



U.S. Department of Energy

0061342

~~Office of River Protection~~

P.O. Box 450
Richland, Washington 99352

JAN 19 2004

04-TPD-010

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

RECEIVED
FEB 19 2004

EDMC

Dear Mr. Wilson:

SUBMITTAL OF SINGLE-SHELL TANK (SST) SYSTEM CLOSURE PLAN REVISION 2

Enclosed is the subject submittal provided to support completion of Hanford Federal Facility Agreement and Consent Order (HFFACO) Milestone M-45-05H. Attachment 1 is the RPP-13774, Revision 2, "Single-Shell Tank System Closure Plan," which has been revised to incorporate resolution of the Notice of Deficiency (NOD) comments on Revision 1 received from Ecology in December 2003.

Attachment 2 is the certification for Attachment 1, required by HFFACO Milestone M-45-06A, "Submit a Certified (Framework) SST System Closure Plan and C-106 Waste Retrieval and Closure Demonstration Plan."

Attachment 3 is the SST System Closure Plan Comment Responses table listing each NOD comment and summarizing how each comment was resolved or dispositioned.

Attachment 4 is the revised State Environmental Policy Act Environmental Checklist that has been updated for consistency with Attachment 1.

If you have any questions, please contact me, or your staff may contact Delmar L. Noyes, Director, Tank Farms Programs and Projects Division (509) 376-5166.

Sincerely,


Roy J. Schepens
Manager

TPD: RAQ

Attachments: (4)

cc: See page 3

Mr. Michael A. Wilson
04-TPD-010

-2-

JAN 19 2004

cc w/attachs:

M. N. Jarayssi, CH2M HILL

T. L. Sams, CH2M HILL

J. Cox, CTUIR

S. L. Dahl, Ecology

K. Elsethagen, Ecology

J. Grantham, Ecology

J. L. Hensley, Ecology

S. J. Skurla, Ecology

N. Ceto, EPA

T. Martin, HAB

P. Sobotta, NPT

K. Niles, Oregon Energy

J. B. Hebdon, RL

E. M. Mattlin, RL

A. C. McKarns, RL

R. Jim, YN

Administrative Record

cc w/o attachs:

D. I. Allen, CH2M HILL

D. B. Amerine, CH2M HILL

E. S. Aromi, CH2M HILL

S. J. Bensussen, CH2M HILL

J. W. Badden, CH2M HILL

W. T. Dixon, CH2M HILL

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T. A. Lee, CH2M HILL

W. H. Pettigrew, CH2M HILL

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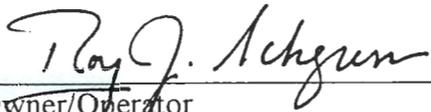
ATTACHMENT 2

**Certification for the Hanford Facility Dangerous Waste Permit Application
Documentation, RPP-13774, Revision 2, Single-Shell Tank System Closure Plan**

Consisting of 2 pages,
including the coversheet

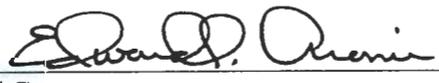
PART B CERTIFICATION [K]

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Owner/Operator
Roy J. Schepens, Manager
U.S. Department of Energy
Office of River Protection

11/19/04
Date



*Co-operator
Edward S. Aromi Jr., President and General Manager
CH2M HILL Hanford Group, Inc.

11/16/04
Date

*Co-operator under the U.S. Department of Energy, Office of River Protection Contract Number DE-AC27-99RL14047

04-TPD-010

ATTACHMENT 3

**RPP-13774, Revision 1, Single-Shell Tank System Closure Plan
Comment Responses**

Consisting of 109 pages,
Including the coversheet

**RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
Comment Responses**

Comment Number	Position in Document	Comment/Response	Comment Closure Date
General Comments			
DH-1	General Comment – entire Closure Plan	<p>Throughout most of this closure plan, general regulatory requirements have been omitted. Considering the significant nature of the SST closure process as well as the extended schedule necessary to properly accomplish closure (many years – possibly several decades), and to comply with regulatory requirements, it is necessary to include all applicable general requirements in all appropriate sections as follows: Required Notices (WAC 173-303-290), General Waste Analysis (WAC 173-303-300), Personnel Training (WAC 173-303-330), Construction Quality Assurance Program (WAC 173-303-335), Procedures to Prevent Hazards (WAC 173-303-310, 320, 340), Contingencies and Emergencies (WAC 173-303-350, 360), Facility Reporting/Recordkeeping (WAC 173-303-390, 395), Precautions for Ignitable, Reactive, or Incompatible Wastes [WAC 173-303-395(1)], Other State and Federal Regulations [WAC 173-303-395(2)], Storage Time Limit for Impoundments/Piles [WAC 173-303-395(5)], Labeling for Containers/Tanks [WAC 173-303-395(6)], Air Emission Standards – WAC 173-303-640(11) describes the Air requirements as 40 CFR Subparts AA, BB, CC incorporated by reference in WAC 173-303-690 through 692. These requirements could be consolidated into one section of each tier. It is expected that each requirement will be described to the maximum extent possible in the upper tiers, with the lower tiers providing additional specific details while referencing requirements previously described in the upper tiers.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #9 (Ecology)</p> <p>Closed</p>
BBK-1	All Tiers	<p>The title of the “FRAMEWORK PLAN FOR SINGLE-SHELL TANK SYSTEM CLOSURE” is not used consistently throughout the different tiers of the document (i.e., Tier II, Section C1.2, first paragraph refers to the Tier I document as “Framework Plan for Closure of the Single-Shell Tank System.” Search all three Tiers for inconsistent titles and replace with the correct title.</p> <p><i>Response: All tiers searched and replaced, where appropriate, with the correct title.</i></p>	<p>Action Item #1 (S Muns)</p> <p>Closed</p>
Framework Plan for Single-Shell Tank Closure			
DH-2	General Comment – Tier 1	<p>Revise the “Framework” (Tier 1) portion of the closure plan to include a Glossary. Include all terms/words used in all three tiers as well as attachments/addendums of this closure plan that have a unique meaning relative to regulations and Hanford. Move Section 1.1.1 “Key definitions” into the glossary as well as all other definitions throughout the closure plan.</p>	<p>Action List #3 (J von Reis)</p>
BR-1	General Comment	<p>This large multi-tiered document has no index. An index would be extremely helpful. If it is not possible to provide an index then much more cross-referencing to other sections of the document is needed.</p> <p><i>Response: Comment noted. Attempts were made in latest edits to cross-reference between documents.</i></p>	<p>CLOSED 12/12/03</p>

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-1	General Comment – Tier 1	<p>While the Tier 1 document acknowledges that contaminated groundwater is to be addressed during closure of the SST system, the documents do not adequately cite WAC 173-303-645. The Tier 1 document estimates a volume of leaked waste from the SSTs as approximately 1,000,000 gallons. As such WAC 173-303-645 is applicable. The Tier 1 document correctly (as per TPA Section 6.3) identifies the applicable final closure performance standards of WAC 173-303-610. WAC 173-303-610(3)(a)(vi) requires the closure plan include: “a detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure performance standards, including, but not limited to, ground water monitoring, leachate collection, and run-on and run-off control.” The Tier 1 document does not identify how applicable groundwater monitoring requirements will be satisfied. While the Tier 1 document identifies (see Section 1.1.4) that corrective action will occur via an integrated Site Wide permit action via RCRA corrective action permit conditions, the document does not identify that applicable groundwater monitoring requirements are being or will be met. The Tier 1 document must include an identification that the groundwater monitoring requirements of WAC 173-303-645 are applicable as closure performance standards. Provide the following additional permit language: “Groundwater monitoring requirements of WAC 173-303-645 will be satisfied as part of SST component and SST system closure actions. Tier 2 and 3 permit conditions will specify how SST component and SST system closure actions will ensure that groundwater monitoring requirements are satisfied. Specifically, and at a minimum, compliance groundwater program monitoring requirements of WAC 173-303-645(10) will be satisfied for Waste Management Areas (WMAs) A-AX, B-BX-BY, C, S-SX, T, TX-TY, and U.” (AH)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #4 (ORP/CH)</p> <p>Closed</p>
AH-2	General Comment – Tier 1	<p>Generally, and throughout the entire Tier 1 document, all references to CERCLA Records of Decision (RODs) must distinguish between “interim” and “final” RODs. The distinction is necessary due to the differences in legal standing between “interim” and “final” RODs. (AH)</p> <p><i>Response: Text added, where appropriate.</i></p>	<p>Action List #9 (S Muns)</p> <p>Closed</p>
AH-3	General Comment – Tier 1	<p>Due to the Tier 1 document’s lack of acknowledgement that WMA-specific groundwater monitoring is a performance standard (i.e., a regulatory requirement), it is recommended that an additional section be added to the Tier 1 document which describes that WMA-specific groundwater monitoring will occur at the WMA point of compliance (as defined by WAC 173-303-645(6)) during the active life of the WMA and during postclosure. Provide the following additional permit language: “During the active life of the WMAs and during post-closure, groundwater monitoring will occur on a WMA-specific basis. WMA-specific monitoring will include WMA-specific point of compliance monitoring as defined by WAC 173-303-645(6).” (AH)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #4 (ORP/CH)</p> <p>Closed</p>

**RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
Comment Responses**

Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-2	Section 1.0, second paragraph	<p>The text states that "As of May 2002, the SSTs contained 125,700,000 L (33,205,000 gal) of radioactive mixed waste." Can this be updated to a more current date/volume?</p> <p><i>Response: Volume and date updated as suggested.</i></p>	<p>CLOSED 11/18/03</p> <p>Action Item #2 (J von Reis)</p>
BBK-3	Section 1.0, fifth paragraph	<p>The text refers to the "dangerous waste portion of the <i>Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste</i>, Rev. 7 (Ecology 2001, hereafter referred to as the Site-Wide Permit)." The title of the permit needs to be changed to "dangerous waste portion of the <i>Hanford Facility Resource Conservation and Recovery....</i>"</p> <p><i>Response: Suggested text added.</i></p>	CLOSED
MJB-1	Sec. 1.1, p. 1-3, ¶ 1	<p>Sentence 2 states that SST Closure Plan states that a component closure activity plan for tank 241-C-106, the first component closure activity in the SST system, is included in RPP-13774, Rev. 1 under WAC 173-303-610. By the definition in WAC 173-303-040, 241-C-106 is a component (i.e., "the tank or ancillary equipment of a tank system"). Closing that tank must therefore also comply with WAC 173-303-640(8) for tank systems or 173-303-665(6) for landfills. Please specify the appropriate regulatory citation.</p> <p><i>Response: Suggested text added.</i></p>	Closed
MJB-2	Sec. 1.1, p. 1-3, ¶ 2	<p>A statement is made that final decisions regarding groundwater may be deferred until final closure of the Central Plateau. The statement implies that no actions will be taken to clean up the groundwater, monitor the path of contaminants, or reduce risk. That statement is somewhat countered on p. 1-7, in Section 1.1.1.9, where an explanation is added about final institutional controls possibly being added after the groundwater operable units in the vicinity are remediated. Ecology regulations require the owner or operator to close a facility to meet the closure performance standards in WAC 173-303-610(2), which includes the need to control, minimize or eliminate...post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, ground water, or the atmosphere. Action to meet the performance standards cannot be delayed until the closure of the Central Plateau. Please state that groundwater will be remediated and monitored as part of tank closure effort.</p> <p><i>Response: Suggested text added.</i></p>	Closed
BBK-4	Section 1.1.1.1	<p>Change definition 1.1.1.1 to read "Component. <i>Component</i> is defined in WAC 173-303-040 as either the tank or ancillary equipment of a tank system. The meaning of the word 'component' is being expanded in this SST system closure plan to mean a subunit of a dangerous waste management unit associated with the SST"</p> <p><i>Response: Suggested text added.</i></p>	CLOSED 10/29/03

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-3	Sec. 1.1.1.2, p. 1-5	<p>It is unclear why the authors chose to coin a new term "component closure" to describe closure activities that may take place in one part of a tank farm while the other other parts continue to store waste. The USDOE maintains that the single shell tanks are out of service; however, Ecology has determined that they are active, non-compliant tank storage systems. They will be closed because the USDOE determined that they will not be upgraded to meet tank standards. The WAC contains a definition for "partial closure" in WAC 173-303-040 that appears to address facilities that will not be permitted as compliant units and that describes the activities planned. Replace component closure with "partial closure".</p> <p><i>Response: Ecology and DOE have agreed to use of term "component Closure" per telecon with M. Brown on 12/15/03.</i></p>	<p>CLOSED 12/10/03</p> <p>Action List #40</p>
DH-3	Section 1.1.1.2 Page 1-5 and elsewhere throughout the closure plan	<p>Lines 20-22. Revise the text to include other significant/ordinary "considerations". Provide additional text discussing the following: high uncertainty of data in early stages of WMA closure activities, limits of technology, placing component in a holding status following a closure action until enough data is generated through other closure actions to reduce the high uncertainty. Basically, unless clean closure standards are met, insufficient data exists to allow final actions during early stages of WMA closure activities. Also provide text indicating that all closure activities must be approved by Ecology. Revise the document to reflect this concept.</p> <p><i>Response: Partially accept. Will add text indicating that all closure activities must be approved by Ecology.</i></p>	Closed
BBK-5	Section 1.1.1.3	<p>Change definition 1.1.1.3 to read "Corrective Action. <i>Corrective action</i> means the process taken to address past and potential future tank system waste releases to the environment as necessary to protect human health and the environment, including from solid waste management units, and areas of concern at the facility, and including releases that have migrated beyond the facility boundary....."</p> <p><i>Response: Suggested text added.</i></p>	Closed
MJB-4	Sec. 1.1.1.3 Corrective Action, pp. 1-5 to 1-6	<p>The text states that soil in the B/BX/BY, S/SX, and TX/TY waste management areas is being investigated for possible corrective actions. Further in text (see Sec. 1.1.3), the commitment is made that the RCRA process (RFI/CMS) will be used to document an alternatives analysis, but that soil cleanups may be imposed through closure plans independent of corrective action authority. Please cite WAC 173-303-645(1)(c), for releases from a regulated unit after closure.</p> <p><i>Response: Added text and WAC 173-303-645 cite to Section 1.1.1.3</i></p>	Closed
MJB-5	Sec. 1.1.1.4 Dangerous Waste Management Unit, p. 1-6	<p>Ecology notes that the examples of equipment listed as ancillary do not include overground transfer lines specifically. Those lines are used in lieu of direct contact pipelines; however, they can be considered as portable because they can be decontaminated and moved among the tank farms. Please ensure that pipelines considered ancillary equipment include overground transfer lines.</p> <p><i>Response: Added text to include overground transfer lines in Section 1.1.1.4</i></p>	CLOSED

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-6	Sec. 1.1.1.5 Dangerous Waste Management Unit, p. 1-6	<p>Explanation is made that a dangerous waste management unit is comprised of a tank farm or group of tank farms that form a contiguous unit. Ecology notes that the definition given here does not address the stipulation in WAC 173-303-040 that such a unit is "a contiguous area of LAND on or in which dangerous waste is placed or the largest area in which there is a significant likelihood of mixing dangerous waste constituents in the same area". The absence of discussion of the land on/in which the tanks and ancillary equipment should be revised. Ecology expects activities in the tank farms DWMU to include corrective actions to clean up releases to the soil, to install groundwater treatment systems, and to eventually install long-term monitoring equipment.</p> <p><i>Response: Added suggested text to 1.1.1.5.</i></p>	Closed
BBK-6	Section 1.1.1.7	<p>Change definition 1.1.1.7 to read "Final Closure of the SST System. <i>Final closure of the SST system</i> means the closure of all dangerous waste management units within the facility in accordance with all applicable closure requirements so that dangerous waste management activities are no longer conducted at the SST-system facility. For the purposes of this <i>SST System Closure Plan</i> and contingent closure and postclosure plan, the SST system is regarded as the "facility." Final closure of the SST system will occur after all components of the SST system have been added to the <i>SST System Closure Plan</i> portion of the Site-Wide Permit and all closure actions for WMAs and components have been completed.</p> <p>At final closure, all closure activities will be completed and WMA/component postclosure care activities will be implemented. Postclosure care activities will may include actions such as monitoring or inspection of the component to ensure continued isolation."</p> <p><i>Response: Text revised as suggested.</i></p>	CLOSED
BBK-7	Section 1.1.1.8	<p>Change definition 1.1.1.8 to read "SST System Postclosure Permit. <i>SST postclosure permit</i> means the SST system portion of the Site-Wide Permit that remains will be issued after final closure of the SST system should removal or decontamination of all SST components not be achieved. Actions required to comply with the postclosure provisions of WAC 173-303-610 and -665(6) will be contained in this permit"</p> <p><i>Response: Text revised as suggested.</i></p>	CLOSED

