” in last paragraph.	Comment accepted
70.	Page 4-11 Section 4.2.2.1	The text references “a Historical Site Assessment (HAS).” Provide a reference to this document or attach it as an appendix to this work plan.	Comment accepted with modifications. The reference will be provided. The HSA has been prepared as a separate document.
71.	Page 4-11 Section 4.2.2.1	What are “Derived Concentration Guideline Levels” and where do they come from. Please provide	Comment accepted. Additional discussion defining “Derived

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		explanation in the text.	Concentration Guideline Levels" will be provided in the text
72.	Page 4-11 Section 4.2.2.1	The second bullet is "Development of initial scoping sampling and radiological survey specifications for a limited field investigation." This should have been completed through the DQO process and should be documented in the attached SAP. Please revise the document accordingly.	Comment accepted. Text will be revised to include a discussion concerning use of the DQO process and presentation of the scoping sampling plan in the SAP (Appendix B). Text changes will be made to be consistent with response to comment 68.
73.	Page 4-8 Section 4.2	Add West Lake to Section 4.2, and propose a characterization approach.	Comment accepted
74.	Page 4-12 Section 4.2.2.2	Part 2, 1 <sup>st</sup> bullet: Define the term "key" in the bullet or replace it with a more detailed description of where samples are to be collected.	Comment accepted. A more detailed description will be provided.
75.	Page 4-12 Section 4.2.2.2 Part 2	Please define "key areas" and explain how they are identified.	Comment accepted. A more detailed description will be provided. Text changes will be consistent with response to comment 74.
76.	Page 4-12 Part 3 Section 4.2.2.2	Change the second bullet to read "Determine if sufficient data is available to estimate maximum and average calculate a 95% UCL for surface radiation COC levels in each zone."	Comment accepted with modifications. Maximum radiation levels and radiological COC concentrations will be documented. The true mean (as estimated by the 95% UCL on sample mean) will also be calculated.
77.	Page 4-13 Section 4.2.2.4	In the first bullet, include non-rad COCs for verification purposes.	An additional evaluation is being conducted to determine whether analysis of non-rad COCs within the BC Controlled Area is needed for verification purposes. The current conceptual site model does include

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			distribution of non-radiological COCs by plants or animals at levels that would exceed PRGs. Further discussion is needed with Ecology concerning inclusion of non-rad COCs in the BC Controlled Area.
78.	Page 4-13 Section 4.2.2.5	In several places the text refers to a "treatability test" but it is not clear what the purpose of this text might be. Please add text explaining what the treatability test might be testing and how it will be used.	Comment accepted. Text will be added to briefing explain the objectives of the treatability test(s).
79.	Page 4-14 Section 4.2.3.2	The text states that the "Survey criteria will meet the agreed-to Derived Concentration Guideline Level set for the BC Control Area." Please provide a reference indicating where the "agreement" is documented.	Comment accepted. Text will be added to explain how the "agreed-to Derived Concentration Guideline Level" for the BC Control Area will be established. This is the radiological survey scan capability as it corresponds to the measured activity in the soil.
80.	Page 4-14 Section 4.2.3.4	Change the last sentence to read "A list of the screening techniques and detection capabilities of the equipment, identified for use at UPR sites is presented in the SAP in Appendix B."	Comment accepted.
81.	Page 4-15 Section 4.2.3.5	The text states that "Verification analysis will provide the data needed to complete site closure documentation." Ecology would like to point out that the analytical detection levels used for the verification analysis must be low enough to document compliance with groundwater protection values established in WAC 173-340-747. In addition, the analytical results must be documented for all COPCs.	See response to comment 42. PRGs for the COCs will also be calculated per the methodology described in WAC 173-340-747 for determination of derived soil concentrations for ground water protection. Soil PRGs protective of ground water will be shown in comparison to analytical detection requirements.

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82.	Page 4-15 Section 4.2.4	In the third sentence there is a double "that" please delete one.	Comment accepted.
83.	Page 4-17 Figure 4-1	The bottom left box needs to be modified to indicate what happens if a waste site is NOT rejected by the regulators.	Comment accepted. Figure 4-1 will be modified to include an additional step to address the need for confirmational sampling for certain candidate rejected or no action waste sites.
84.	Page 4-18 Figure 4-2	This figure needs to be modified to include evaluation of non-rad PRGs.	Comment accepted.
85.	Page 5-1	Change Section 5.1 and 5.1.1 Titles from "... Justify Removal Actions" to "... Justify Response Actions".	See previous responses to the requested changes in terminology from "Removal" to "Response". Text will be modified to be consistent with the selected terminology and used throughout the rest of the document.
86.	Page 5-4	In 3rd bullet, change "Bioaccumulation" to "Bioaccumulation and bio-magnification"	Comment accepted. The revised bullet will indicate, "Bioaccumulation and bio-magnification (as appropriate)...."
87.	Page 5-4	In last paragraph of Section 5.1.2.3, insert a new sentence between the existing first and second sentences: "US EPA guidance does not have a corresponding limitation."	Comment accepted.
88.	Page 5-4 Section 5.1.2.3	The text states that "most of the sites have been stabilized, thereby limiting ecological access." However, Table A-4 indicates that several of the waste sites have no stabilization cover, or a shallow cover. Please revise text to accurately reflect the potential for ecological exposure.	Comment accepted with modifications. Text will be modified. Approximately half of the waste sites have a stabilization cover.
89.	Page 5-4	The first bullet should include "inhalation" as an	The Central Plateau Ecological DQO

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	Section 5.1.2.3	exposure pathway for invertebrates and burrowing mammals.	evaluated pathways and determined that inhalation was an insignificant pathway for invertebrates. Supporting information from that project was sent to Ecology on 10/25/04. Ecosystem protection evaluated using WAC 173-340-7490 through 7494 does not include evaluation of inhalation by ecological receptors.
90.	Page 5-5 Section 5.3	<p>Modify the 1<sup>st</sup>, 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> bullets to read:</p> <ul style="list-style-type: none"> <li>• Prevent or <del>reduce negative impact</del> mitigate risk to human health, ecological receptors, and natural resources associated with exposure to soil or wastes contaminated above ARARs or risk-based criteria <del>by removing the source or eliminating the pathway.</del></li> <li>• Prevent or <del>reduce</del> mitigate occupational health risks associated with physical, chemical, and radiological hazards to workers performing removal actions.</li> <li>• Minimize the <del>general</del> disruption of ecological and cultural resources caused by remediation and prevent adverse impacts to cultural resources and threatened or engendered species.</li> <li>• Provide conditions suitable for future industrial land use inside the Central Plateau Core Zone boundary and <del>residential</del> unrestricted land use outside the Core Zone.</li> </ul> <p>Delete the last RAO. It implies removal and cleanup will be minimized to reduce the amount of waste</p>	<p>Comment accepted with modifications. The last RAO will be reworded to more clearly reflect the intent of this statement. Remedial actions will be conducted in an efficient manner in order to minimize the amount of generated waste. Good management practices will be used during removal actions to control unnecessary waste generation. Cleanup requirements will be in accordance with the selected land-use outside the Core Zone as identified in the Comprehensive Land Use Plan.</p>

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91.	Page 5-6	Change "WAC 173-340 also specifies a . . ." to "WAC 173-340 specifies a standard point of compliance of 15 feet and a . . ."	Comment accepted with modifications. The text will be reworded to discuss the WAC standard point of compliance of 15 feet.
92.	Page 5-6 Section 5.4.1.2	The text only addresses the decay of radioactive contaminants. Add text addressing the remaining non-rad COCs which will NOT decay but may experience natural attenuation	Comment accepted.
93.	Page 5-7	3 <sup>rd</sup> paragraph in Section 5.4.1.3, change "Removal technologies do not" to "The observational approach does not".	Comment accepted with modifications. The text will be modified to state that a removal response using the observation approach does not....
94.	Page 5-8 and 5-9	A traditional sampling DQO would consider the consequences of making a bad decision. For remediation, a decision to continue MNA and maintain existing soil cover could result in bio-intrusion and re-release of contamination. That's consistent with the history of the URs, and should be considered in "implementability" and "effectiveness" -- please revise the text accordingly.	Comment accepted with modifications. Additional text will be added in the 3rd paragraph on page 5-9 where a failure of institutional controls is discussed. Because of the short vertical extent of contamination at the UPR waste sites where an existing soil cover is present, re-release of contamination caused by bio-intrusion, if it were to occur, would result in relatively minor redistribution.
95.	Page 5-8 Section 5.5.2.1	Under Alternative 2, Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation, contaminants would remain in the UPR sites, with controls to prevent inadvertent human and biological intrusion into the areas until contaminant concentrations beneath the existing soil cover reach	Comment Acknowledged. Additional text will be added to identify the potential of biological vectors to transport radioactive contamination.