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-8	Section 1.1.1.9	<p>Change definition 1.1.1.7 to read “Postclosure Actions. <i>Postclosure actions</i> mean actions taken after final closure of a WMA or closure of the entire SST system, if with contaminants are left in place that require postclosure monitoring and maintenance. Final-postclosure actions may include performing maintenance activities, and developing long-term monitoring systems. Some final-postclosure actions may not be implemented until after a set of WMAs or all WMAs are completed closed. For example, final institutional control requirements may not be developed until after all SST components are closed and soil and groundwater operable units in the vicinity are remediated. Final-postclosure actions may also include deed restriction and administrative controls, groundwater monitoring, and cover maintenance. Postclosure requirements actions will be detailed in WMA postclosure action plans. Postclosure requirements actions pertaining to the entire SST system on a unified basis or to system components that exist outside WMAs will be detailed in the Framework Plan. Final-post-closure-monitoring-must-be implemented after development. It is not clear to Ecology why ‘postclosure actions’ are being differentiated from ‘final postclosure actions’ and what the difference is. If DOE wants to differentiate between the two a separate definition for ‘final postclosure actions’ should be developed.</p> <p><i>Response: Text revised as suggested.</i></p>	CLOSED
DH-4	Section 1.1.1.9, Page 1-7	<p>Lines 6-21. A contingent postclosure plan must be submitted with this closure plan application. This requirement was stated to some degree in the Rev. 0 NOD comments #43 and #115. The request at that time was to supply a “framework” postclosure as part of the Rev 1 closure plan at the tier 1 level. The current text states that SST system postclosure requirements will be detailed in the Framework Plan. Section 8.0 essentially provides no additional detail beyond the Rev. 0 version on which the previous comments are based. This document also indicates that separate postclosure plans will be developed for each WMA. Provide additional detail as well as a schedule for supplying postclosure plans.</p> <p>Requirement: WAC 173-303-640(8)(c), WAC 173-303-610(8), etc.</p> <p><i>Response: Partially accept. Issue of contingent postclosure is contained in WMA C Closure Action Plan, Section C8.1 and discussed in this plan in Sections 1.4.1 and 8.0. SST Postclosure requirements are stated in Section 8 of this plan (paragraph 2). Detailed postclosure planning is conceptual at this point and therefore were assigned as a parking lot issue.</i></p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Closed</p> <p>Parking Lot #10 (DH)</p> <p>CLOSED</p>
BBK-9	Section 1.1.2, general	<p>This section should include some text stating that the incorporation of WMAs and component closure actions into the SST System Closure Plan will be conducted in accordance with WAC 173-303-830(4).</p> <p><i>Response: Text inserted “New information pertinent to making closure decisions will be provided as necessary in accordance with the WAC 173-303-830 permit modification process.” in Section 1.1.2.</i></p>	<p>CLOSED</p> <p>Action Item #4 (BBK)</p>
DH-5	Section 1.1.2, Page 1-7	<p>Line 35. Replace “may” with “will”. (See Rev. 0 NOD #25)</p> <p><i>Response: Accept.</i></p>	Closed

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Comment Responses

Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-10	Section 1.1.2, second paragraph	<p>Modify the existing text to read "Final closure of the system will be accomplished on a WMA basis. No individual component closures will be deemed final before until closure of the associated WMA. Each WMA closure must be preceded by a risk assessment."</p> <p><i>Response: Accept. Text revised as suggested.</i></p>	CLOSED 10/29/03
BBK-11	Section 1.1.3	<p>WAC 173-303-610(2)(b)(i) and 640(8)(a) clearly require soil cleanup during closure. The Hanford Site Wide RCRA Permit Condition II.Y.2.c states that the Permittee will "document that the activities completed under closure and/or post-closure satisfy the requirements for corrective action; or if the activities completed under closure and/or post closure care do not satisfy corrective action requirements, identify the remaining corrective action requirements and the schedule under which they will be satisfied....." If the Permittee intends to complete this work under RPP or CPP processes a reference to the unit and a schedule must be provided. Revise this section accordingly.</p> <p><i>Response: Text revised as suggested.</i></p>	Closed 10/29/03
DH-6	Section 1.1.3 Page 1-8, Lines 18-23	<p>Hold – Corrective Action Issue -----</p> <p><i>Response: Issue resolved by D. Heggen.</i></p>	Closed
AII-4	Section 1.1.4	<p>Section 1.1.4 text states: "Groundwater actions associated with SSTs will be conducted within the integrated, long-term management approach set forth in HFFACO Milestone M-45 and the associated monitoring requirements of Milestone M-24." It should be noted that Milestone M-24 provides a schedule for groundwater monitoring well installation and does not provide a schedule by which groundwater monitoring networks will become compliant with WAC 173-303-645 standards. Include in Section 1.1.4 an identification that groundwater monitoring requirements of WAC 173-303-645 will be satisfied as part of SST component and SST system closure actions.</p> <p>AH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	Parking Lot #4 (ORP/CH) Closed
AH-5	Section 1.1.4	<p>Section 1.1.4 text states: "CERCLA Records of Decision (RODs) are accepted for integration within the closure process." To date, no final groundwater RODs have been issued, only "interim" RODs. As such, the text should identify if "interim" RODs are also accepted for integration within the closure process. Furthermore, it is recommended that the Tier 1 document identify, if available, the anticipated date of final groundwater operable unit ROD issuances for each groundwater operable unit that each WMA resides over. Revise the document to reflect the above concerns.</p> <p>AH</p> <p><i>Response: Added text to Section 1.1.4.</i></p>	CLOSED
AII-6	Section 1.1.4	<p>Section 1.1.4 does not identify when postclosure groundwater monitoring will be initiated. As the Tier 1 document provides for SST component and SST system closure actions, provide schedule information in the Tier 1 document that specifically defines when postclosure groundwater monitoring will be initiated for SST components and for SST systems. AH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	Parking Lot #4 (ORP/CH) Action List #10 (AH) CLOSED

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
Comment Responses

Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-7	Section 1.1.4	<p>Section 1.1.4 identifies TPA Milestones M-45-51, -52, -53, -54, and -55 but does not provide a description of the RCRA subpart S corrective action process. Revise the Milestone M-45 flow chart to show how/when the RCRA corrective action process for characterizing the SST releases are placed in the Tier 1 document. In addition, include in this section an identification of where each WMA (U, S-SX, B-BX-BY, T, and TX-TY) is at on the Milestone M-45 RCRA corrective action process flow chart (i.e., the status). AH</p> <p><i>Response: Section 1.1.4 text revised.</i></p>	<p>CLOSED 12/10/03</p> <p>Action List #11 (Freestone)</p>
BBK-12	Section 1.1.5	<p>Please provide additional explanation, and an example, for the statement "Closure actions will not be subordinated to long-term stewardship requirements." <i>Response: Aforementioned sentence was deleted.</i></p>	CLOSED
MJB-7	Sec. 1.1.5 Process for Developing SST System Postclosure Permit Conditions, p. 1-9	<p>An assertion is made that closure actions "will not be subordinated to long-term stewardship" but no further explanation is given. Long-term stewardship is no longer the responsibility of Environmental Management within the USDOE. Per the information provided to the U.S. Congress in the FY 2004 Congressional Budget for the Department of Energy (p. 179, February 2003), the Office of Legacy Management will assume that responsibility (i.e., long-term surveillance and maintenance, long-term pump and treat operations). Post closure treatment of groundwater and post-closure monitoring are considered PART of long-term stewardship. Explain what is meant by the statement made concerning subordination; it appears to conflict with the information provided to the 108th Congress by the USDOE. <i>Response: Deleted last sentence in Section 1.1.5.</i></p>	Closed
AH-8	Section 1.1.5	<p>Section 1.1.5 states: "The SST system postclosure permit conditions in the Site-Wide Permit may be developed on a WMA-by-WMA basis." As WMA-specific groundwater monitoring and post-closure care conditions will differ from WMA to WMA, it is appropriate that postclosure permit conditions will be developed on a WMA-by-WMA basis. Provide the following text : "The SST system postclosure permit conditions in the Site-Wide Permit will be developed on a WMA-by-WMA basis. Postclosure care for each WMA will be performed to satisfy WAC 173-303-610(7) requirements. Postclosure care will be performed on a WMA-by-WMA basis and, at a minimum, will include: groundwater monitoring and reporting as required by WAC 173-303-645 and -665, and maintenance and monitoring of waste containment systems." AH <i>Response: Suggested text inserted at the end of Section 1.1.4.</i></p>	CLOSED
AH-9	Section 1.1.5	<p>Include text identifying that groundwater monitoring conducted during postclosure will be performed in accordance with performance standards of WAC 173-303-645 and at WMA-specific points of compliance as defined by WAC 173-303-645(6). <i>Response: Suggested text inserted at the end of Section 1.1.4 as mentioned in Comment AH-8.</i></p>	CLOSED

RPP-13774, Rev. 1 Single-Shell Tank System Closure Plan
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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-7	Section 1.1.5, Page 1-9	Lines 24-25. Revise the text to clarify the issue of subordination of closure actions. <i>Response: Accept. Revised per response to comment BBK-12.</i>	Closed
DH-8	Section 1.2.1, Page 1-9	Line 30. Delete the word "more". This list should be a complete list of components and reflect all components known to DOE at this time. If this is not a "complete, accurate and true" listing of system components, then revise the text to include a near-term schedule to provide a complete list of SST system components. Requirement: WAC 173-303-610(3) <i>Response: Accept. Deleted "more"</i>	Closed
DH-9	Section 1.2.1, Pages 1-9, 1-10	Missing is a scale diagram of all components relative to WMA boundaries and adjacent facilities. Provide a schedule to provide diagram(s). This could be accomplished on a WMA by WMA basis. <i>Response: Comment will be resolved through development of permit conditions</i>	Parking Lot #9 (Ecology) Action List #19 (J von Reis) CLOSED
DH-10	Section 1.2.1, Page 1-13	Table 1-3. The total waste volume described for transfer piping is listed as 0 gallons of solid and 1,200 gallons of liquid waste (155 cubic feet). That equates to about 600 feet of 3 inch pipe filled/plugged with waste. This seems far too low an estimate of waste contained in old abandoned transfer pipelines. Explain/Revise this estimate. Additionally, no inventory estimate is provided for waste leaked to the vadose zone. Also provide inventory estimates (in gallons) for waste leaked to the soil/vadose zone. <i>Response: Table 1-3 has been revised and inserted into document.</i>	CLOSED Action List #20 (J von Reis)
DH-11	Section 1.3 Page 1-13, and throughout the document as appropriate	Provide additional text as follows: Any closure action on SST system components or portions of WMAs that exist outside of the WMA boundary/fenceline must comply with all requirements/approvals set forth in this closure plan and addendums/attachments to this plan. <i>Response: Accept. Will revise text as suggested.</i>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-10	Section 1.3.1	<p>This section describes groundwater monitoring as an “integration opportunity”. While there may be opportunities for integration of the RCRA corrective action remedy design and risk assessment, groundwater monitoring requirements of WAC 173-303-645 represent waste management area-specific closure performance standards and should not be considered standards to be achieved via integration actions that are occurring outside of the closure plan or on different schedules. In other words, the groundwater monitoring requirements of WAC 173-303-645 represent closure performance standards that must be satisfied via the SST system closure process and not deferred to a process that addresses groundwater monitoring across the Central Plateau. Section 1.3.1 text states: “Postclosure monitoring needs should be organized by whole regions, not individual waste sites.” This is an inappropriate statement in the Tier 1 document and does not satisfy WAC 173-303-645 or -610 performance standards. Revise the permit language for Tier 1 actions to include the following: “Groundwater monitoring to satisfy an active and a postclosure status SST component(s) and/or system will be satisfied on a WMA-by-WMA basis. Specifically, and at a minimum, groundwater monitoring requirements of WAC 173-303-645 will be satisfied at the following SST WMAs: A-AX, B-BX-BY, C, S-SX, T, TX-TY, and U. WAC 173-303-645(10) compliance groundwater program monitoring requirements will be satisfied while the SST System WMAs are active and WAC 173-303-645(11) corrective action groundwater program monitoring requirements will be satisfied for postclosure groundwater monitoring.”</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #4 (ORP/CH) CLOSED</p>
BBK-13	Section 1.2.1, last paragraph	<p>Delete the sentence “There is, however, considerable potential for integration of SST system closure activities with closure of these other past-practice sites and operable units, as described in Section 1.3 below.” See comment 18 below.</p> <p><i>Response: Text deleted as suggested.</i></p>	CLOSED
BBK-14	Table 1-1 and 1-2	<p>Table 1-1 should include all constituents in the XXXX DQO. Table 1-2 should be deleted from the Tier I document. The COPC list should be developed on, at a minimum, a WMA by WMA basis. The Tier 1 document should include text stating that the COPC list will be developed during the DQO process for each WMA.</p> <p><i>Response: Inserted “Partial” to title of Table 1-1 and deleted Table 1-2.</i></p>	CLOSED
BBK-15	Table 1-1	<p>Why is the quantity of Strontium reported in “kg” rather than “Ci”? Is this an error?</p> <p><i>Response: Quantity for Strontium changed from “kg” to “Ci”.</i></p>	CLOSED
BBK-16	Table 1-3	<p>Include a column for “Quantity.” Provide information on how many MUSTs, how many Vault Tanks, etc. the waste volume is distributed over.</p> <p><i>Response: Table 1-3 revised to include “Quantity” and information inserted as suggested.</i></p>	<p>CLOSED Action Item #5 (J von Reis)</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-10	Sec. 1.3.1, Integration Opportunities, p. 1-13, ¶ 2	<p>Sentence 2 asserts that closure actions under CERCLA Records of Decision can address RCRA and HWMA requirements and Site-Wide Permit standard condition II.Y.2. While that may be one possible method by which cleanup may be accomplished, Ecology will require cleanup of tank farm facilities to meet the performance standards in WAC 173-303-610(2). Should the USDOE decide to integrate the SST closures with CERCLA actions, Ecology will require that closure and post-closure activities be accomplished under the RCRA and the HWMA as implemented in the State's Dangerous Waste Regulations, WAC 173-303. Modify the sentence to so state.</p> <p><i>Response: Added reference to -610 performance standards to last sentence of paragraph two of Section 1.3.1.</i></p>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-17	Section 1.3.1	<p>Revise text to read "Closure of the SST system will take place within the same time frame as other planned Central Plateau closure actions. These other closure actions involve facilities and operable units currently regulated under both RCRA and CERCLA. Certain facilities and operable units listed for closure are geographically adjacent to parts of the SST system. Closure of these facilities and units may require activities substantively similar to SST closure actions. Additionally, a CERCLA final ROD will ultimately be developed for the Hanford Site 200 Areas. As closure actions proceed for the SST system, achievement of protectiveness pursuant to CERCLA and ARARS, for all hazardous substances, must be considered.</p> <p>The existence of proximate facilities scheduled for closure in the same general time frame as the SST system and involving similar closure activities creates a potential to accelerate cleanup, increase efficiency, and avoid both duplicative effort and regulatory conflicts by integrating closure actions where feasible. While SST system closure must ultimately satisfy RCRA and HWMA requirements, the HFFACO and the Site-Wide Permit standard condition II.Y.2. provides provisions for the coordination of RCRA and CERLA activities. In some instances closure actions accomplished in accordance with CERCLA RODS will can fulfill address RCRA and HWMA requirements. and Site-Wide Permit standard condition II.Y.2.</p> <p>Several specific opportunities for integrated closure and postclosure actions are apparent.</p> <ul style="list-style-type: none"> • Delete 7 bullets <p>DOE, Ecology, and EPA are presently identifying and evaluating opportunities for integration of closure and postclosure activities on the Central Plateau through the Central Plateau regional strategy effort. As specific opportunities are defined identified for integrating actions involving the SST system, DOE will, in accordance with Site Wide Permit standard condition II.Y.2., modify the Site Wide Permit, to incorporate closure integration opportunities into corresponding proposals into future modifications of this plan and into subsequently submitted WMA closure action plans and component closure activity plans."</p> <p>Ecology is requesting a commitment for integration be included in the Tier I closure plan, but no specific information. If specific information is provided Ecology will have to include the proposals in a compliance schedule to ensure the documentation is submitted on schedule. When specific integration opportunities are identified they should be included in the Tier II or Tier III documents.</p> <p><i>Response: Text revised.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-11	Sec. 1.3.1, Integration Opportunities, p. 1-14	<p>Bullet 3 Groundwater Monitoring, Protection, and Risk Assessment states that a common and consistent risk assessment is need of collective groundwater impacts. Per information provided by the US EPA Office to the Hanford Advisory Board, the groundwater cumulative impacts will not be addressed until after 2008 (see Letter, Nicholas Ceto to Todd Martin, "Response to Hanford Advisory Board Advice #148 on the Revised Draft Hanford Solid Waste Environmental Impact Statement," dated August 20, 2003). Please explain how those assessments will be incorporated into the SST closure plans.</p> <p><i>Response: Bulleted text was removed per BBK-17.</i></p>	Closed per resolution of parking lot item #1
MJB-12	Sec. 1.3.1, Integration Opportunities, p. 1-14	<p>Bullet 6 Regulatory Efficiency, last sentence, states that use of a single Record of Decision for each cleanup zone would create building blocks for completing the overall CERCLA cleanup, which would include delisting. Ecology asks that the USDOE provide information on when the USDOE proposes to delist the 200 Areas and how that action will affect long-term groundwater remediation and monitoring required for an SST Tank Farm that will be closed as a land-based disposal facility by WAC 173-303-610(7) and 173-303-665.</p> <p><i>Response: Bulleted text was removed per BBK-17.</i></p>	Closed per resolution of parking lot item #1
MJB-13	Sec. 1.3.1, Integration Opportunities, p. 1-14 and 1-15	<p>Bullet 7 Closure of SST System Components Outside of WMAs states that current plans for closure of tank and non-tank pipelines, transfer lines, and related components under CERCLA. Ecology has not surrendered its regulatory authority to regulate the cleanup of the Central Plateau DWMA's to date. As stated in the Hanford Federal Facility Agreement and Consent Order, Article IV, paragraph 17, closure of facilities must comply with both CERCLA (42 USC Sec. 9601 et seq. HWMA corrective action requirements (42 USC Sec. 6924 (u) and (v) and Sec. 3008(h) 42 USC Sec. 6928(h), and meet or exceed all applicable or relevant and appropriate federal and state requirements as required by Sec. 121 of CERCLA, 42 USC Sec. 9621. Releases covered by the HFFACO will be covered by RCRA, RCW Ch 70.15 and the Model Toxics Control Act, which are to be incorporated as ARAR's. Please add the reference to the provisions in Article IV, paragraph 17 after 2.</p> <p><i>Response: Bulleted text was removed per BBK-17.</i></p>	Closed per resolution of parking lot item #1
DH-12	Section 1.3.2, Figure 1-4	<p>Revise the "Planning and Strategy Documents/Processes" box on Figure 1-4 (for the RCRA/HWMA line) as follows: "RCRA/HWMA requirements and process". Clearly, the RCRA/HWMA performance standards are an important element of planning and strategy documents and processes. This comment is retracted if the Figure is deleted.</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	Hold pending figure deletion.

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-14	Figure 1-4, pp. 1-17/1-18	<p>Please note: the USDOE declared that post-closure actions will be considered part of long-term stewardship in the USDOE FY 2004 budget submitted to Congress in February 2003. The time line as shown to the right of <i>Major Central Plateau Activities</i> is therefore incorrect. Please insert post-closure actions parenthetically after Long-Term Stewardship.</p> <p>Please correct the box entitled <i>NEPA/SEPA/Processes</i> by changing "Significance determination" to "Threshold Determination" to reflect the requirement in WAC 197-11-310 and the process involved in WAC 197-11-330.</p> <p>Please add "NEPA ROD" in the same box to reflect completion of the NEPA cycle.</p> <p>Please reword "NEPA and SEPA EIS" to "NEPA EIS meeting SEPA requirements" to reflect the preparation of a NEPA EIS by the USDOE and the cooperation or adoption by Ecology.</p> <p>Please correct the box labeled <i>Integration Decision Documents/Processes</i> to add NEPA ROD. The USDOE completes the NEPA process by issuing an ROD that describes the alternative the agency selects after the Final EIS is published.</p> <p>In the box labeled Integration Steps, please revise "Demonstrate regulatory compliance – ensure satisfaction with RCRA/HISWA/RCW/MTCA (Initiative 97)" to reflect HFFACO Article IV, ¶ 17.</p> <p>Time line for <i>Component Closure Activities</i>: see comment on <i>Major Central Plateau Activities</i>.</p> <p><i>Response: Bulleted text was removed per BBK-17.</i></p>	Closed per resolution of parking lot item #1
AH-11	Section 1.3.2, Figure 1-4	<p>"Groundwater monitoring" as a "candidate integration element" must be removed from Figure 1-4. Groundwater monitoring represents WAC 173-303-610 and -645 performance standards applicable to each SST WMA. As such, groundwater monitoring is WMA-specific and should not be identified as a "candidate integration element". Revise the document to address this concern.</p> <p>AII</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED
AH-12	Section 1.3.2, Figure 1-4	<p>Add "Active WMA groundwater monitoring" and "postclosure groundwater monitoring" to the "SST System Closure" box on Figure 1-4. The Tier 1 document does not appear to acknowledge that WMA-specific groundwater monitoring is a performance standard (i.e., a regulatory requirement).</p> <p>AII</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED
AH-13	Section 1.3.2, Figure 1-4	<p>Revise the "SST System Closure" box on Figure 1-4 to state "System components to be addressed include:" rather than "System components to be closed include:". "Closure" of "groundwater" that is already contaminated from releases is not administratively or regulatorily correct.</p> <p>AH</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-14	Section 1.3.2, Figure 1-4	<p>Delete the words “- integrated with other Central plateau GW monitoring” from the “SST System Postclosure State” box on Figure 1-4. Again, the Tier 1 document does not appear to acknowledge that WMA-specific groundwater monitoring is a performance standard (i.e., a regulatory requirement). Groundwater monitoring during the active life of the WMA and during post-closure is an action that should occur specific to the WMA. In other words, groundwater monitoring conducted during the active life of the WMA and during postclosure is not an activity that should be integrated. Clearly, groundwater monitoring is required to be conducted at the WMA “point of compliance” as defined by WAC 173-303-645(6). Postclosure groundwater monitoring is a WMA-specific activity, a performance standard, and a regulatory requirement.</p> <p>AH</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED
AH-15	Section 1.3.2, Figure 1-4	<p>Due to the Tier 1 document’s lack of acknowledgement that WMA-specific groundwater monitoring is a performance standard (i.e., a regulatory requirement), revise the “Central Plateau Postclosure State” box on Figure 1-4 to identify that “WMA-specific” groundwater post closure monitoring will be ongoing. Specifically, revise the wording regarding groundwater postclosure monitoring to read: “WMA-specific postclosure monitoring ongoing”.</p> <p>AH</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED
AH-16	Section 1.3.2, Figure 1-4	<p>Revise the “Planning and Strategy Documents/Processes” box on Figure 1-4 (for the RCRA/HWMA line) as follows: “RCRA/HWMA requirements and process”. Clearly, the RCRA/HWMA performance standards are an important element of planning and strategy documents and processes.</p> <p>AH</p> <p><i>Response: Partially accept. Figure 1-4 has been removed from the closure plan.</i></p>	CLOSED
BBK-18	Figure 1-4	<p>Delete Figure 1-4, see comment 18.</p> <p><i>Response: Figure has been deleted.</i></p>	CLOSED Parking Lot #1 resolved (J von Reis)
BBK-19	Section 1.3.2	<p>Ecology requests the deletion of this section, along with the figure it refers to.</p> <p><i>Response: Section and figure has been deleted.</i></p>	CLOSED
DII-14	Section 1.3.3, Pages 1-19 through 1-21	<p>Revise the section number for this section to Section 1.4 and adjust the subsequent sections to accommodate or move to section 6.0 as a subsection. Relative timeline information should be part of the required schedule information, not integration.</p> <p>DII</p> <p><i>Response: Partially accept. Section number has been revised to 1.3.1.</i></p>	Closed Parking Lot #1 resolved (J von Reis)

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-20	Section 1.3.3, first paragraph	<p>Please revise the text to read: "The SST system includes seven WMAs. Closure of the SST system requires closing the WMAs and conducting closure activities for individual system components within the WMAs. DOE will develop WMA closure action plans and component closure activity plans, or alternate decision documentation such as corrective measures studies or CERCLA RODs referenced by the Site Wide Permit, to describe how the components or groups of components will be disconnected, dismantled, decontaminated, removed, and/or stabilized."</p> <p><i>Response: Partially accept. Inserted "(final and interim) upon approval through incorporation into" after CERCLA ROD.</i></p>	CLOSED
DS-1	Page 1-20 line 13	<p>If the 2nd column represents the period during which WMA closure activities are completed; on Page 1-19, state the 1st column represents intervals during which closure activities occurs. Clarify; these two statements are not in agreement.</p> <p><i>Response: Clarified third column description in Section 1.3.3.</i></p>	Closed
MJB-15	Sec. 1.3.3 Relative Timeline for WMA Closures, p. 1-20, ¶ 2	<p>In sentence 2, the period during which WMA closures begin is said to occur when all of the SSTs have been retrieved, isolated and filled. The tank closure EIS, which evaluates clean closure versus landfill closure has not been issued for public comment; therefore, the USDOE is premature in assuming that WMA closures will begin after the SSTs are closed as landfills. The USDOE must complete the NEPA process then select the alternative to be implemented AFTER the analyses of impacts in the EIS are completed, the document has released for public comment, and a Record of Decision has been issued. Federal agencies may not make irretreivable and irreversible commitments of resources until the NEPA process is complete. Please add to the information in Figure 1-5 to show a typical schedule for closure of a WMA after clean closure of a tank.</p> <p><i>Response: Added text to indicate that WMA closure occurs when SSTs, soil, and ancillary equipment component closures are completed in accordance with WAC 173-303-610(2) in fifth paragraph of Section 1.3.3 and added text regarding assumption that clean closure under WAC 173-303-640(8)(a) is not achieved in third paragraph of Section 1.3.3.</i></p>	CLOSED
AH-17	Section 1.3.3, Figure 1-5	<p>On Figure 1-5, the word "strategies" is used repeatedly. Replace the word "strategies" with "schedules and processes". The word "strategies" should not be used unless strategies have been developed and/or approved by the agencies or stakeholders.</p> <p><i>Response: Figure revised with suggested text.</i></p>	CLOSED Action List #12 (Freestone)
AH-18	Section 1.3.3, Figure 1-5	<p>On Figure 1-5, revise the bullet under the "Groundwater Component Closure Activities" box to indicate that activities associated with characterizing the rate and extent of contamination migration may be integrated with regional contamination characterization efforts but that groundwater monitoring required by WAC 173-303-645 will be performed on a WMA-by-WMA basis.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4 (ORP/CH)

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-19	Section 1.3.3, Figure 1-5	On Figure 1-5, the first bullet under the "Groundwater Monitoring During Closure" box should include the WAC 173-303-645 citation. Also, it is recommended that the second bullet identify that monitoring requirements may change via the permit modification process of WAC 173-303-830. Revise the text to reflect these concerns. <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #4 (ORP/CH)
AII-20	Section 1.3.3, Figure 1-5	On Figure 1-5, revise the wording under the "Postclosure Groundwater Monitoring" box to read: "WMA-specific postclosure monitoring required by WAC 173-303-645 and -665 will be performed".	
AH-21	Section 1.3.3, Figure 1-5	On Figure 1-5, delete the following words under the "Postclosure Groundwater Monitoring" box: "integrated with Central Plateau regional groundwater monitoring". Replace the deleted wording be replaced with: "Where possible, information obtained from WMA-specific monitoring will be integrated with Central Plateau regional groundwater monitoring." <i>Response: Figure revised with suggested text.</i>	CLOSED Action List #12 (Freestone)
AH-22	Section 1.3.3, Figure 1-5	On Figure 1-5, Revise the title of the "Central Plateau Groundwater Monitoring" box to read: "Postclosure and Central Plateau Groundwater Monitoring". <i>Response: Figure revised with suggested text.</i>	CLOSED Action List #12 (Freestone)
AII-23	Section 1.3.3, Figure 1-5	On Figure 1-5, delet the bottom "Postclosure Care" and "Central Postclosure Care" boxes. Move all bullets occurring below these boxes up to the "Postclosure Groundwater Monitoring" and "Postclosure and Central Groundwater Monitoring" boxes. <i>Response: Figure revised with suggested text.</i>	CLOSED Action List #12 (Freestone)
BBK-21	Section 1.3.3, fifth paragraph	Please revise the text to read: "The second column represents the period during which WMA closure activities are completed. This period begins when all of the SSTs within a WMA have been retrieved, isolated, and filled, and the ancillary equipment and soils have been characterized and appropriately dispositioned...." <i>Response: Text revised as follows: "This period begins when closure activities on all SSTs, ancillary equipment, and soils in the WMA have been completed in accordance with WAC 173-303-610(2), and groundwater has..."</i>	CLOSED
DS-2	Page 1-21 line 3	Your statement that during this period other WMA closure action within the SST system are on going is not in agreement with previous statement, Be specific as to what period will be defined as "Closure actions complete" <i>Response: Clarified third column description in Section 1.3.3.</i>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-15	Section 1.4, Page 1-21	<p>Revise the entire section. The section does not accurately state the regulatory status of SST closure. Revise the section to include the fact that the primary regulatory driver for this RCRA/DW SST closure plan is WAC 173-303. Also indicate that the HFFACO requirements must also be met and that the HFFACO requires all waste must meet the RCRA closure plan performance standards regardless of the closure process or authority. The last paragraph implies that closure moves directly into landfill requirements without first demonstrating the ability to meet clean closure requirements. Revise the text to indicate that landfill closure can only occur after DOE demonstrates/documents the ability to achieve clean closure.</p> <p>Requirement: WAC 173-303, HFFACO</p> <p><i>Response: Accept: Will 1) revise the section to include the fact that the primary regulatory driver for this RCRA/DW SST closure plan is WAC 173-303 and HFFACO, and 2) will revise text to "... cannot be clean closed until after first demonstrating an attempt to meet these standards and must be closed as landfills."</i></p>	Closed
MJB-16	Sec. 1.4.1, RCRA/IWMA Applicability, p. 1-22, ¶ 3	<p>Sentence 1 states that the USDOE does not know if it will achieve the closure performance standards in WAC 173-303-610(2)(b), so closure plan contains options for clean closure and landfill closure in WAC 173-303. Please cite the appropriate regulatory references in WAC 173-303-640(8) and WAC 173-303-665(6) to closure and post-closure care.</p> <p><i>Response: Added WAC 173-303-640(8) and WAC 173-303-665(6) cites to paragraph three of Section 1.4.1.</i></p>	Closed
DH-16	Section 1.4.1, Page 1-22	<p>Lines 2-4. Revise the text to state that the SST (tank) system is subject to both WAC 173-303-610 and 640, not just 640 as the current text implies.</p>	Closed
DH-17	Section 1.4.1, Page 1-22	<p>Lines 18-28 Rad issue -- hold -----</p> <p><i>Response: Issue resolved by D. Heggen.</i></p>	CLOSED Action List #21 (DH)
BBK-22	Section 1.4, fourth paragraph	<p>Please revise the text to read: "WAC 173-303-610 sets forth primary state requirements for closure and postclosure of dangerous waste TSD facilities such as the SST system. WAC 173-303-640 and 40 <i>Code of Federal Regulations (CFR)</i> 265.196 and 197 set forth primary state requirements for closure and postclosure care of tank systems that cannot be clean closed and must be closed as landfills, referencing standards contained in WAC 173-340....."</p> <p><i>Response: Text revised.</i></p>	CLOSED
BBK-23	Section 1.4.1, fifth paragraph	<p>Please revise the text to read: "DOE will attempt to remove or decontaminate all waste residues from contaminated SST system components, contaminated soils, and structures and equipment, evaluating removal and decontamination in accordance with WAC 173-303-610 and 640 requirements the context of the <i>Environmental Impact Statement for Retrieval, Treatment, and Disposal of Tank Waste and Closure of Single-shell Tanks at the Hanford Site</i> (Closure Environmental Impact Statement [EIS]) now being prepared....."</p> <p><i>Response: Text revised.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-24	Section 1.4.3	<p>Have issues with DOE Order 435.1 been resolved? Should all but the first paragraph of this section be modified or deleted?</p> <p><i>Response: Text in Section 1.4.3 modified.</i></p>	Closed - Parking Lot #2 resolved (J von Reis)
MJB-8	Sec. 1.4.4 National Environmental Policy Act and Washington State Environmental Policy Act Applicability, pp. 1-25/26	<p>In ¶ 1, p. 1-26, the text states that the SEPA process is similar to NEPA. That is not factually accurate: the SEPA <u>process</u> differs from NEPA in that a threshold determination against a checklist is required, documents called Environmental Analyses that help determine whether a NEPA EIS is needed are not required by the State, the FONSI is not used (the document is a Determination of Non-Significance), there is a formal document published that announces the need for an EIS (Determination of Significance). The <u>philosophy</u> of the SEPA process is similar to that of NEPA: any action to be taken by a State agency (e.g., issuing a permit) must be evaluated for its potential environmental impacts before the agency takes action. Please clarify in text.</p> <p><i>Response: Added text to better define SEPA process to second paragraph of Section 1.1.4.</i></p>	Closed
MJB-9	Sec. 1.4.4 National Environmental Policy Act and Washington State Environmental Policy Act Applicability, pp. 1-25/26	<p>In ¶ 1, p. 1-26, the statement is made that the State may choose to co-author or adopt a NEPA EIS in lieu of preparing a SEPA EIS. Clarification: a state agency may <u>adopt</u> a NEPA environmental assessment to satisfy the requirements of a determination of non-significance or it may adopt a NEPA EIS if certain requirements in WAC 197-11-610(3) are met. The agency may choose to COOPERATE with a Federal agency, which may mean more than co-authoring a document (i.e., providing input to development of alternatives, etc.). Any NEPA document must be <u>adopted</u> in whole or part to satisfy SEPA (WAC 197-11-630 and WAC 197-11-965).</p> <p><i>Response: Added text to better define NEPA EIS process to second paragraph of Section 1.1.4.</i></p>	Closed
DH-18	Section 2.0 and Section 2.1 – (all)	<p>See previous Rev. 0 NOD comments (#82 and #83) requiring final status groundwater monitoring be described in the Rev 1. SST closure plan as effective with the issuance of this closure plan permit modification. Revise the entire section to reflect this concept.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	Parking Lot #4 (ORP/CH) Closed
JC-1	Page 2-2 Section 2.1.1 Lines 25-27	<p>Groundwater is currently monitored under interim-status regulations, but final status (i.e., WAC 173-303-645) will apply when applying for a permit to close a Waste Management Area. Not addressed here in response to an NOD comment on Rev. 0 is the potential role that groundwater monitoring could play as part of LDMM during waste retrieval.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	Parking Lot #6 (ORP/CH) Closed
JC-2	Page 2-2 Section 2.0	<p>Implementation of an effective and efficient LDMM system during waste retrieval for all tanks to which significant quantities of fluid will be added during waste retrieval (e.g., saltcake tanks) will be protective of groundwater and should be mentioned somewhere in this section.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	Parking Lot #6 (ORP/CH) Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-3	Page 2-2 Section 2.1.1 Bullet 1	<p>While background has been established for all SST WMAs, it was established under a groundwater flow regime that may be considerably different than the current flow system, especially with regard to direction. This section should include the requirement to revisit and revise the groundwater monitoring plan and network to accommodate changes in groundwater flow direction, changes in dispersivity and the required number of wells, etc. Please correct.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #5 (ORP/CH)</p> <p>Closed</p>
JC-4	Page 2-3 Table 2-1	<p>As new and replacement wells are constructed and/or groundwater quality changes because of changing direction of groundwater flow, the list of site-specific parameters may need to be revised.</p>	
JC-5	Page 2-4, Section 2.1.2	<p>A mention of any relationship between post-closure groundwater monitoring and monitoring that will be implemented for Long Term Stewardship is perhaps worthy of mention here.</p> <p><i>Response: Text inserted to address long-term stewardship as suggested.</i></p>	CLOSED
DH-19	Section 3.0, Page 3-1	<p>Refer to previous Rev. 0 NOD comment #58. The text that DOE promised to supply relating to cleanup levels stated in WAC 173-303-610(2)(b) calculated according the WAC 173-340 (MTCA) is missing. Provide the missing text.</p> <p><i>Response. Partially accept. This information is in Section 1.4.1 which was 1.3.1 as promised in the NOD reply. However elaboration of 610(2)(b) is contained in Section 3.4.1.</i></p>	Closed
BBK-25	Section 3.1, first paragraph	<p>Please revise text to read: "Closure activities planned for the SST tank farms will be designed to minimize the maintenance required after closure of individual WMAs and the SST system. Closure activities may will include removing waste from tanks and ancillary equipment, minimizing the potential for spills and leaks, characterizing residuals and contaminated media, isolating and stabilizing any remaining wastes in tanks or ancillary equipment, evaluating and implementing closure options for environmental media, and constructing engineered surface barriers. DOE will focus primarily on the following to meet this general performance standard:</p> <ul style="list-style-type: none"> • Waste removal reduction to reduce consequences of any maintenance issues..." <p><i>Response: Text revised as suggested.</i></p>	CLOSED
BBK-26	Section 3.1, fifth paragraph	<p>As necessary, DOE may will install engineered surface barriers at WMAs and other locations to minimize water infiltration into remaining structures and equipment, soil, and groundwater.</p> <p><i>Response: Text revised as suggested.</i></p>	CLOSED