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		<p>acceptable levels. This alternative would rely on natural attenuation (e.g., radioactive decay) to decrease contaminants until concentrations reached levels that would be protective of human health and the environment.</p> <p><u>As recently as 1997 there were 145 annual incidents of biological vectors transporting radioactive contamination in the environment (Section 3.2.3). Only some of these incidents were associated with unplanned releases, and significant changes to controls were made in response to the increasing number of incidents. However, the number of incidents across the Hanford Site make it a key concern for this alternative, whether the existing soil covers and controls would be effective in preventing biological intrusion. If they are shown to be effective, Alternative 2 could possibly provide overall protection of human health and the environment for sites that show protection of groundwater and achieve human health and environmental protection within 130 years.</u></p>	
96.	Page 5-8 Section 5.5.2.1	The text states that soil covers will be maintained "until contaminant concentrations beneath the existing soil cover reach acceptable levels." If non-rad COCs are present above PRGs they will not decay, please add text addressing natural attenuation of non-rad COCs.	Comment accepted.
97.	Page 5-9 Section 5.5.2.1	The text states that "Confirmatory sampling would be used to determine the appropriate timeframe for decay of the constituents to acceptable levels." Non-rad	Comment accepted. Organic constituents are expected to attenuate. If confirmatory sampling analytical results

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		COCs will not decay, please add text addressing the natural attenuation of non-rad COCs.	show inorganic analytes above PRGs, the MNA remedy will be reevaluated.
98.	Page 5-9 Section 5.5.2.1 3 <sup>rd</sup> paragraph	Detail what the risks would be long-term if the controls were to fail, including dispersion of contamination through animals, wind-blown contamination, etc.	Comment accepted with modifications. Additional text will be added to discuss long-term risks. The sites selected for this alternative would have a minimal potential for long-term risk from disturbance.
99.	Page 5-9 Section 5.5.2.1 4 <sup>th</sup> paragraph	The majority of the UPR sites resulted in contamination from sites in the Hanford site boundaries, so controls and access are irrelevant in this discussion. Also, annual surface radiation surveys of specific waste sites do not detect radiation that may have migrated out of boundaries if the soil cover were to fail. Delete this paragraph completely, or re-word to address these concerns.	The discussion concerning current controls and access to UPR sites is appropriate in this section. The process allows for assessment and response to maintain control of the site and soil cover conditions.
100.	Page 5-9 Section 5.5.2.1 2 <sup>nd</sup> paragraph	Would sampling alone be enough to determine the possibility of mobility of contaminants through the soil during the period of natural attenuation? Address this concern in this section.	Comment accepted with modifications. Sampling and subsequent analysis of results will identify the constituents present. Distribution coefficients for the constituents and site infiltration rates will be considered in assessing vertical migration and mobility. The stabilization soil cover effectively reduces both infiltration associated with precipitation and lateral dispersion caused by wind.
101.	Page 5-10 Section 5.5.3.1	Please add to your discussion that alternative 3 would best address one of the main causes of the UPR's of animal intrusion and wind-blown contamination (that is,	Comment accepted with modifications. Additional text will be added to discuss how removal of contaminated soil would



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106.	Page 5-10 Section 5.5.3.1	Modify text to read: "Confirmation sampling will be used to verify that residual contamination levels <del>do not</del> <del>pose unacceptable risks</del> comply with potential ARARs."	Comment accepted with modification. Indicate remedial actions "will comply with selected ARARs," not "potential ARARs."
107.	Page 5-10 Section 5.5.3.1	Leaving contaminants in place below 4.6 m (15 ft) bgs, at concentrations that exceed the groundwater protection values specified in WAC 173-340-747, is not compliant with ARARs. The remediation of the 200-UR-1 OU Waste Sites should incorporate the requirements specified in WAC 173-340-350(9), WAC 173-340-360(2), and WAC 173-340-370(2).	Comment accepted with modifications. Contaminants are not anticipated to be found or left in place below 15 ft at UPR waste sites that would threaten ground water. Addition of soil PRGs that are protective of groundwater will be included in the SAP, and applied for all soil removal associated with liquid release sites. If contamination deeper than 15 ft is encountered, other remedial alternatives would need to be considered in consultation with Ecology. Text will be added to clarify this point.
108.	Page 5-11 1 <sup>st</sup> paragraph	Re-consider that movement of waste to ERDF would result in a "minor" reduction in mobility, given the importance of animal & plant intrusion as secondary release mechanisms for the URs. Revise your text accordingly.	Comment accepted with modifications. Text will be revised and the word "minor" will be removed.
109.	Page 5-11 5 <sup>th</sup> paragraph	Other than BC Controlled Area, which sites are "larger, more complicated" and could require years to remediate?	Text will be added to specify that the as a group, the numerous railroad waste sites may require more time to remediate than other UPR sites because of logistics associated with removal activities, waste handling, and disposition of multiple waste streams.
110.	Page 5-12	Delete 2 <sup>nd</sup> paragraph. It doesn't apply because "this	Comment accepted.