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MJB-17	Sec. 3.1, Minimize Need for Further Maintenance, p. 3-3, ¶ 3	<p>The first sentence explains that the USDOE has not developed final barrier or marker designs at the Hanford Site; however, HFFACO Milestone M-45-55 requires that a Phase I RFI report for the S/SX, T/TY/TX, B/BY/BX be submitted by 02/28/04. Milestone M-45-55-T03 requires submission of a field investigation report for T/TX/TY by 01/31/2005. Per Milestone M-45-60, six months after the RFI report is approved by Ecology. See pp. 6-16/17 of RPP-13774, Rev. 1). From the text, Ecology cannot determine when the final barrier or marker designs will be completed in this closure plan. The WMA closures are said to be dependent upon barriers and markers, thus delay in the development will affect the permits for closure for the WMAs listed above. Please provide an integrated schedule for the integration of barrier and markers into the RFI/CMS activities for the three WMAs.</p> <p><i>Response: Modified text in fourth and fifth sentences of paragraph five of Section 3.1 to clarify barrier design will be completed prior to end of closure activities.</i></p>	Closed
JC-6	Page 3-3 Section 3.1 Lines 24-28	<p>Barriers should also be designed to minimize the potential for intrusion and destructive effects by burrowing animals (ground squirrels, gophers, etc.) that could reduce the potential for limiting infiltration.</p> <p><i>Response: Text inserted to address barriers as suggested in Section 3.1 end of 6th paragraph.</i></p>	CLOSED
JC-7	Page 3-5 Lines 11-13	<p>Page 3-5, Lines 11-13. Please add to this bullet the following: "...that will meet the standards of RCRA as an ARAR."</p> <p><i>Response: Suggested text inserted.</i></p>	CLOSED
JC-8	Page 3-5 Line 15	<p>Please add the following to this bullet: "...and periodic sampling of these wells for identified constituents as included in the post-closure monitoring plan."</p> <p><i>Response: Suggested text inserted.</i></p>	CLOSED
MJB-18	Sec. 3.2.1.1, Meeting SST Retrieval Criteria, p. 3-6, ¶ 3	<p>Sentence I states that the USDOE will submit an exception to EPA and Ecology. A bulleted list of information follows. Appendix H of the HFFACO Step 8 requires the USDOE to prepare a request for waiver to the appropriate regulatory agency. That waiver must be in the form of a petition that complies with WAC 173-303-910(6) Petitions to allow land disposal of a waste restricted under WAC 173-303-140 (Land Disposal Restrictions) if it is submitted to Ecology. Please add the regulatory reference.</p> <p><i>Response: Added text to third paragraph of Section 3.2.1.1 to qualify that request is "Appendix H Attachment 2 request".</i></p>	Closed
BBK-27	Section 3.2.1.1, second set of bullets, fourth and fifth bullets	<p>Please revise the text to read:</p> <ul style="list-style-type: none"> • "The volume, chemical characteristics, and radiological characteristics of the proposed waste residual • Expected impacts to human health and the environment from leaving the proposed residual in place" <p><i>Response: Deleted suggested text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-19	Sec. 3.2.1.2, Component Closure Activities for Tanks, p. 3-7	<p>Paragraph 2 and others in this section state that tank stabilization will be completed through addition of cementitious grout. Ecology has not agreed that grout is an appropriate material to use to stabilize emptied tanks or to fill components left in the ground after closure. Unless/until the USDOE provides sufficient proof that the material being considered for stabilization will provide equivalent protection to that afforded by immobilized waste from the Waste Treatment plant, plans to remove components should be given preference to those that leave components in place.</p> <p>The USDOE should also consider mechanical and chemical techniques to remove wastes from ex-tank ancillary equipment to reduce the volume and toxicity of waste left in the equipment. As the effort to dissolve wastes plugging the transfer line from 241-U-107 to the 241-SY Tank Farm revealed, line blockages can be cleared. The standard</p> <p><i>Response: Added "in accordance with Ecology-approved component closure activity plans" in second paragraph of Section 3.2.1.2. Also revised text by substituting "fill" for "grout" where appropriate.</i></p>	Closed
DH-20	Section 3.2.1.3 Page 3-7	<p>Lines 30-35. Revise this portion of the paragraph as follows: "Disposition of ex-tank ancillary equipment (such as pipelines, diversion boxes) will be described in an ancillary equipment component closure activity plan. Additionally, for closure actions, including SST retrieval, where ancillary equipment is connected/attached must describe with sufficient detail how anticipated ancillary equipment or tank retrieval/closure actions will not preclude future retrieval/closure actions for those components." There is no agreement to move such a basic requirement into an unenforceable document outside of the closure plan such as the Implementation Plan. This is a key scheduling issue.</p> <p>Requirement WAC 173-303-610(3)</p> <p><i>Response: See response to comment BBK-28.</i></p>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-28	Section 3.2.1.3, second paragraph	<p>Please revise the text to read: "There are uncertainties associated with the level of contamination contained in ancillary equipment and with potential difficulties in accessing buried equipment. DQOs will be developed to ensure appropriate characterization data are collected to support the ancillary equipment component closure activities. Disposition of in-tank ancillary equipment (such as in-tank measuring equipment and tank risers) will be described in the respective tank component closure activity plans. In-tank ancillary equipment will be dispositioned as debris during the tank closure activity. Disposition of ex-tank ancillary equipment (such as pipelines, diversion boxes) will be described in either an ancillary equipment component closure activity plan or other alternate decision documentation such as a corrective measures study or ROD and referenced back to the SST system chapter of the Site-Wide Permit. Integration activities for remediating ex-tank ancillary equipment are expected to be developed through the SST system Implementation Plan pursuant to HFFACO Milestone M-45-06-T20."</p> <p><i>Response: Partially accept. Inserted the following text "...ROD (final and interim) upon approval through incorporation into the SST system chapter of the Site-Wide Permit. Additionally, for closure actions, including SST retrieval, where ancillary equipment is connected/attached, DOE must describe with sufficient detail how anticipated ancillary equipment or tank retrieval/closure actions will not preclude future retrieval/closure actions."</i></p>	CLOSED
DH-21	Section 3.2.1.4, Pages 3-7 – 3-8	<p>This section implies filling of SSTs with a grout-like immediately following tank retrieval. This is unacceptable. Eventually, after sufficient data is provided to address regulatory and stakeholder issues, grouting of tanks may be an acceptable option. However, to date, these issue are not resolved and most importantly, at this early stage of SST closure, DOE has not presented any evidence that tanks must be filled for structural engineering purposes. Furthermore, filling tanks at this stage of WMA characterization when overall risk/data uncertainty is extremely high would preclude future closure actions, if needed. No such action will be allowed until sufficient characterization occurs to reduce the high uncertainty that exists at this time. Revise the text to address/reflect these concerns.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Text revision</i></p>	Closed
BBK-29	Section 3.2.1.4, second paragraph	<p>Please revise text to read: "Stabilization of any remaining below grade components following waste retrieval will be designed to immobilize any remaining contain wastes residue, minimize contaminant transport, and avoid long-term subsidence and settlement of the tank farm surface."</p> <p><i>Response: Inserted suggested text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-30	Section 3.2.1.5, fourth paragraph	<p>Please revise the text to read: "Soil characterization and corrective measures activities for all WMAs will be integrated as appropriate with ancillary equipment and groundwater component closure activities and with the Ecology, EPA, and DOE Central Plateau regional closure strategies currently under development. Integration will influence the implementation schedule as well as the technical and regulatory approach to completing the closure activities. Coordination of these integration actions is expected to be implemented through modification of the <i>SST System Implementation Plan</i> or component closure plans pursuant to HFFACO Milestone M-45-06-T20."</p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED
DH-22	Section 3.2.1.6, Page 3-9	<p>Section 3.2.1.6 does not identify that SST releases are currently being characterized via TPA Milestone M-45. Describe in detail the RCRA corrective action (Subpart S) process being followed via Milestone M-45. In addition, include the provision of Milestone M-45 status in Section 3.2.1.6. The status should identify what RCRA corrective action step each WMA is at in the Milestone M-45 process being followed.</p> <p><i>Response: See response to comment AH-25.</i></p>	Closed
AH-24	Section 3.2.1.6	<p>Section 3.2.1.6 has omitted the primary step of compliance monitoring to determine the impact to groundwater at the point of compliance during the active life of the unit and during the postclosure monitoring period. In other words, Section 3.2.1.6 has omitted WAC 173-303-645 groundwater monitoring performance standards. Revise the section to describe WAC 173-303-645 requirements. AH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4 (ORP/CH)
AH-25	Section 3.2.1.6	<p>Section 3.2.1.6 does not identify that SST releases are currently being characterized via TPA Milestone M-45. Describe in detail the RCRA corrective action (Subpart S) process being followed via Milestone M-45. In addition, include the provision of Milestone M-45 status in Section 3.2.1.6. The status should identify what RCRA corrective action step each WMA is at in the Milestone M-45 process being followed. AH</p> <p><i>Response: Text revised</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-31	Section 3.2.1.7, third and fourth paragraphs	<p>Please revise text to read: "Barrier design and installation of surface barriers over WMAs may be integrated with Central Plateau regional closure strategies. For example, barrier installation over a WMA may be delayed until closure efforts in a contiguous waste site (such as a DST farm) are complete. Additionally, barrier design criteria may need to be revised if a barrier cover encompasses multiple contiguous waste sites. When an engineered surface barrier has been installed, the barrier and surrounding disturbed area will be revegetated to enhance evapotranspiration, limit erosion, and blend the area into the surrounding landscape of the Central Plateau. Performance monitoring will ensure the surface barrier is performing as designed. Monitoring will include visual inspection and may will be supplemented with groundwater sampling. DOE will also employ institutional controls and markers to minimize the potential for intrusion by humans."</p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED
DH-23	Section 3.2.2 Page 3-10, and throughout the document.	<p>Lines 22-26. This section does not provide the true picture of leak detection and monitoring and mitigation (LDMM) for the SST system. The status of the DOE baseline LDMM as a stand alone system has been found to be unacceptable, especially for tank waste removal operations using liquid retrieval methods. Refer to the June 2, 2003 letter to DOE regarding resolution of outstanding RCR comments for tank S-102 and S-112 Functions and Requirements documents. This letter details Ecology concerns over the lack of baseline leak detection validation. It requires the use of electrical resistivity LDMM which is the only leak detection system validated at Hanford. Refer to the following DOE documents for additional comparison of the DOE LDMM baseline system to the electrical resistivity methods: PNNL-13818 (March 2002), RPP-14606 (March 2003), RPP-15449 (March 2003). Unless live testing during retrievals show that the electrical resistivity LDMM methods to be ineffective, Ecology requires a minimum of this level of LDMM to be used as the LDMM baseline for all retrieval/closure actions involving liquid retrieval methods. For closure purposes, the most accurate measurement of leak loss is required for the following reasons: 1) to document the volume of any leak for risk assessment calculations, 2) to document the amount of waste leaked to the vadose zone after all closure actions are complete, and 3) to respond to a release of waste to the environment. Revise the text to accommodate the above concerns and concepts.</p> <p>Requirement: WAC 173-303-640(7)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #6

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-20	Sec. 3.2.2, Treatment Storage, and Disposal of Retrieved Waste, p. 3-11	<p>Figure 3-1 shows Retrieved SST waste TRU and LLW traveling to supplemental TRU and LLW waste processing. Please correct the figure to show that SST liquid wastes will be considered TRU mixed waste; LLW will only include waste from secondary waste streams (contaminated soil, PPE, etc). Ecology will not agree that liquid tank wastes previously designated at HLW may be reclassified as LLW.</p> <p>The same figure shows HLW/LLW/LAW from the SSTs going to the DSTs. <u>The SSTs do not contain LLW.</u> Only HLW waste is stored in the SSTs. Some fraction of that waste can be considered LAW but none of it is considered LLW.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #11
MJB-21	Sec. 3.3, Return Land to Appearance of Surrounding Land Areas, ¶ 4, p. 3-12.	<p>A statement is made that given previous activity on the Central Plateau, the most appropriate future uses might be industrial or no permitted uses, that is treating the area as an exclusion zone. While the USDOE may conjecture what the future state of the Tank Farms areas might be, the final decisions are yet to be made, as is indicated in ¶ 1 on p. 3-13. Please delete the speculative statement on p. 3-12.</p>	Action Item # 42 (MJB)
BBK-32	Section 3.3.1, second paragraph	<p>Please revise text to read: "Possible actions associated with restoration activities may include:</p> <ul style="list-style-type: none"> • Design and implement practicable restoration measures consistent with restoration goals and estimates of future land use ..." <p><i>Response: Text revised as suggested.</i></p>	CLOSED
BBK-33	Section 3.4	<p>Please revise the text to read: "In addition to standards stated in terms of general functionality, protection, and restoration, the SST closure action must comply with specific criteria for waste removal and decontamination, or conversely, to meet closure and postclosure requirements consistent with landfill standards (WAC 173-303-665(6)). WAC 173-303-610(2)(b) contains a standards applicable to closure of all dangerous waste facilities, WAC 173-303-640(8) contains a standards specifically applicable to closure of tank systems, and landfill standards (WAC 173-303-665(6))."</p> <p><i>Response: Text revised as suggested.</i></p>	CLOSED
BBK-34	Section 3.3.1, third paragraph	<p>Please revise text to read: "DOE will perform waste removal or decontamination activities in accordance with all applicable regulations. DOE will assess the alternative to clean up soil and groundwater associated with the SST system pursuant to WAC 173-303-610(2)(b)(i). Such assessment will be documented through a corrective action RFI/CMS or as part of a component closure activity plan. Should this assessment conclude that removal or decontamination to levels calculated according to MTCA Method B is not practicable, in accordance with WAC 173-303-640(8)(b), the performance of closure and postclosure care in accordance with WAC 173-303-665(6) requirements that apply to landfills will be required.</p>	
JC-9	Page 4-1 Lines 1 and 2	<p>A risk assessment is required for closure of units as a landfill AFTER an adequate demonstration/analysis proves that clean closure is not possible. This statement needs to be added to this paragraph. Furthermore, since most agree that clean closure is unlikely, a technically credible risk assessment should be performed to evaluate the clean closure option. If, as suspected, clean closure is not feasible, then that risk assessment should be included in the Tier 1 Closure Plan as applicable to all tanks. (JC)</p>	

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-24	Section 5.0 Pages 5-1 through 5-3	<p>The overall SST characterization strategy is lacking. A description of the known status of each WMA and associated related uncertainty is missing. A description of known data needs in each WMA is also missing. This section relies almost exclusively on the DQO process as the ultimate guide to direct characterization. That is incorrect. Sufficient goals and objectives must be provided in the closure plan to direct the DQO process in order to provide data to satisfy closure requirements. Provide the missing information as well as a description of a logical stepped characterization approach for each WMA. Provide the estimated acceptable uncertainty targeted for final WMA characterization. Remove "DQO" from the headings of most sections. The sections should describe characterization needs with the DQO process as a tool to achieve sufficient data to support these needs. DH</p> <p>Condition to modify the permit at a specified date. DOE may choose various methods to develop the permit mod – possibly the implementation plan; however, it will be subject to Ecology approval and public notice requirements through a class 2 or 3 modification.</p> <p>Requirement: WAC 173-303-610(3), WAC 173-303-830(4)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #10 (DH) Action List #23 (J von Reis)</p>
DH-25	Section 5.0 Pages 5-1 through 5-3	<p>Missing from this section is a description of waste characterization to provide data to prevent harm to workers. Waste must be properly characterized and the data utilized to sufficiently understand potential air emission hazards in order to allow DOE to take appropriate measures such as engineering controls to prevent worker exposure to toxic air emissions.</p> <p>Air Issue – hold</p>	Hold
DS-3	Section 5.0	<p>The Waste Analysis Plan has not been identified in the document.</p> <p>Requirement: 173-303-300</p>	Action Item #38,39

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-26	Section 6.0, General	<p>Paragraph 1. Ecology is not aware of an agreement that the implementation plan is another mechanism for the timing/scheduling of SST closure activities. The implementation plan may have some use as a planning tool; however, the exact use for the plan under development. The HFFACO is the previous agreed-to mechanism for establishing schedules for SST closure actions including retrievals. Ecology is aware of plans by DOE to conduct closure actions (retrievals) on SSTs in the near future outside of an approved schedule (i.e., C-200 series SSTs) in the HFFACO. If that is the case, DOE must include these actions in the appropriate sections of this closure plan. Schedules for all closure actions are required as part of a closure plan; however the HFFACO M-45 closure milestones can be incorporated by reference into the SST closure plan. There is no need for yet another process to document closure activities/schedules. All closure actions must be scheduled/approved through the closure plan and/or the HFFACO incorporated by reference. Revise the text to include the above requirements.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #10 (DH)</p>
DH-27	Section 6.0	<p>Revise the section to reduce the text discussing the M-45-06-T20A "Implementation Plan" down to one subsection basically describing the plan as a potential planning tool.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Reduced discussion of implementation plan in Section 6.0.</i></p>	Closed
DH-28	Section 6.0, Page 6-2	<p>Lines 4-7. Although the HFFACO establishes a high-level schedule for overall SST closure actions, it also includes specific closure actions such as retrieval schedules and requirements for SSTs such as Retrieval Functions and Requirements document milestones found in the attached Table 6-1. Revise the text to clearly indicate that the HFFACO is an agreed-to mechanism for scheduling closure actions and that these actions, including retrievals, will be incorporated by reference in the SST closure plan permit and will be subject to SST closure plan requirements.</p> <p>Requirement: WAC 173-303-610(3)</p>	Hold
DH-29	Section 8.0, General	<p>Missing is the contingent post closure plan or a schedule to supply the plan. Provide either the plan or a schedule to provide the plan in the near future.</p> <p style="text-align: center;">TIMING CONDITION?</p> <p>Requirement: WAC 173-303-640(8)(C)(ii)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #10 (DH)</p>
JC-18	Page 8-1 Line 4	<p>Given the conditions of the Central Plateau with a thick vadose zone and deep water table in the unconfined aquifer, vadose zone monitoring during the post-closure period should be an optional consideration.</p>	

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-19	Page 8-2 Lines 2-4	<p>Page 8-2, Lines 2-4. The current groundwater monitoring plan for each WMA is for compliance with requirements for monitoring of a TSD facility. As part of LDMM during waste retrieval operations to assess any potential impacts of waste retrieval to groundwater, consideration should be given to supplemental groundwater monitoring; i.e., a change in the constituents monitored and the frequency of monitoring.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #6
DH-30	Framework , Addendum 2, HWMA Compliance Matrix	<p>The HWMA Compliance Matrix of Addendum 2 has omitted all groundwater regulatory cites of WAC 173-303-645. All applicable cites must be added. Specifically, applicable standards (i.e., requirements) associated with WAC 173-303-645(1), -645(2), -645(3), -645(4), -645(5), 645(6), -645(7), -645(8), -645(9), -645(10), and -645(11) must be included in the matrix. Also list all the general operating requirements + Air (or omnibus for air).</p> <p>Alternatively, DELETE this matrix if not needed</p> <p>HOLD FOR Internal Decision If deleted – we must cross walk a corrected matrix compared to the closure plan text to be requirements in the matrix are also covered in the text. Jean Vanni has a corrected version of the matrix. Idaho DEQ said this matrix has been used for Part B RCRA permits at INEEL to address contingency requirements.</p>	Action List #13 (DH)
AH-26	Framework , Addendum 2, HWMA Compliance Matrix	<p>The HWMA Compliance Matrix of Addendum 2 has omitted all groundwater regulatory cites of WAC 173-303-645. All applicable cites must be added. Specifically, applicable standards (i.e., requirements) associated with WAC 173-303-645(1), -645(2), -645(3), -645(4), -645(5), 645(6), -645(7), -645(8), -645(9), -645(10), and -645(11) must be included in the matrix.</p> <p>ECOLOGY AND DOE CONSIDERING DELETING THIS TABLE ???? REGULATORS IN IDAHO REQUIRED THIS FOR THEIR SITE — I plan to discuss this with Idaho regulators to try to understand why they required it??? AH/DH</p>	Action List #13 (DH)
MSB-24	Addendum 2 HWMA Compliance Matrix, p. Addendum 2-11	<p>WAC 197-11-100(1) The approach to SEPA compliance listed in the matrix , to submit an environmental checklist for any proposed system closure, does not provide sufficient analyses of the cumulative, long-term impacts of component/waste management area/tank farm closures. The <i>Tank Closure Environmental Impact Statement</i> is presumed to contain sufficient analyses of the impacts of closing all of the components, WMAs, and tank farms. The USDOE Office of River Protection assumes incorrectly that Ecology has determined that each proposed closure action is singular. Ecology deems the individual closures as related actions (see WAC 197-11-060(3)(b). To prepare environmental checklists for each closure action that do not address the cumulative impacts of the closures is prohibited by WAC 197-11-060(5)(d)(iii).</p> <p><i>Response: Addendum was deleted.</i></p>	Closed pending resolution of Action #13

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-25	HWMA Compliance Matrix, p. Addendum 2-11	Please add the following references: WAC 197-11-060(4) Impacts, WAC 197-11-060(5) Phased review (d), WAC 197-11-070 Limitations on actions during the SEPA process (1) through (4). <i>Response: Addendum was deleted.</i>	Closed pending resolution of Action #13
DH-31	Framework	General Requirements – hold for additional NOD(s) ????????????? <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #9 (Ecology)
Appendix C WMA C Closure Action Plan			
JC-20	General Comment	A strategy for characterization and closure of all pipelines within and between SST farms, including the development of closure performance standards for all pipelines needs to be developed so that all pipelines, when closed through whatever process and whatever schedule, will conform to the same performance standards. <i>Response: Text revised in Section 1.3, 3.1, 3.2, and 3.4 of Framework Closure Plan.</i>	CLOSED 12/10/03 Parking Lot #8 CLOSED 12/12/03 Action List #17 (ORP/CH)
JC-21	General Comment	While it is assumed that SST WMAs will be closed as landfills, an evaluation of the clean closure alternative is required. A Tier 1 Risk Assessment that addresses worker safety as well as environmental threats should be conducted, with the resultant conclusion applicable to all tank farms and WMAs. Such an activity would also streamline the process so that this decision does not have to be made for each and every tank farm and component thereof. <i>Response: Revised text in Section 1.3.3 of Framework Closure Plan and Section C1.0 of WMA Closure Action Plan sufficiently addresses concern of commentor.</i>	Closed
JC-22	General Comment	If landfill closure is selected, decommissioning of all wells that may be buried by the barrier must be included in the closure activities for this (and other) WMAs. <i>Response: Inserted text in Section 3.1 of Framework Closure Plan citing WAC 173-360-460.</i>	Closed
AH-27	Section C1.0	Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, it is recommended that WAC 173-303-645 requirements be cited in Section C1.0. Insert the following sentence in the third paragraph between the first and second sentences: “Due to unremediated releases from the WMA C and agreements made via the Hanford Federal Facility Agreement and Consent Order (HFFACO), the groundwater monitoring requirements of WAC 173-303-645 are also applicable.” AH <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #4 (ORP/CH)

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-35	Section C1.0, first paragraph	Provide a reference to a list of WMA C components which are covered by this portion of the closure plan. <i>Response: Inserted suggested text in Section C.1.</i>	CLOSED
MJB-C1	Sec. C1.0, ¶ 1, p. C1-1, Sec. C2.0, ¶ 1. p. C2-1	Both locations state that WMA C is generally coincident with fence line of the 241-C Tank Farm. Aside from obvious references to the groundwater that moves beneath the farm, it is not apparent what other solid waste management units or other facilities and equipment are outside of the C Farm that would be included in the WMA. Please specify what part of WMA is not coincident with the C Farm. Please explain why the USDOE proposes to permit that non-coincident area with the WMA C. <i>Response: Modified text in Sections C1.0 and C2.2 to clarify boundary of WMAs and where closure actions for components outside those boundaries will be discussed.</i>	Closed
DH-32	Section C1.0 Page C1-1	Lines 14-15. Explain the statement: "This document in its final form, will be submitted as the closure action plan for that purpose." Explain which document is being referenced. Ecology assumes the referenced document is the WMA-C portion (Addendum C1) of the SST closure plan. This statement contradicts the purpose of the existing Addendum C1 of the SST closure plan. If the purpose of this "document" is other than as a closure action plan, please state the purpose. Requirement WAC 173-303-610(3) and 640(8) <i>Response: Deleted sentence.</i>	Closed
MJB-C2	Sec. C1.0, ¶ 2	Text states that closure of the WMA C will include disposition of all components including any corrective measures required for soil or groundwater. Please explain what corrective measures will be taken to disposition soil and groundwater. <i>Response: Added text to indicate that corrective measures will be selected to meet performance objectives.</i>	Closed
DH-33	Section C1.0, Page C1-1	Line 16. Insert the word "clean" between "with" and "closure". Requirement: WAC 173-303-640(8) <i>Response: Added text.</i>	Closed
DH-34	Section C-1.0, Page C1-1	Line 21. Insert the following text after "...commitment...": "...and after it has been demonstrated by DOE to not be practicable to achieve clean closure for either soil or tank/ancillary equipment or both." Requirement: WAC 173-303-340(8) <i>Response: Added text.</i>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-36	Section C1.1, first bullet	<p>Please revise the text to read: "DOE submits this closure action plan to support the following:</p> <ul style="list-style-type: none"> • Closure in accordance with WAC 173-303-610 TSD closure and post-closure requirements • The concurrent closure activity for the tank 241-C-106 (C-106)..." <p><i>Response: Added suggested text.</i></p>	CLOSED
BBK-37	Section C1.1, first paragraph	<p>Please revise the text to read: "DOE expects that information gaps will be filled by successive revisions of this closure action plan as component closure activities generate data and reduce the uncertainties. DOE will not propose closure of WMA C until all associated components have been addressed pursuant to component closure activity plans or alternative documentation (such as corrective measures, <i>Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Action Memoranda or Records of Decision (ROD)</i>), approved through modifications to the Site-Wide Permit."</p>	
AH-28	Section C1.1	<p>Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, it is recommended that the HFFACO agreement to monitoring groundwater in relation to SSTs be identified as a bullet in Section C1.1. Insert the following bullet in Section C1.1 after the third bullet: "HFFACO Milestone M-24-00, which specifies groundwater monitoring will occur in relation to the SSTs." AH</p> <p><i>Response: Added suggested text.</i></p>	CLOSED
DH-35	Section C1.2	<p>Groundwater monitoring authorities and Rad issue</p> <p style="text-align: center;">HOLD FOR INTERNAL REVIEW</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #4 (ORP/CH) Action List #21 (DH)</p>
AH-29	Section C1.2	<p>Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, it is recommended that WAC 173-303-645 requirements be cited in Section C1.2. Specifically, identify that groundwater monitoring requirements in the second paragraph so that the text reads as: "The HFFACO establishes that WMA C and the balance of the SST system will be closed in accordance with WAC 173-303-610, WAC 173-303-645, and the HFFACO Milestone M-45 series." AH</p> <p><i>Response: Added "WAC-173-303-645" to text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-38	Section C1.2, third paragraph	<p>The HFFACO establishes that WMA C and the balance of the SST system will be closed in accordance with WAC 173-303-610 and the HFFACO Milestone M-45 series.</p> <p>Closure will be carried out at the WMA level. Thus, the requirements for certification of closure, and for potentially postclosure care, a contingent for landfill closure, will apply to WMA C and ultimately will be addressed in this closure action plan....”</p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED
BBK-39	Section C1.2, fourth paragraph	<p>Please revise the text to read: “....(as defined by the <i>Atomic Energy Act of 1954</i> [AEA]) has been incorporated into the Site-Wide Permit, it is not incorporated for the purpose of regulating such components under the authority of this the Site-Wide Permit and the HWMA. To the extent that <i>Resource Conservation and Recovery Act of 1976</i> (RCRA)/HWMA requirements are inconsistent with requirements under the AEA....”</p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED
BBK-40	Section C1.3	<p>Please revise the text to read: “....DOE has developed a tiered structure of documentation to integrate the various component closure activity plans, closure action plans, and into the Site-Wide Permit, as shown in Figure C1-1....”</p> <p><i>Response: Added suggested text.</i></p>	CLOSED
JC-23	Page C1-3 Section C1.3.2	<p>As this is a RCRA TSD and includes contaminated groundwater, here or somewhere the satisfaction of RCRA requirements for closure need to be spelled out, considering that the groundwater beneath WMA C will be closed as part of the 200-PO-1 groundwater operable unit.</p> <p><i>Response: Revised text in C4.2.3, C4.2.4, and C4.2.6 sufficiently address commentor's issue.</i></p>	Closed
MJB-C3	Sec. C1.3.2, p. C1-3	<p>In Sentence 1, the text states that component closure activity plans will be submitted. In Sentence 2, contradictory information states that component closure activity plans or equivalent decision documents will be developed consistent with the WMA strategy for closure. Please clarify whether the component closure activity plans will be replaced by “equivalent decision documents” for certain components and what those components will be.</p> <p><i>Response: Text added for BBK-40 resolves commentor's issue.</i></p>	Closed
BBK-41	Section C1.3.2	<p>Please revise the text to read: “DOE intends to submit component closure activity plans (tier 3) for the various components of WMA C, such as individual or groups of tanks, ancillary equipment, soil, and groundwater. The component closure activity plans, or equivalent decision documents, will be developed to be consistent with the overall WMA strategy for closure. Each approved component closure activity plan will become an attachment to this WMA C Closure Action Plan.”</p> <p><i>Response: Partially accept. Added the following text to end of paragraph “If equivalent documents are used they will be approved through incorporation into the Site-Wide Permit “.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-36	Section C1.3.2, Page C1-3	<p>Line 15. Revise the text to indicate that if DOE intends to submit closure activity plans group tanks, the tank histories/waste knowledge, condition, structure of the tanks must be adequate to allow the tanks to be treated in a similar fashion.</p> <p>Requirement: WAC 173-303-610</p>	Closed – Comment Withdrawn
AH-30	Section C1.3, Figure C1-1	<p>The titles of the Tier 3 documents are not legible. Include an identification, by document title, in Section C1.3 of each document that is designed to be used to support closure of WMA C. The significance of this may be considered in relation to groundwater monitoring. The Hanford Site has many mechanisms for reporting groundwater monitoring information. For completeness, the Tier 2 closure plan must identify all sources (by title or description) where groundwater information may be obtained and which are intended to be used to satisfy <i>Washington Administrative Code</i> (WAC). For example, it is assumed that several sources of information would include: quarterly groundwater reports for WMA C, annual groundwater reports for WMA C, vadose zone characterization reports for WMA C or any WMA C tank, the Hanford Environmental Information System (HEIS) database, etc.</p>	Hold
AH-31	Section C1.3.3	<p>The last sentence of Section C1.3.3 indicates that postclosure requirements will be incorporated into Part VI should landfill postclosure requirements be required for WMA C. The text implies that postclosure care and/or monitoring will not be conducted for SST system components that have been closed until the entire WMA is closed. The Tier 2 document must clearly identify that until a closure decision is made for the entire WMA C, the closed component will be managed and monitored as an “active portion” as defined by WAC 173-303-040. This is especially relevant as the WMA closure decision may not be made for years after SST components have been closed. The Tier 2 document must include a detailed description of how the SST component will be managed and monitored after the SST component has been closed and before the WMA closure decision is made.</p> <p>Revise the text to reflect these concerns.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4 (ORP/CH)
JC-24	Page C2-3 Figure C2-2	<p>The following should be added to this figure: 1) the date that the direction of groundwater was determined, 2) the assumed leaking tanks as identified in Hanlon, and 3) the identification and location of all Unplanned Releases, including the areas affected by these leaks.</p> <p><i>Response: 1) will add date to groundwater flow direction arrow on Figure C2-2., 2) will shade Hanlon-designated leaker and footnote to Figure C3-1 (for UPR locations) with associated text information on Figure C3-1, and 3) UPR locations in Figure C5-1 sufficient.</i></p> <p><i>Inserted text in Section C2.1 to direct reader to figure in Section C5.0.</i></p>	CLOSED 12/12/03 Action List #45
BR-13	Figure C2-2, p. C2-3	<p>Some sites that were referred to in the History of WMA C section should be added to this figure: 202A building, 244AR vault, and 244A lift station. If these locations are outside the map area then add arrows pointing in their relative directions.</p> <p><i>Response: Figure revised to reflect suggested text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-38	Section C2.0, general	<p>Although some information was provided regarding the status of certain components, missing is a description of the status of each transfer line listed. Include a schedule to provide the missing details such as line material/construction, location map, general history of use, interconnecting components, reason for being removed from service (i.e., plugging, line leakage). Also if a line leaked, provide information on waste type, volume, associated UPR number, etc.</p> <p>Requirement: WAC 173-303-610, 640</p>	Action List #31 (DH)
AH-32	Section C2.0, Page C2-6, Paragraph 3	<p>The third paragraph defines interim stabilized as meaning the tank “now contains less than 189,250 L (50,000 gal) of drainable interstitial liquid and less than 18,925 L (5,000 gal) of supernatant liquid”. The word “now” implies a measurement made in time. The description of the interim stabilized state should include an identification that over time, liquid drains out of the solid waste. While it is recognized that the Tier 2 document include a date of the interim stabilized state designation (HNF-EP-1082 2003), the Tier 2 document should include a description of how the drainable liquid will be measured on a periodic basis to ensure that the interim stabilized designation is still applicable. Also, the Tier 2 document should include a description of actions to be taken in the event that the interim stabilized liquid volume criteria is exceeded and the tank is no longer considered interim stabilized. Revise the document to reflect these concerns.</p> <p><i>Response: Added text to Section C2.0 regarding quarterly volume measurements.</i></p>	Closed
MJB-C4	Sec. C2.1, pp. C2-8 & 9	<p>A bulleted description of each of the 14 unplanned release (UPR) sites is included on these pages; however, they do not appear as components on Table C2-2. Earlier descriptions of the WMA C closure (see p. C1-1) state that disposition of all components including corrective measures required for soil contaminated with dangerous waste or dangerous waste constituents will be included. Ecology must assume that the unplanned release sites where dangerous waste was released have become components by these statements. Please add the dangerous waste UPR sites to Table C2-2.</p> <p><i>Response: Added sentence to sixth paragraph of C2.1 specifying that UPRs associated with the soil component and will be addressed during investigation and cleanup.</i></p>	Closed
DH-40	Section C2.2, Page C2-9, Paragraph 1	<p>In Section C2.2, page C2-9, the first paragraph identifies that the component list (which constitutes Table C2-2) “represents units listed on the RCRA Part A, Form 3 permit application”. The RCRA Part A, Form 3 permit application has undergone numerous revisions. Include a revision number associated with the RCRA Part A permit.</p> <p><i>Response: Added Part A revision number to text.</i></p>	Closed
DH-41	Section C2.2, Page C2-9	<p>Lines 29-36. Provide additional text referencing Section C4.2 and related subsections. Section C4.2 provides further detail regarding the scope of WMA C closure actions. Also revise the text to indicate this section describes a very general picture (overview) of WMA C closure actions.</p> <p><i>Response: Changed section C2.2 title and added suggested text to end of paragraph.</i></p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED 12/10/03