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		condition is not expected in the 200-UR-1 waste sites.”	
111.	Page 5-13 Section 5.6	Please revise the text to read: “For some sites, final cleanup requirements activities may be limited minimal, with removal costs reduced....”	Comment accepted.
112.	Page 5-14 Section 5.8	Provide documentation supporting the statement “The UPR sites are not a threat to groundwater and mainly consist of surface radioactive contamination.....”	Comment accepted. The text will be revised to say, “Because the UPR sites mainly consist of surface radioactive contamination caused by small leaks/spills, windblown particulates, tumbleweed parts, and intrusion by animals, they are not considered a threat to groundwater.”
113.	Page 5-14 Section 5.8	Is the statement “Generally placement of a soil stabilization cover was followed a decontamination or cleanup action” correct, or were the soil stabilization covers preceded by decontamination or cleanup actions?	This sentence will be revised to restate its intended meaning.
114.	Page 5-27 Table 5-6	Include sites that were not approved for reclassification. For sites where ecology is just requesting “confirmatory sampling”, ecology requests creating a new category of just “samples” versus classifying them as RTD or MESC/IC/MNA.	Comment accepted.
115.	Page 5-27 Table 5-6	Why does RTD have an asterisk following it? The asterisk is not included in footnotes. Delete if not used to signify something.	The asterisk will be replaced and an “a” inserted. The footnote for “a” can be found at the bottom of table 5-6 on page 5-28
116.	Page 5-27 Table 5-6	2 waste sites are listed as 220-E-110 and 220-E-115, correct to 200.	Comment accepted.
117.	Page 5-27 Table 5-6	Site UPR-200-W-166 is listed for both preferred remedies. Therefore, instead of 52 waste sites for RTD	Comment accepted with modifications. The two remedies were identified for

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		(listed in introduction pg. V) there are 53 listed in table. If it is because both alternatives are identified, then treat all sites where both alternatives are identified as the same, and make note in the table.	application within different areas of the same site. RTD was the preferred remedy for removal of residual contamination on the portion of the site that was previously scraped. MESC/IC/MNA was the preferred remedy for the portion of the site that is now under a soil stabilization cover. Because the remediation cost models are being revised, the proposed remedies may be changed. The table will be revised accordingly. Numerically counting these two remedies at one site may lead to some confusion in summary statements concerning the number of remedies versus the number of sites.
118.	Page 5-32 Table 5-7	200-W-106 facility area is labeled 200-W Pond, but it appears from your maps and description to be in T-farm zone.	Comment accepted. Table will be corrected to indicate the facility area is T-Farm.
119.	Table 5-7 and Appendix A tables	"Facility area" column—should this be called this, as your maps have it referred to as closure zones? If they are "closure zones" change the name of the column to match, or change map label.	Comment accepted. Callouts and labels will be made consistent.
120.	Table 5-7	For sites that are MESC/IC/MNA, more clarification is needed as to why that approach is being taken versus RTD. Add specific justifications for each site identified	Comment accepted. Additional text will be added in the column for justification.
121.	Table 5-7	Several waste sites have the preferred remedial alternative as both MESC/IC/MNA and RTD (including UPR-200-W-116 and UPR-200-W-166). The	Comment accepted. Additional text will be added. See response to comment 117.

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		clarification as to why these are checked for both is not sufficient to understand—add additional explanations for these unusual sites.	
122.	Page A-1 Table A-1	Add West lake area to listing of the 200-UR-1 Operable Unit Waste Sites.	Comment accepted.
123.	Page 6-2 Section 6.1.1	Revise the text to read: “...ACTION MEMORANDUM <del>(or in other terms, an interim action ROD)</del> will be issued....”	Comment Acknowledged. See the response to Comment 27.
124.	Page 6-2 Section 6.1.2	The paragraph that discusses CERCLA closure options does not address how these cleanup standards will be used in the 200-UR-1 OU. Please add a detailed explanation of how Method B and Method C cleanup standards will be used in each media and the regulatory path for each. Discuss how clean closure will be used at the 200-UR-1 OU waste sites.	Comment accepted.
125.	Page 6-3 Section 6.1.2	Revise the text to read: “Public involvement, including public notices and an opportunity to comment, will be <del>enhanced, as necessary,</del> to satisfy CERCLA requirements. The public also will be able to review and comment on the FS and any <del>proposed</del> draft conditions that will be contained....”	Comment accepted.
126.	Page 6-4 Section 6.2.2	Add the following bullet: Soil sampling and analysis for non-rad COCs.	Comment accepted with modifications. Text will be modified to clarify that soil sampling and radiological surveys will be performed as part of all remedy verification field activities. Analytical requirements are associated with the potential COC's groups (radiological only or radiological and nonradiological) that have been identified for each site that is a