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-42	Section C2.2, Page C2-10	Lines 1-2. Either provide the regulatory designation of the other components, or a schedule to provide designations. <i>Response: Sentence deleted.</i>	Closed
DH-43	Table C2-2, Page C2-10	Revise the table to include the current status of each component, (i.e., estimated waste remaining in each component - liquid s. solid). Include information regarding the type and thickness of material used to construct lines/tanks. Also indicate if a tank or line has plugged or leaked in the past. A schedule to provide this information may be used.	Action List #31 (DH)
JC-25	Page C2-9 Last 2 lines	Explain and justify why the diversion boxes are RCRA waste piles. Diversion boxes fit the definition of Ancillary Equipment in WAC 173-303-040 and will be treated as such by Ecology. <i>Response: Text was deleted per earlier comment from Section C2.2.</i>	Closed
AH-33	Section C3.0, Paragraph 1	Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, the first sentence of the first paragraph of Section C3.0 should identify that groundwater monitoring requirements are applicable to WMA C. Include the following text: “In accordance with closure requirements outlined in WAC 173-303-610(3)(a)(vi) and the HFFACO, this section describes groundwater monitoring requirements and activities associated with WMA C.” <i>Response: Revised text as suggested.</i>	Closed
AH-34	Section C3.0, Bullet 5	The fifth bullet in Section C3.0 indicates that only “recent” groundwater sampling results are described and/or discussed in the Tier 2 document. As the groundwater monitoring network only consists of seven wells and the sampling time frame does not span decades, the description and discussion should not be limited to “recent” groundwater sampling results. Delete the word “recent” from the fifth bullet. <i>Response: “recent” deleted from fifth bullet</i>	CLOSED
JC-26	Page C3-1 Reference to Figure C2-2	The sentence states that, “As shown on Figure C2-2, seven RCRA groundwater monitoring wells are located outside the WMA C fence line.” Fig. C2-2 shows only five groundwater monitoring wells. <i>Response: Changed text to “nine” and will revise Figure to show new wells.</i>	Closed
AH-35	Section C3.1, Page C3-2	Section C3.1, page C3-2, states: “Changes in the monitoring program status will be documented in modifications to the WMA C RCRA groundwater monitoring plan (PNNL-13024, PNNL-13024 ICN-1).” The text should include a description of a process by which changes will first be approved by Ecology prior to implementation. The description of the process should also include a description of how the closure plan will be modified administratively. In other words, the closure plan should include reference to WAC 173-303-830 with an indication that the permit modification process as codified by WAC 173-303-830 will be followed for making changes in the monitoring program and/or monitoring network. Revise the text to include the above stated recommendations. <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #5 (ORP/CH)

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-36	Section C3.1, Page C3-2	<p>Section C3.1, page C3-2, states: "Prior to closure of WMA C, a postclosure groundwater monitoring plan will be developed." As indicated previously, the Tier 2 document should identify that the time after SST component closure and before WMA C closure, the closed SST component is considered "active portion" as defined by WAC 173-303-040. As the time between SST component closure and WMA C closure may be significant, the Tier 2 or Tier 3 document should include a detailed description of how the closed SST component will be managed and monitored until the closure decision for the WMA C is made. Revise the text to include these recommendations.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #4 (ORP/CH)</p>
AH-37	Section C3.1, Page C3-2	<p>Section C3.1, page C3-2, states: "Prior to closure of WMA C, a postclosure groundwater monitoring plan will be developed." The text should identify that the plan developed will be approved by Ecology and the SST component closure plan will be modified via the WAC 173-303-830 process. Provide additional text to clearly indicate by permit (closure plan) modification, the postclosure groundwater monitoring plan will be incorporated into the closure permit.</p> <p><i>Response: Inserted the following text at the end of the paragraph "The plan must be approved by Ecology and modified through the WAC 173-303-830 process."</i></p>	<p>Closed</p>
AH-38	Section C3.1, Page C3-2	<p>Section C3.1, page C3-2, states: "Postclosure groundwater monitoring will be integrated with the Central Plateau regional groundwater monitoring system." As commented on in my October 8 memorandum, certain postclosure groundwater monitoring activities are required by WAC 173-303-645 to be conducted on a WMA-specific-by-WMA-specific basis. Such monitoring represents fundamental RCRA groundwater monitoring requirements to determine a unit's impact on groundwater quality at the regulatory-defined point of compliance. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, include a citation of WAC 173-303-645 requirements in Section C3.1.</p> <p><i>Response: Inserted "in compliance with WAC 173-303-645" in fourth paragraph, second sentence.</i></p>	<p>Closed</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-39	Section C3.2, Page C3-2	<p>Section C3.2, page C3-2, states: "Geologic and hydrologic data obtained from these wells are adequate for inferring generalized stratigraphy and groundwater conditions below WMA C..." The statement could be interpreted to imply that Ecology has made a compliance determination in relation to the WMA C. This is not the case. During 2000, Ecology performed a Comprehensive Groundwater Monitoring Evaluation (CME) of the T and TX-TY Tank Farm Groundwater Monitoring Networks. Ecology issued a 34 page report of the CME dated March 1, 2001 entitled "Comprehensive Groundwater Monitoring Evaluation Report T and TX-TY Tank Farm Groundwater Monitoring Networks March 1, 2001". The CME report included findings and conclusions as well as recommendations. Since then, there have been no other CMEs performed at the Hanford Site. Due to the possible incorrect interpretation of the quoted statement, the statement should be re-written. Revise the text as follows: "Geologic and hydrologic data have been obtained from these wells from which generalized stratigraphy and groundwater conditions below WMA C may be inferred. However, Ecology has not performed a RCRA Comprehensive Groundwater Monitoring Evaluation (CME) of the WMA C and therefore, has made no compliance determination regarding the adequacy of the existing groundwater monitoring system to satisfy WAC 173-303-645 requirements. However, it may be concluded that the existing WMA C groundwater monitoring network does not provide component-specific monitoring information that would allow an identification of potential distribution and movement of contaminants directly below the individual components of WMA facilities."</p> <p><i>Response: Changed "adequate" to "used" in first paragraph of Section C3.2 to remove inference that an Ecology compliance determination has been made.</i></p>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-40	Section C3.2	<p>During year 2000, Ecology performed a Comprehensive Groundwater Monitoring Evaluation (CME) of the T and TX-TY Tank Farm Groundwater Monitoring Networks. Ecology issued a 34 page report of the CME dated March 1, 2001 entitled "Comprehensive Groundwater Monitoring Evaluation Report T and TX-TY Tank Farm Groundwater Monitoring Networks March 1, 2001". The CME report included findings and conclusions as well as recommendations. Due to the significance of the deficiencies associated with the T and TX-TY WMAs, the Tier 2 document should identify that those deficiencies associated with the T and TX-TY WMAs that are similar to the WMA C will be addressed by the approved closure plan. This statement should be placed in Section C3.2. Revise the text as follows: "It is acknowledged that a RCRA CME of the T and TX-TY WMAs was performed by Ecology. It is also acknowledged that certain groundwater monitoring network and groundwater monitoring program deficiencies were noted in the resulting report that are also applicable to the WMA C groundwater monitoring network and groundwater monitoring program. Specifically, the following deficiencies noted in the T and TX-TY tank farm CME report are also applicable to the WMA C groundwater monitoring network and program: inadequate groundwater monitoring well spatial coverage at the point of compliance and inappropriate collection of filtered samples (without demonstration of representative metal concentration measurement). These deficiencies will be addressed by this closure plan."</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED Parking Lot #5 (ORP/CH)</p>
AH-41	Section C3.2, Last Sentence	<p>The last sentence of the Section C3.2 paragraph states: "Elevation values contained in Section C3.2.1 are based on the North American vertical datum of 1988." Due to the significant difficulties associated with determining groundwater flow direction in the vicinity of the WMA C, either delete the sentence or include a statement that references where in the closure plan the reader may better understand the difficulties associated with obtaining a groundwater flow direction due to the flatness of the hydraulic gradient (i.e., Section C3.2.2).</p> <p><i>Response: No change required. Discussed with commenter the purpose of using the NAVD88 datum in closure action plan.</i></p>	Closed
AH-42	Section C3.2, Page C3-3	<p>Section C3.2, page C3-3, it is indicated that the stratigraphic data of Table C3-1 "should only be used as estimates until refined through possible future characterization activities". The closure plan should identify if there are plans for future characterization activities. Furthermore, if the future characterization activities are to be applied to WMA C to satisfy groundwater monitoring requirements of WAC 173-303-645, the text should also indicate the future characterization activities will occur after Ecology's approval and will be reflected in either or both a modified closure plan or/and modified closure plan permit conditions. Revise text per recommendation.</p> <p><i>Response: No change required. Referred commenter to Section C3.5.5 for existing text identifying future WMA C characterization activities.</i></p>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-43	Section C3.2.2, Page C3-5, Paragraph 1	<p>The first paragraph of Section C3.2.2, page C3-5, provides depth-to-groundwater measurements collected for only one date (June 25, 2002). Depth-to-groundwater measurements should be provided for a range of time. Since the five WMA C groundwater monitoring wells were installed, the Tier 2 document should include a discussion of depth-to-groundwater measurements. Providing only one measurement does not adequately describe the hydraulic gradient in the vicinity of the WMA C. Section C3.2.2 should include sufficient number of depth-to-groundwater measurements for the reader to understand if the depth-to-groundwater is static. Furthermore, if the depth-to-groundwater is increasing, information should be provided to indicate the "life" of the existing groundwater monitoring wells. In other words, if the groundwater table is receding, information should be provided which describes that condition. Also, if the groundwater table is receding, linear regression calculations and future approximations should be provided for each groundwater monitoring well. Provide additional text to accommodate the above recommendations.</p> <p><i>Response: Inserted suggested text.</i></p>	Closed
AH-44	Section C3.2.2, Page C3-5, Paragraph 5	<p>The fifth paragraph of Section C3.2.2, page C3-5, describes the difficulty in determining groundwater flow direction due to the nearly flat hydraulic gradient below WMA C. The sixth paragraph of Section C3.2.2, page C3-5, indicates the groundwater flow direction is expected to continue to change. Groundwater flow direction and monitoring to determine groundwater quality impacts are fundamental RCRA WAC 173-303-645 requirements. The section should include a detailed description of how groundwater flow directions in the vicinity of the WMA C will be determined. In addition, the section should indicate that future groundwater flow direction determinations not described in this closure plan will occur after Ecology's approval and will be reflected in either or both a modified closure plan or/and modified closure plan permit conditions. Revise the text to address the above concerns.</p> <p><i>Response: Groundwater monitoring issues will be resolved through the drafting of permit conditions.</i></p>	Parking Lot #5 (ORP/CH) CLOSED 12/12/03 Action List #15 (AH&JC)
AH-45	Section C3.2.2, Page C3-5, Paragraph 7	<p>The seventh paragraph of Section C3.2.2, page C3-5, indicates that groundwater flow rates beneath WMA C were derived. Closure plans and permits are considered "stand alone" documents. This is to say that the information provided in the document is complete and does not require other documents to be reviewed to determine what is being provided. As various hydraulic conductivities were used from various published values, the derivation, including all values used, should be included in this Tier 2 document. Provide this missing information.</p> <p><i>Response: Groundwater monitoring issues will be resolved through the drafting of permit conditions.</i></p>	Parking Lot #5 (ORP/CH) CLOSED 12/12/03 Action List #15 (AH&JC)
AH-46	Section C3.2.3, Page C3-6, Last Paragraph	<p>The last paragraph of Section C3.2.3, page C3-6, indicates that clastic dikes were observed in C farm during construction. Identify if any more information (i.e., mapping, observations, etc.) is available regarding clastic dikes in the vicinity of WMA C or 200 East Area.</p> <p><i>Response: Added text to paragraph six of Section C3.3 indicating that the effects of clastic dikes on contaminant transport are not established.</i></p>	CLOSED 12/10/03 Action List #16 (Freestone)