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			candidate for sampling.
127.	Page 6-4 Section 6.2.2.2	Revise the text to read: "...Hanford Environmental Information System numbers, an inventory of investigation-derived waste containers, available waste designation information for radiological and non-rad COCs, and any chemical field-screening results."	Comment accepted.
128.	Page 6-4 Section 6.2.3	Please elaborate on the statements: <ul style="list-style-type: none"> <li>□ "During development of WMP-19920 (pending), listed waste issues were resolved." and</li> <li>□ "Sampling and analytical requirements or specific analytes needed to support designation activities were identified and the requirements noted in WMP-19920."</li> </ul> <p>Ecology has not reviewed or approved of WMP-19920. It is impossible for Ecology to determine if waste is being managed in accordance with ARARs.</p>	Comment accepted. Additional text will be added to elaborate on these statements. The 200-UR-1 DQO document (WMP-19920) will be issued to incorporate changes that may be needed following resolution of comments pertaining to the SAP. Please note that a current draft of the DQO was provided to Ecology on CD during Ecology's review of the Draft A Work Plan.
129.	Page 6-5 Section 6.2.5	Revise the text to read: "...based on radiological field screening and COC sampling results; documenting the extent of contaminated soils removed from the site and disposed of at ERDF; documentation of the verification radiological survey and COC sampling results; and..."	Comment accepted.
130.	Page 6-5 Section 6.2.5.1	Ecology has not reviewed an official released DQO and can not determine if the "analytical quality criteria outlined in the DQO" comply with ARARs. Provide additional explanation.	Comment accepted. The 200-UR-1 DQO document (WMP-19920) will be issued to incorporate changes that may be needed following resolution of comments pertaining to the SAP.

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131.	Page 6-5 Section 6.2.5.1	Revise text to read: "...or risk-based levels if <del>exposure data are available</del> regulatory standards are not available and existing process knowledge...."	Comment accepted.
132.	Page 6-6 Section 6.2.5.2	Revise the 3 <sup>rd</sup> and 4 <sup>th</sup> bullets to read: <ul style="list-style-type: none"> <li>□ "A site map showing the grid for the initial and verification <del>radiological</del> COC survey and the surface contamination delineated during the initial <del>radiological</del> COC survey"</li> </ul> <p>A discussion of removal action including hot-spot sampling, excavation, field screening the excavation surfaces for continued presence of <del>radiological</del> COC contamination, soil screening, verification radiological surveys and COC sampling results, waste characterization, management and disposition, excavation backfill, compaction, and final grading".</p>	Comment accepted with Modifications. The 3 <sup>rd</sup> and 4 <sup>th</sup> bullet statements will be revised to differentiate between field screening activities for COCs (mainly radiological surveys, but includes other techniques if nonradiological COC could be present) and final verification radiological surveys and sampling and analysis for COCs.
133.	Page 6-6 Section 6.2.6	Suggest changing the title of this Section to "Remedial Investigation Report for BC Cribs Area" (and add Westlake site if reclassified into this operable unit).	Comment accepted with Modifications. The RI report is for the BC Controlled Area (200-UR-1 OU waste site number UPR-200-E-83), not the BC Cribs Area. West Lake will also be added to the title.
134.	Page 6-6 Section 6.2.6	Revise text to read: "...and concentration of <del>cortaminants</del> based on sampling results; <del>evaluating the concentration of COCs against regulatory limits,</del> assessing contaminant fate and transport;...."	Comment accepted.
135.	Page 6-7 Section 6.2.6.2	Revise the text to read: "...by using a simple comparison of <del>an</del> the mean as estimated from the 95% upper <del>confidence limit bound</del> of the data to background	Comment accepted with modifications. This statement will be added in addition to comparison of the maximum detected

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		concentrations, PQLs, and with appropriate cleanup levels.”	value to background. This would be the most conservative approach.
136.	Page 6-7 Section 6.2.6.2	Revise text to read: “...against regulatory standards or risk-based levels if <del>exposure data are available</del> regulatory standards are not available and existing process knowledge.....”	Comment accepted.
137.	Page 6-9 Section 6.2.6.3.1	Revise text to read: “Risks initially will be evaluated by comparison to risk-based standards such as WAC 173-340-745740, “Unrestricted Land Use Soil Cleanup Standards <del>for Industrial Properties.</del> ”	Comment accepted with modifications. Additional text will be added to differentiate the risk-based standards for 200-UR-1 waste sites located inside the core zone versus those for sites located outside the core zone.
138.	Page 6-9 Section 6.2.6.3.1	Revise text to read: “Additional analysis will be performed using WAC 173-340-747(3) or (4), or an <del>appropriate</del> alternate fate and transport model (e.g., STOMP [PNNL-11216, STOMP – Subsurface Transport Over Multiple Phase: Application Guide]) will be established in accordance with WAC 173-340-747(8) to assess impact to the groundwater.....”	Comment accepted with modifications. Text will be revised to indicate that additional analyses will be performed that will meet potential ARARs when assessing the impact to groundwater.
139.	Page 6-10 Section 6.2.6.3.2	Ecology has not reviewed the most recent versions of DOE/RL-2001-54 and can not determine if the “screening-level ecological risk assessment” is in compliance with ARARs. However, the ecological risk assessment will need to comply with requirements provided in WAC 173-340-7490 “Terrestrial Ecological Evaluation Process.” Please revise text accordingly.	Comment accepted with modifications. Text will be revised to indicate that the ecological risk evaluation will be compliant with potential ARARs.
140.	Page 6-10 Section 6.2.6.3.2	In the first bullet, include “inhalation” as an exposure pathway for invertebrates and burrowing mammals.	See response to comment 89.
141.	Page 6-10	The text states that “A risk management decision will	Comment accepted. Additional text will

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	Section 6.2.6.3.2	be needed to determine how contaminants that do not have toxicity values will be handled during the risk assessment for each OU." Please insert text to clarify who will make that decision and when.	be added for clarification.
142.	Page 6-12 Section 6.2.6.3.2	The Ecological risk needs to be evaluated against WAC 173-340 requirements as well as the eight-step EPA process. Please include this evaluation in the text.	Comment accepted with modifications. Text will be modified to state ecological risk will be evaluated using the EPA eight-step Ecological Risk Assessment guidance and potential ARARs.
143.	Page 6-12 Section 6.2.6.3.2	The statement "Because most of the waste sites in this OU are within the core zone, generally only terrestrial wildlife risks will need to be evaluated....." is misleading. Numerous waste sites in this OU are in the core zone, but the BC Control Area encompasses a huge amount of land that is outside the core zone and is NOT considered industrial-exclusive land use. Please revise the text to include evaluation of waste sites within the core zone and waste sites outside the core zone.	Comment accepted. Additional text will be added for clarification.
144.	Page 6-13 Section 6.3	This section reiterates the steps and remedial action alternatives for the FS process, as taken from Appendix D of DOE/RL-98-28. The document DOE/RL-98-28 was based on information and technologies available in 1997. A supplemental evaluation of technological developments should be provided in the forthcoming 200-UR-1 FS. Add text to section 6.3 indicating that the forthcoming FS will include information to update Appendix D in DOE/RL-98-28. Specifically: <ul style="list-style-type: none"> <li>Identify potential technologies and process options associated with each GRA</li> </ul>	Comment accepted with modifications. Additional elements of the 200-UR-1 FS not identified in DOE/RL-98-28 Appendix D will be indicated.

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		<ul style="list-style-type: none"> <li>Screen process options to select a representative process for each type of technology based on their effectiveness, implementability, and cost</li> </ul> Assemble viable technologies or process options into alternatives representing a range of treatment and containment plus a no- action alternative.	
145.	Page 6-15 Section 6.4	The last paragraph of section 6.4 "Three alternatives to the OU-by-OU remediation...." and the next three sections (6.4.1, 6.4.2, and 6.4.3) do not add any value to this section. Ecology suggests deleting this text.	Comment accepted.
146.	Page 6-16 Section 6.5	The text "Additional guidance for confirmatory and verification sampling is provided in Section 6.2 of the Implementation Plan (DOE/RL-98-28)" should be deleted. The guidance in Section 6.2 of the Implementation Plan is for characterization sampling, instead use WAC 173-340-740(7) "Compliance Monitoring."	Comment accepted with modifications. The incorrectly referenced sections of DOE/RL-98-28 will be changed to 6.2.3 and 6.2.4.
147.	Page 7-2 Figure 7-1	The Project Schedule doe not include any schedule for the RTD sites. Please include work covered by the proposed action memorandum.	The schedule for remediation of candidate RTD sites will be negotiated between RL and Ecology. This schedule is "To Be Determined" and will not be included in this work plan.
148.	Page a-1 Appendix A Table A-1	Add a column indicating the remedy for the waste site (e.g., rejected, MNA, RTD, RI/FS, Reassignment).	Comment accepted with modifications. Table A-11 will continue to be used to list sites and provide general information. A new table will be prepared summarizing proposed actions and remedies as they currently apply to each 200-UR-1 waste site.