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-27	Page C3-7 Paragraph 2	<p>The effect of leaking water (and other) lines and the location of UPRs should be mentioned here.</p> <p><i>Response: In Section C3.3 added text to indicate leaking water and other water sources accelerate transport.</i></p>	Closed
JC-28	Page C3-7 Paragraph 3 Last sentence	<p>There is "...no direct evidence of contaminant migration along a clastic dike in WMA C." However, there is also no direct evidence that clastic dikes have not affected contaminant fate and transport. Provide a basis for this statement or delete.</p> <p><i>Response: Revised text in referenced sentence.</i></p>	Closed
AH-47	Section C3.3, Page C3-7, Last Sentence	<p>The last sentence of the first paragraph on page C3-7, Section C3.3, should identify the scenario as a conceptual model. Provide the following additional text: "Therefore, via this generalized conceptualization (that has not been validated in the vicinity of WMA C), potential impacts to the groundwater from contaminant sources would likely occur near the source."</p> <p><i>Response: Added "is an overview that" to first paragraph of Section C3.3. New text implies that conceptual model discussed in Closure Action Plan is intended to be a general overview – not a refined conceptual model that has undergone validation.</i></p>	Closed
AH-48	Section C3.3, Page C3-7	<p>The first sentence of the last paragraph in Section C3.3, page C3-7, references Section C3.5.5 as discussing the planned characterization activities for WMA C. The correct section to reference is: Section C3.4.3.</p> <p><i>Response: Revised text as suggested.</i></p>	Closed
JC-29	Page C3-9 Section C3.4.2	<p>This section provides little information about contaminant distribution with depth in WMA C, including the fact that Co-60 has shown at least 12 ft. of downward movement in borehole 30-06-10 in a period of some 8 years at depths well below the bottom of the C-106 tank.</p> <p><i>Response: Text inserted in Section C3.4.2.</i></p>	CLOSED 12/12/03 Action List #46
AH-49	Section C3.4.3, Page C3-10	<p>This section should include a detailed description of the additional vadose zone characterization that is planned for FY 2004. Similarly, the same section should include a detailed description of how the vadose zone will be characterized during the drilling and installation of the new groundwater monitoring wells. It is noted that Section C3.3.3 does not include a description of how additional vadose zone characterization outside the WMA C fenceline will be conducted as implied by the last sentence in Section C3.4.3. Provide additional text to address the above concerns.</p> <p><i>Response: Inserted additional text in Section C3.4.3.</i></p>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-50	Section C3.4.3, Page C3-10	<p>This section should also include a description of how vadose zone characterization will be approved by Ecology prior to implementation. Furthermore, the description of the process should identify how the closure plan will be modified administratively. In other words, the closure plan should include a reference to WAC 173-303-830 with an indication that the permit modification process as codified by WAC 173-303-830 will be followed for making changes in the RCRA corrective action characterization activities in the vicinity of WMA C. Provide additional text to address these concerns.</p> <p><i>Response: Added "information obtained subsequent to preparation of this closure action plan will be documented in a RFI report pursuant to HFFACO M-45-55." to second paragraph of Section C3.4.3.</i></p>	CLOSED
JC-30	Page C3-10 Section 3.4.3	<p>Fails to mention the work plan addendum for characterization of the soils and groundwater associated with WMA C as is currently being planned and implemented.</p> <p><i>Response: Added reference to Addendum in Section C3.4.</i></p>	Closed
AH-51	Section C3-5, Page C3-10	<p>This section should explain that the minimum interim status requirements for a groundwater monitoring network are one upgradient and three downgradient groundwater monitoring wells. The section should also identify that, to date, Ecology has not performed a RCRA CME for the WMA C to determine if the WMA C is compliant with interim status groundwater monitoring requirements. The significance of this acknowledgement is related to 1) the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, and 2) the deficiencies associated with the T and TX-TY WMA's groundwater monitoring networks and programs noted during the RCRA CME associated with those WMAs. As identified previously, certain groundwater monitoring network and program deficiencies associated with the T and TX-TY WMAs are also applicable to the WMA C (i.e., inadequate groundwater monitoring well spatial coverage at the point of compliance and inappropriate collection of filtered samples (without demonstration of representative metal concentration measurement)). Provide additional text to address the above concerns.</p> <p><i>Response: Groundwater monitoring issues will be resolved through the drafting of permit conditions.</i></p>	PLOT 4 CLOSED 12/12/03 Action Item #15
AH-52	Section C3.5, Page C3-10	<p>This section should identify and describe the Ecology letter regarding "C Single-Shell Tank (SST) Farm Waste Management Area (WMA) Resource Conservation and Recovery Act Groundwater Monitoring" dated October 11, 2000 addressed to M. Thompson (USDOE) from D. Goswami (Ecology) and M. Brown (Ecology) in which Ecology acknowledged technetium-99 contamination increases in WMA C groundwater monitoring wells. Section C3.5 should also identify that due to the increased technetium-99 contamination increases in WMA C groundwater monitoring wells, Ecology requested USDOE to conduct quarterly monitoring. Provide additional text to address the above stated concerns.</p> <p><i>Response: Ecology/ORP developed text for insertion into Section 2.3 of C-106 Closure Activity Plan.</i></p>	CLOSED 12/12/03 ACTION ITEM #33

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-31	Page C3-10 Section C3.5.1	<p>New RCRA groundwater monitoring wells have been installed at WMA C, but are not mentioned here.</p> <p><i>Response: Revised table C3-2 and added text to footnote.</i></p>	<p>CLOSED 12/12/03</p> <p>Action List #47</p>
AH-53	Section C3.5.1, Page C3-10, Paragraph 1	<p>The first paragraph of Section C3.5.1, page C3-10, indicates that additional wells will be installed to provide upgradient and downgradient coverage of WMA C. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, specify the RCRA requirement (i.e., WAC 173-303-645(8)(a)).</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #4</p>
AH-54	Section C3.5.1, Page C3-10, Paragraph 1	<p>The third sentence of the first paragraph of Section C3.5.1, page C3-10, states: "In order to comply with RCRA requirements, additional wells will be installed to provide upgradient and downgradient coverage of WMA C." The sentence could be interpreted to mean that the existing WMA C groundwater monitoring network is out of compliance. The paragraph should identify that Ecology has not performed a RCRA Comprehensive Groundwater Monitoring Evaluation (CME) of the WMA C and therefore, has made no compliance determination regarding the adequacy of the existing groundwater monitoring system to satisfy WAC 173-303-645 requirements. The paragraph should also identify that it may be concluded that the inadequate groundwater monitoring well spatial coverage at the WMA C point of compliance does not currently satisfy WAC 173-303-645(8)(a) (i.e., the current groundwater monitoring network is inadequate in that it does not allow a determination of WMA C's impact on groundwater quality at the WMA C point of compliance). Revise the text to address the above concerns.</p> <p><i>Response: Modified text in Section 3.5.1 to acknowledge new well placement to improve upgradient and downgradient coverage.</i></p>	<p>Closed</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-55	Section C3.5.1, Page C3-10, Paragraph 1	<p>The third sentence of the first paragraph of Section C3.5.1, page C3-10, states: "In order to comply with RCRA requirements, additional wells will be installed to provide upgradient and downgradient coverage of WMA C." The sentence could be interpreted to mean that the existing WMA C groundwater monitoring network is out of compliance. Approximately two years ago and as part of Milestone M-24 negotiations, Ecology provided USDOE a table which identified the number of wells that would be appropriate to install at the WMA C point of compliance to satisfy WAC 173-303-654(8)(a). This table represented a compilation of Hanford Site well needs. The well needs were based on conservative well spacings due to a lack of field-confirmed site-specific modeling input parameters. To further explain, Ecology issued a letter regarding "Monitoring Efficiency Model (MEMO) as Applied to Single-Shell Tank (SST) Farm Waste Management Areas (WMAs)" dated October 13, 2000 addressed to M. Thompson (USDOE) from D. Goswami (Ecology). The letter explained Ecology concerns with the MEMO model's application. The letter also described comparison of MEMO model well spacings and groundwater contaminant observations at two locations. The letter concluded: "Until such time that MEMO output can be validated by the comparison of field-confirmed site-specific input parameters (i.e., transverse dispersion coefficients, longitudinal dispersion coefficients, source concentrations, seepage velocities, etc.) and groundwater contaminant observations, Ecology will promote usage of conservative input parameters and/or the reliance upon closer well spacings." Section C3.5.1 should include 1) an identification of Ecology's October 13, 2000 letter, 2) a discussion of the MEMO model, 3) an acknowledgement of the number of wells that Ecology considered needed to satisfy WAC 173-303-645(8), and 4) any field-confirmed WMA C-specific MEMO model input parameters obtained during the last one and a half years. Revise the text to address these concerns.</p> <p><i>Response: Revised text in Section C3.5.1</i></p>	<p>CLOSED 12/10/03</p> <p>Action List #34 (Freestone)</p>
AH-56	Section C3.5.1, Page C3-10, Paragraph 1	<p>The third sentence of the first paragraph of Section C3.5.1, page C3-10, states: "In order to comply with RCRA requirements, additional wells will be installed to provide upgradient and downgradient coverage of WMA C." The sentence could be interpreted to mean that the existing WMA C groundwater monitoring network is out of compliance. If field-confirmed WMA C-specific MEMO model input parameters are not available, Section C3.5.1 should include a detailed description of the process that will be followed to provide a technical basis for the groundwater monitoring well spatial coverage at the WMA C point of compliance. In addition, if an inadequate technical basis exists to justify the proposed spatial coverage at the WMA C point of compliance (i.e., field-confirmed WMA C-specific MEMO model input parameters are not available), Section C3.5.1 should also include a description of how changes will be made to the groundwater monitoring network in the future. Specifically, Section C3.5.1 should identify that the closure plan modification process as codified by WAC 173-303-830 will be followed.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #5</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-57	Section C3.5.1, Page C3-10, Paragraph 1	<p>The first paragraph of Section C3.5.1, page C3-10, indicates that details of the existing groundwater monitoring network are discussed in another document. Details regarding the groundwater monitoring network and program are required to be discussed in the closure plan (see WAC 173-303-610(3)(a)(vi)). In other words, the closure plan is intended to be a “stand alone” document and must include a detailed description of activities necessary to ensure that all partial and final closures satisfy the closure performance standards including groundwater monitoring. Provide additional text to address these concerns.</p> <p><i>Response: Groundwater monitoring issues will be resolved through the drafting of permit conditions.</i></p>	CLOSED 12/12/03 Action Item #15
AH-58	Section C3.5.2, Page C3-11	<p>Section C3.5.2, page C3-11, indicates there is a WMA C groundwater sampling and analysis plan. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan and the requirement of WAC 173-303-610(3)(a)(vi), the details of the groundwater sampling program should be included in this closure document. The elements of the sampling and analysis plan should, at a minimum, include: procedures for groundwater sampling, sample documentation and preservation, shipment, chain-of-custody requirements, quality assurance/quality control procedures, etc. In addition, and due to the T and TX-TY WMA CME findings and recommendations, the sampling and analysis plan should include an identification that both filtered and non-filtered groundwater samples will be analyzed until such time as USDOE demonstrates the appropriateness of analyzing only filtered groundwater samples. Provide additional text to address the above concerns.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4
AH-59	Section C3.5.2, Page C3-11	<p>Section C3.5.2, page C3-11, does not describe how reporting of statistically significant evidence of contamination. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan and the lack of detail regarding groundwater monitoring provided in this closure plan, Section C3.5.2 should specify that the reporting requirements of WAC 173-303-645(9)(g) will be followed. Furthermore, Section C3.5.2 should include a description of how WAC 173-303-645(9)(g) reporting requirements will be satisfied. Provide additional text to address the above concerns.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-60	Section C3.5.2, Page C3-11	<p>Section C3.5.2, page C3-11, does not provide detailed description of the groundwater detection monitoring program that will be followed at WMA C. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan and the lack of detail regarding groundwater monitoring provided in this closure plan, Section C3.5.2 should include a detailed description of the groundwater detection monitoring program that will be followed at WMA C. At a minimum, the description should include the following: identification of constituents and/or parameters that will be monitored, monitoring frequency of each constituent and/or parameter, identification of the statistical method to be used to evaluate the groundwater monitoring data, justification of the proposed statistical method, a description of the statistical evaluation methodology, background data for each constituent and/or parameter, statistical mean calculations for each constituent and/or parameter, etc.</p> <p>Provide additional text to address the above stated requirements.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #4</p>
AH-61	Section C3.5.2, Page C3-11	<p>Section C3.5.2, page C3-11, does not cite WAC 173-303-645(8)(h) as a groundwater monitoring requirement that must be satisfied. In addition to including a detailed description of the statistical methodology that will be followed, include the WAC 173-303-645(8)(h) cite.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #4</p>
AH-62	Section C3.5.2, Page C3-12	<p>Section C3.5.3, page C3-12, states: "For information purposes, the following radionuclide information pursuant to AEA authority is summarized." The closure plan does not recognize Washington State's authority or obligation to impose radionuclide constituent and/or parameter groundwater monitoring for the purposes of detecting, monitoring, and/or characterizing impacts from the SSTs to the groundwaters of Washington State. Delete the statement.</p>	<p>CLOSED</p> <p>Independent follow-up by Ecology</p>
JC-32	Page C3-11 Section C3.5.3	<p>Trend plots showing concentration/activity over time should be included for principal contaminants. Data for just 2001 makes this section incomplete.</p> <p><i>Response: Inserted text and trend plot figures in Section C3.5.3.</i></p>	<p>CLOSED</p> <p>12/12/03</p> <p>Action List #48</p>
JC-33	Page C3-11 Last bullet	<p>What is the suspected source of the NO₃, SO₄, Ca and Cl? Because HNO₃ was extensively used in chemical processing, an anthropogenic source is indicated.</p> <p><i>Response: Added text to Section C3.5.3 to indicate sources of contamination are not defined.</i></p>	<p>Closed</p>
JC-34	Page C3-11 Table C3-11	<p>The date of the upgradient/downgradient determination should be indicated, as groundwater flow direction has changed with time.</p> <p><i>Response: Added reference to source document and date to Table C3-2.</i></p>	<p>Closed</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-63	Section C3.5.4, Page C3-12	<p>Section C3.5.4, page C3-12, describes groundwater monitoring well inspection and maintenance. The section should identify where this information will be maintained and how Ecology may access the documentation of well inspection and maintenance. Provide additional text to address this concept.</p> <p><i>Response: Added and revised text in Section C3.5.4.</i></p>	<p>CLOSED</p> <p>Action Item #36</p>
AH-64	Section C3.5.4, Page C3-12	<p>Section C3.5.4, page C3-12, describes groundwater monitoring well inspection and maintenance. Revise this section to include inspection and maintenance dates for each WMA C well as well as a description of actions taken.</p> <p><i>Response: Added and revised text in Section C3.5.4.</i></p>	<p>CLOSED</p> <p>Action Item #36</p>
AH-65	Section C3.5.5, Page C3-12	<p>Section C3.5.5, page C3-12, should identify that prior to installing any groundwater monitoring wells intended to satisfy WAC 173-303-645 groundwater monitoring requirements at the WMA C point of compliance, Ecology approval will be obtained. In addition, prior to installing any groundwater monitoring well intended to satisfy WAC 173-303-645 requirements at the WMA C point of compliance, the closure plan modification process of WAC 173-303-830 will be followed. Section C3.5.5 should include a description of the closure plan modification process. The description should identify the various classes of modifications and should specify that the WAC 173-303-830 closure and/or groundwater monitoring network/program modification process and criteria will be followed. Provide additional text to address these requirements.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #5</p>
AH-66	Section C3.5.2, Page C3-11	<p>The last sentence of the paragraph in Section C3.5.2, page C3-11, states: "Additional groundwater monitoring wells will provide supplementary data for characterizing groundwater flow direction, stratigraphy, vadose zone properties, and groundwater chemistry in the vicinity of WMA C." It can also be stated: "Additional groundwater monitoring wells will be installed to satisfy WAC 173-303-645 requirements for determining groundwater quality at the WMA C point of compliance (i.e., detecting releases and impacts to groundwater)". Clearly, the existing WMA C groundwater monitoring network is deficient. The text should be re-written to promote compliance rather than to imply that additional groundwater monitoring wells will provide supplementary data. Revise the text as described above.</p> <p><i>Response: Text revisions were made to C3.5.5.</i></p>	<p>CLOSED</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
AH-67	Section C3.5.2, Page C3-11	<p>Section C3.5.2, page C3-11, appears to describe that corrections of the deficiencies associated with the WMA C groundwater monitoring network will occur via a data quality objective process. In my October 8 memorandum regarding the Tier 1 document, numerous deficiencies were noted regarding the Tier 1 document's lack of acknowledgement that WMA-specific groundwater protection standards are specified by WAC 173-303-645. Section C3.5.2 should include a statement that groundwater monitoring requirements of WAC 173-303-645 will be satisfied as part of SST component and SST system closure actions. Furthermore, Section C3.5.2 should identify that during the active life of the WMA C and during postclosure, groundwater monitoring will occur at the WMA C point of compliance (as defined by WAC 173-303-645(6)). Provide additional text to address the above concerns.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4
AH-68	Section C4.0, Page C4-1	<p>Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan, the second paragraph of Section C4.0, page C4-1, should include a reference to groundwater protection standards of WAC 173-303-645(3). Recommended text is: "Additionally, the section lists the component closure activities that will contribute to meeting the closure performance standards of WAC 173-303-610(2), -640(8), and HFFACO Milestone M-45 and the groundwater protection standards of WAC 173-303-645(3)."</p> <p>Revise the text to reflect the above recommendations.</p> <p><i>Response: Partially accept. Revised text to include "and -645(3)".</i></p>	CLOSED
BBK-42	Section C4.0	<p>Please revise the text to read: "Component closure activity plans, or alternate decision documentation such as corrective measures studies or CERCLA RODs referenced by the Site Wide Permit, will be developed to describe how the components or groups of components will be characterized, disconnected, dismantled, decontaminated, removed, and/or stabilized."</p> <p><i>Response: Deleted "referenced by" and inserted "upon approval through incorporation into..."</i></p>	CLOSED
DS-4	page C4-1 line 17	<p>This time line depicts "related sequence and anticipated duration of activities", the WAC requests at a minimum the total time required to close...The figure does not have a unit of time associated with it. Other ongoing closure activities are not identified.</p> <p>Requirement: 173-303-610(3)(vii)</p> <p><i>Response: Added text referencing M-45 Milestone to Section 1.3.3 of Framework Closure Plan and in Section C4.1 of WMA C Closure Action Plan.</i></p>	Closed
BBK-43	Section C4.1, second bullet	<p>Please revise the text to read: "Column Two: The second column represents the period during which all WMA C closure activities are completed. This period begins when all of the SSTs within a WMA have been retrieved, isolated, and filled, and the ancillary equipment and soils have been characterized and appropriately positioned....."</p> <p><i>Response: Added suggested text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-44	Figure C4-1	<p>It seems like it should be possible to put some dates on this, even if it is decades. There are milestones that drive this work, maybe they could provide some data points. Please add any chronological parameters available to the figure.</p> <p><i>Response: Added relevant RFI/CMS M-45 milestone dates associated with WMA C to figure.</i></p>	<p>CLOSED</p> <p>Action Item #6 (J von Reis)</p>
AH-69	Section C4.1, Figure C4-1	<p>The first bullet directly under the "Postclosure Groundwater Monitoring" box in Figure C4-1 should read as follows: "RCRA postclosure monitoring at the WMA C point of compliance". A second bullet should be added under the "Postclosure Groundwater Monitoring" box which might read as follows: "RCRA groundwater corrective action requirements integrated with Central Plateau regional groundwater monitoring as appropriate". Revise the text to reflect these recommendations.</p> <p><i>Response: Figure text revised in accordance with recommendations.</i></p>	<p>CLOSED 12/10/03</p> <p>Action Item #31</p>
JC-35	Page C4-2 Figure C4-1	<p>While groundwater beneath WMA C will be closed under CERCLA as part of the closure of the 200-PO-1 groundwater operable unit, it should be stated that such closure must satisfy the RCRA requirements for corrective action and closure.</p> <p><i>Response: Text changes already made to the Figure are sufficient to address comment concerns.</i></p>	Closed
AH-70	Section C4.1, Figure C4-1	<p>The second bullet directly under the "Groundwater Monitoring During Closure" box in Figure C4-1 should read as follows: "Monitoring program and/or network may change during closure process". Revise the figure as described above.</p> <p><i>Response: Text changes were made to the Figure.</i></p>	<p>CLOSED 12/10/03</p> <p>Action Item #37</p>
DS-8	Attachment C 1.2.1.4	<p>Is the contingent post-closure plan complete? Figure C4 Relative Timeline of Major Activities for Closure of WMA C does not include the activities for contingent post—closure plan activities.</p> <p>Requirement: 173-303-640 (8)(ii)</p> <p><i>Response: Added text to refer to postclosure plan in Section C4.1.</i></p>	Closed
AH-71	General	<p>A general comment throughout the Tier 2 document is that the groundwater monitoring during closure is not clearly described as being WMA C-specific and at the point of compliance. For example, the second paragraph of Section C4.2.3 states: "Soil characterization and corrective measures activities will be integrated as appropriate with ancillary equipment and groundwater closure activities and with the Ecology, EPA, and DOE Central Plateau regional closure strategies currently under development." The Tier 2 document should be written to clearly describe WMA C-specific groundwater monitoring at the point of compliance to satisfy groundwater protection standards of WAC 173-303-645(3) and monitoring requirements of WAC 173-303-645. Revise the text to address these concerns.</p> <p><i>Response: Added -645 citation to C4.2.3.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-44	Section C4.2.1, Pages C4-3 to C4-4	<p>Although the HFFACO milestones/schedules listed in the Framework portion of the closure plan include some WMA C closure actions, DOE plans to conduct several other WMA C closure actions (C-200 series tanks) in the near future. Although Ecology reviewed a C-200 Series Functions and Requirements document and provided formal comments regarding the proposed actions, these proposed actions are missing from this closure plan. All proposed closure actions, including tank retrievals, must at least be summarized and included in this closure plan. These actions will be incorporated by reference into the closure plan. DOE proposes to conduct the C-200 retrieval closure actions outside of the established HFFACO approval process without even a reference to the plans or schedule in the closure plan. Revise Section C4.0 to include the C-200 series retrieval closure actions as well as the future C-104 retrieval closure action.</p> <p>Requirement WAC 173-303-610(3)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #10 (DH)
DS-5	Page C4-3 Section 4.2.1 line23	<p>What are DQO summary reports? Are they part of the DQO process? And who in Ecology approves them.</p> <p><i>Response: Corrected text with appropriate DQO document title.</i></p>	Closed
DS-6	Page C4 Sec. 4.2	<p>Since 173-303-610 requires a description of each unit, and they are not currently included, will these be provided as attachments to the closure plan or permit? If so, will the addition of these figures be permit mods?</p> <p><i>Response: No text change required. Provided clarification of "unit" and referred to component tables, also found supporting text in Section 1.2.1.</i></p>	Closed
JC-36	Page C4-3 Section 4.2.1 Paragraph 3	<p>Some indication as to the means for verifying that retrieval volume criteria have been met should be included; i.e., what technologies are being considered and when they may be chosen/implemented. Eyeball qualitative estimates are NOT acceptable.</p> <p><i>Response:</i></p>	On Hold per JWB
BBK-45	Section C4.2.1, fourth paragraph	<p>Please revise the text to read: "If the residual waste in individual tanks meets the retrieval criteria and risk metrics related to the residual waste are accepted, DOE will modify the closure activity plan and the Site-Wide permit if necessary, and then proceed with implementing the approved component closure activity plan....."</p> <p><i>Response: Revised text as suggested.</i></p>	CLOSED
JC-37	Page C4-4 Lines 6-13	<p>The schedule for placement of grout should be provided. As this is an irreversible action, grout should not be added before the WMA is ready for closure because it could preclude any additional retrieval/action in the subject tank.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #12