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			analysis for chemical COCs will be performed at RTD sites where a liquid release reportedly occurred. The third bullet in Section 3.6 will be revised to include nonradiological field screening. Section B3.6.2 discusses the use of chemical field screening methods for detection of nonradiological contaminants.
158.	Page B-25 Section B3.9	Correct "Figure B-18" to "Figure B-19" in the 5 <sup>th</sup> sentence.	Comment accepted.
159.	Page B-26 to B-27 Section B3.14 general	Add an explanation of how the number of survey and sampling locations were determined, and explain how the sampling design follows guidance from MARSSIM, or a similarly recognized document, for the type of survey and type of contamination.	Comment accepted. Additional text will be added to discuss these items.
160.	Page B-28 Section B3.14.2	Provide in this section a statement about the sample design for non-radioactive contaminants. Depths of greater than 1 foot for sampling are probably required.	DOE RL has researched the historical analytical results for samples collected in the BC Controlled Area to determine if data exists for non-radionuclides. There does not appear to be any chemical data for the BC Controlled Area. Therefore, samples will be collected from 3 hot spot areas in the highest contamination zone for full suite chemical analyses. Chemicals detected through this sampling effort will be added to the BC Controlled Area COC list. Chemical constituents that are not detected will be dropped from further consideration.

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			Historical radiological characterization results indicate that the majority of contamination occurs within the upper 6 inches of the soil in the BC Controlled Area. An additional sampling interval from 1.0-1.5 ft. will be included to further assess vertical contaminant distribution.
161.	Page B-59 Figure B-19	Change the arrow from the box "Verify presence or absence of .. ." to point directly to the box "Stake site boundaries to encompass potentially contaminated area".	Comment accepted.
162.	Page B-59 Figure B-19	From the box "Conduct screening of excavated material to determine if radiologically contaminated", add labels on the area to say "removed material" and "remaining material", to clarify the different directions from that box.	Comment accepted
163.	Page B-59 Figure B-19	Insert a box that explains that samples will be collected to test for non-radioactive contaminants. This box should be added on the right of the diagram after the "No" arrow, after the box "Any radiological survey readings above background?" Only if there are no nonradioactive and no radioactive contaminants above regulatory levels should the documentation be submitted for regulatory concurrence.	Comment accepted with modifications. Additional text will be added to indicate field screening for radiological and non-radiological constituents will be performed at liquid release sites. Samples for laboratory analysis will be collected for verification of removal completeness or confirmation that no action is required. Liquid release sites will be analyzed for radiological and non-radiological COCs.
164.	Page B-61 Figure B-21	The first box has a bullet for "IH survey". Add IH to the list of acronyms in the front of the document.	Comment accepted

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165.	Page B-68 to B-69 Table B-5	The chromium (VI) soil cleanup level for direct contact is set by the inhalation pathway because Cr (VI) is carcinogenic via inhalation. Use 2 mg/kg as a soil cleanup level, which applies to the inhalation pathway and accounts for dust resuspension.	Comment partly accepted. The soil cleanup level for the wastes sites outside of the Core Zone boundary are subject to the 2 mg/kg value. However, the waste sites inside the Core Zone are under the Industrial land use. The corresponding calculation for industrial use is based on the same equation, but uses a risk of $10^{-5}$ , which results in a soil cleanup value of 21.3 mg/kg.
166.	Page B-68 to B-69 Table B-5	There is a limit on the PRG for lead for the industrial scenario. Please correct table B-5: <del>No limit</del> 1000 mg/kg. This is the Method A value.	Comment accepted
167.	Page B-68 to B-69 Table B-5	The following contaminants have industrial direct contact PRGs given as "No limit". Replace the "No limit"s with the following values: methyl ethyl ketone, 2.1E06 mg/kg; phenol, 2E05 mg/kg (considers dermal absorption); 1,1,1 trichloroethane, 3.15E06 mg/kg.	Comment accepted. The Clark table values will be inserted into the table as requested in a comment resolution meeting with Ecology. Please note that the standard Method C value should be used for phenol, which is 1.05E6 mg/kg in this case. The standard Method C values does not include dermal absorption.
168.	Page B-68 to B-69 Table B-5	The PRG for residential direct contact for phenol is 1.67E04 mg/kg; this value accounts for dermal absorption. Replace the 24,000 mg/kg with 1.67E04 mg/kg.	The standard Method B values are being appropriately used and do not require consideration of dermal absorption.
169.	Page B-68 to B-69 Table B-5	List the PRGs for each PAH of interest and for each pesticide of interest.	No specific PAH compounds or pesticides have been identified as PRGs. Based on analytical results for PAHs (Method 8310) and pesticides (Method

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			8081), PRGs will be identified and DOE/FH will seek concurrence with Ecology on their use.
170.	Page B-68 to B-69 Table B-5 Page B-71 to B-78 Table B-7	<p>The PRGs for soil for the protection of groundwater, using default values for variables, are as follows in units of mg/kg: antimony 5.4; arsenic 2.92; barium 923; beryllium 63.2; cadmium 0.69; chromium (III) 2000; copper 0.8; lead 3000; mercury 2.1; molybdenum 32.3; nickel 130; silver 5.2; selenium 13.6; thallium 1.59; vanadium 2.24E03; zinc 5.97E03; nitrate-N/nitrite-N 40; cyanide 0.8; acetone 3.2; acetonitrile 0.282; benzene 0.028; benzyl alcohol 19.2; bromodichloromethane 3.68E-03; butanol 6.62; carbon tetrachloride 3.1E-03; chlorobenzene 0.87; dichloroethylene 0.36; 1,1-dichloroethane 4.37; 1,2-dichloroethane 2.32E-03; 1,1 dichloroethylene 5.22E-04; dichloromethane 0.022; p-dichlorobenzene 0.03; ethyl benzene 6.05; ethyl ether 9.09; hexane 96.2; MIBK 310; methyl ethyl ketone 21.8; tetrachloroethene 9.1E-03; phenol 44; toluene 7.3; 1,1,1-trichloroethane 1.58; 1,1,2-trichloroethane 4.27E-03; trichloroethylene 0.026; vinyl chloride 1.84E-04; xylenes 9.14; TPH 30; PCBs 0.21.</p> <p>Unless proper justification can be added to use other values for groundwater protection, add these values to tables B-5 and B-7.</p>	See response to comment 42. This section will be changed and soil cleanup PRGs for protection of groundwater will be added.
171.	Page B-68 to B-69 Table B-5 Page B-71 to B-78 Table B-7	Because the contamination in the BC control area came from the BC cribs the COC list for BC cribs should be used to complete the COC list for the BC control area. Isophorone, pentachlorophenol, and styrene are on the	As indicated in the response to comment #160, sampling and analysis will be performed for the BC Controlled Area. The results of that effort will determine



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178.	Page B-83 to B-87 Table B-13, B-14, B-15	The sampling scheme is too sparse for making decisions about cleanup. For instance, two samples are way too few to represent areas as large as 500 m <sup>2</sup> . Soil variability generally increases with area. Contaminant concentration variability should be used as a basis for choosing sampling densities – the software package Visual Sample Plan should be used to determine the number of samples needed for verification.	Large sites are the result of dissemination of a thin interval of radiologically contaminated material, such as windblown particulates, tumbleweed parts, and/or animal feces. Once this contaminated interval has been scraped off the site, a layer of native soil should be exposed at background concentrations. Following excavation and prior to sample collection, thorough coverage of the site surface will be accomplished through a radiological walkover survey, to provide additional verification of the completeness of the removal action. Based on subsequent discussions with Ecology, the sampling approach will be modified. For the instance cited, two multi-increment samples will be collected. Each multi-increment sample will consist of 20 randomly collected sub-samples. With this approach a total of 40 sub samples will be taken from throughout site. This sampling data along with the final radiological survey data will be sufficient to verify completeness of the removal.
179.	Page B-81 Table B-16	Add to this table the physical samples that will be taken in the BC Control Area to test for hazardous metals and PCBs. If radionuclides were dispersed by animal droppings in the BC Control area, metals from the BC	See response to comment 160.

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		cribs would accompany those radionuclides. Physical samples from the BC Control Area must be taken to demonstrate that there are no hazardous metals dispersed in the area.	
180.	Page C-16. Table C-4	Please add sufficient detail to the description of the cost estimating assumptions to explain the apparent discrepancies in unit costs between different sites. For example, the level of detail in the "C3.1 Trench Template" is insufficient for the reviewer to understand the difference in ERDF Disposal Costs in Table C-4. For example, the difference in ERDF disposal cost for Sites 200-E-29 and 200-E-53 is >50%, the difference between \$3.79 per cubic foot disposed and \$2.37 per cubic foot disposed.	Comment accepted. Costs will be re-evaluated and the text will be revised as appropriate.
181.	Appendix D	Revise the text to read: "In general, this CERCLA permitting exemption will be extended to all response action activities conducted at the 200-UR-1 OU waste sites, with the exception of the Resource Conservation and Recovery Act of 17-976 units, which will be incorporated into WA7890008967m Hanford Facility RCRA Permit." Ecology was not able to identify any RCRA TSDs assigned to the 200-UR-1 OU.	Comment accepted.
182.	Page D-3 Appendix D Section D1.2	Revise the text to read: "...specifically associated with developing risk-based concentrations for cleanup (WAC 173-340-740, "Unrestricted land use soil cleanup standards," WAC 173-340-745, "Soil Cleanup Standards for Industrial Properties," and WAC 173-340-747 "Deriving soil concentrations for ground water protection")." Update Table D-2 accordingly.	Comment accepted. Changes to the text and Table D-2 will be included.
183.	Appendix D, Table	Chapter 4 "Potential Applicable or Relevant and	Table D-2 will be revised appropriately.

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	D-2	Appropriate Requirements" of DOE/RL-98-28 lists multiple ARARs that should be include in Table D-2. Please re-evaluate potential ARARs and update Table D-2.	