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-38	Page C4-4 Line 10	Cementitious grout may be free-flowing when added, but not after it sets. This can not be added before the WMA is ready for closure (see comment above). <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #12
BBK-46	Section C4.2.1, last paragraph	The text states that "Physical and administrative isolation of the tanks will occur before and after the tank retrieval and tank stabilization activities. Physical isolation refers to filling (such as by grouting) and/or capping of pipelines, drains, ducting or other openings into the tank structure to prevent..." Provide additional explanation (possibly a list) describing which physical and which administrative procedures will be taken before, and which after the tank retrieval and stabilization.	Action Item #7 (J von Reis)
DS-7	Sec 4.2.2	There has been little or no language to describe the steps needed to remove ancillary equipment. This has not been addressed in the WMA. Requirement: 173-303-610(3)(v) <i>Response: No text change. Showed supporting existing text in Sections 3.2.1.3 and C4.2.2.2</i>	Closed
BBK-47	Section C4.2.2, second paragraph	Please revise the text to read: "...the respective tank component closure activity plans. In-tank equipment will be dispositioned as in-tank debris during the tank closure activity. Disposition of ex-tank ancillary equipment (such as pipelines, diversion boxes, and cascade lines) will be described in either an ancillary equipment component closure activity plan, or tank component closure activity plan, or other alternate decision documentation such as a corrective measures study or ROD and referenced back to the SST system chapter of the Site Wide Permit. Integration activities for remediating..." <i>Response: Added text to indicate approval through incorporation into the site-wide permit.</i>	Closed
BBK-48	Section C4.2.2, last paragraph	Please revise the text to read: "Ancillary equipment closure activities will be integrated as appropriate with soil and groundwater component closure activities and with the Ecology, EPA, and DOE Central Plateau regional closure strategies currently under development. Integration will influence the implementation schedule as well as the technical and regulatory approach to completing the closure activities. Coordination of these integration actions is expected to occur through modification of the SST System Implementation Plan pursuant to HFFACO Milestone M-45-06-T20." <i>Response: Text changes made per request.</i>	Closed
BBK-49	Section C4.2.3, first paragraph	Please revise the text to read: "The two primary steps in the WMA C soil component closure activities are 1) characterizing the nature, extent, and mobility of the contamination in the soil column, and 2) performing necessary corrective measures closure in accordance with WAC 173-303-610..." <i>Response: Added requested text.</i>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-50	Section C4.2.3, second paragraph	<p>Please revise the text to read: "Soil characterization and corrective measures activities will be integrated as appropriate with ancillary equipment and groundwater component closure activities and with the Ecology, EPA, and DOE Central Plateau regional closure strategies currently under development. Integration will influence the implementation schedule as well as the technical and regulatory approach to completing the closure activities. Coordination of these integration actions is expected to occur through modification of the <i>SST System Implementation Plan</i> pursuant to HFFACO Milestone M 45-06-T20."</p> <p><i>Response: Made changes similar to requested text.</i></p>	Closed
AH-72	Section C4.2.3	<p>The text of Section C4.2.3 refers to "regional closure strategies currently under development". WAC 173-303-610(3)(a)(vi) requires the closure plan include a detailed description of activities necessary during closure including groundwater monitoring. As such, the Tier 2 document should include the detailed description of regional closure strategies if those strategies include WMA C groundwater monitoring activities. Therefore, Section C4.2.3 should identify that after groundwater regional strategies are finalized, the WMA C closure plan will be modified in accordance with WAC 173-303-830 to incorporate and/or change WMA C groundwater monitoring network and/or program description. Revise the text to address the above concerns.</p> <p><i>Response: Text added in 4.2.3.</i></p>	CLOSED
AH-73	Section C4.2.4	<p>Section C4.2.4 has omitted the fundamental step in groundwater component closure activities of groundwater monitoring to satisfy groundwater protection standards of WAC 173-303-645(3) and groundwater monitoring requirements of WAC 173-303-645. The first sentence of the first paragraph of Section C4.2.4 should identify three primary steps in groundwater component closure activities. Recommended wording is: "The three primary steps in groundwater component closure activities are: 1) groundwater monitoring to satisfy groundwater protection standards of WAC 173-303-645(3), 2) characterizing the nature and extent of contamination, and 3) performing necessary corrective measures." Revise the text to include the recommended language.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4
BBK-51	Section C4.2.4, second paragraph	<p>Please delete the second paragraph starting with "In the event...."</p> <p><i>Response: Text deleted</i></p>	CLOSED Parking Lot #3 (J von Reis)
AH-74	Section C4.2.4, Pages C4-5, C4-6	<p>Revise Section C4.2.4, pages C4-5 and C4-6, to identify groundwater monitoring to satisfy groundwater protection standards of WAC 173-303-645(3) as a fundamental step in groundwater component closure activities.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4
AH-75	Section C4.2.4, Pages C4-5, C4-6	<p>Revise Section C4.2.4, pages C4-5 and C4-6, to identify that WMA C-specific groundwater monitoring will occur at the WMA C point of compliance.</p> <p><i>Response: Inserted text into Section C4.2.6.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-C6	Sec. C4.2.4, p. C4-6, ¶ 2; Sec. C4.2.6, ¶ 2, p. C4-7	<p>The text on p. C4-6 states that the groundwater remediation may be performed per a CERCLA ROD developed for operable unit 200-PO-1. The text on p. C4-7 states that a post-closure monitoring plan will be developed as part of future modifications of the postclosure care plan. Ecology holds the requirement in WAC 173-303-665(b)(5)(b)(iv) to be an ARAR for the operable unit CERCLA cleanup, i.e., monitoring and maintaining the groundwater monitoring system. Please indicate the USDOE's intent in text.</p> <p><i>Response: Added WAC 173-303-665(6)(b)(iv) cite in sentence one of paragraph two of C4.2.6.</i></p>	Closed
JC-39	Page C4-6 Lines 4-6	<p>While corrective actions may be accomplished under a CERCLA ROD, satisfaction of RCRA Corrective Action requirements must be met and this should be so stated here.</p> <p><i>Response: Revised text from previous comment disposition sufficient for comment resolution.</i></p>	Closed
BBK-52	Section C4.2.5, last paragraph	<p>The text states that "The System Assessment Capability (SAC) is a computational tool for use in preparing the Hanford site-wide composite analysis of long-term impacts to groundwater. The WMA C risk assessment will be integrated with the SAC by preparing a constituent breakthrough curve for constituents at the water table underlying the WMA. This data set will be inserted into the SAC computations to represent the WMA as a point source in the composite analysis, as available. This will allow the localized fate and transport analysis performed at the WMA level to be directly integrated into the large-scale analysis performed by the SAC." Please include an explanation that the output from the SAC will not make any of the cleanup-levels for WMA C any <u>less</u> stringent than the regulatory requirements.</p> <p><i>Response: Added text to Section C4.2.5.</i></p>	CLOSED
AH-76	Section C4.2.6, Page C4-6	<p>Section C4.2.6, page C4-6, references another document for details of the groundwater monitoring plan. Due to the consistent lack of acknowledgement of applicability of groundwater performance standards of WAC 173-303-645 in Tier 1 of the SST closure plan and the WAC 173-303-610(3)(a)(vi) requirement that the closure plan include a detailed description of activities necessary during closure including groundwater monitoring, the Tier 2 document must contain a detailed description of the groundwater monitoring program that will be conducted during the time that WMA C component closure activities are underway and until WMA C closure is achieved. Revise the text.</p> <p>AH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4
AH-77	Section C4.2.6, Pages C4-6, C4-7	<p>Section C4.2.6, pages C4-6 and C4-7, should identify that groundwater monitoring in relation to the WMA C will be conducted to satisfy groundwater protection standards of WAC 173-303-645(3). Revise the text.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-C7	Sec. C4.2.6, p. C4-11	<p>The WMA C text for WAC 173-303-665(6) must be corrected to match the Dangerous Waste Regulations (e.g., (a) "At closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill"...should be "At final closure..."). Please review and revise quoted text as needed.</p> <p><i>Response: Revised text in Section 4.3 as suggested.</i></p>	Closed
AH-78	Section C4.2.7, Page C4-7	<p>An additional bullet should be added to Section C4.2.7, page C4-7, which identifies that groundwater protection standards will be satisfied. Recommended wording for the bullet is: "Groundwater monitoring at the WMA C point of compliance as necessary to comply with groundwater protection standards." Revise the text to include the recommended language. AH</p> <p><i>Response: Added requested text in C4.2.7.</i></p>	CLOSED
BBK-53	Section C4.2.7, second paragraph	<p>Please revise the text to read: "Should removal or decontamination of dangerous waste constituents not be achievable at WMA C, the proposed contingent final remedy for WMA C is closure in accordance with WAC 173-303-665 with the installation of an engineered surface barrier."</p> <p><i>Response: Added requested text in C4.2.7.</i></p>	CLOSED
BBK-54	Section C4.2.7, third paragraph	<p>Please revise the text to read: "performance standards for barriers under the requirements of WAC 173-303-665 are discussed in Section C4.3. Surface barrier designs developed for application to waste sites located within the Hanford Site 200 Areas will meet or exceed RCRA design criteria, as well as incorporate established long-term performance and maintenance objectives and specified design criteria. These objectives and criteria are based on an evaluation of CERCLA applicable or relevant and appropriate requirements (ARARs) and engineering criteria. A site-specific evaluation will be done to ensure that a surface barrier design candidate is appropriate for specific WMA C characteristics and will be ultimately incorporated into the Site-Wide Permit."</p> <p><i>Response: Revised text in Section C4.2.7.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
BBK-6	Section C4.2.7, fourth, fifth, and sixth paragraphs	<p>Please revise text to read. "ARARs and technical guidance pertaining to surface barrier design for various RCRA treatment, storage, and disposal (TSD) scenarios at the Hanford Site are currently defined in <i>Focused Feasibility Study of Engineered Barriers for Waste Management Units in 200 Areas</i> (DOE/RL-93-33). Based on current knowledge of waste sources associated with WMA C, it is anticipated that the minimum design criteria required for the waste site would be the modified RCRA Subtitle C Barrier, as defined in this report. However, any final barrier design will be incorporated into this permit prior to installation. Additional factors that may be considered in barrier design are aspects of risk and performance assessment modeling.</p> <p>Contingent actions for barrier design and installation of the surface barrier over WMA C would be integrated with Central Plateau regional closure strategies. For example, barrier installation over a WMA may be delayed until closure efforts in a contiguous waste site (such as a DST farm) are complete. Additionally, barrier design criteria may need to be redesigned modified if the barrier cover encompasses multiple contiguous waste sites. When the construction of the WMA C engineered surface barrier is complete, the barrier and surrounding disturbed area would be revegetated to further enhance evapotranspiration, limit erosion, and blend the site area into the surrounding landscape of the Central Plateau. Some level of performance monitoring would be implemented to ensure the surface barrier is performing as designed. Monitoring the continued integrity of the surface barrier would be accomplished through visual inspection and may will be supplemented with groundwater sampling. The long-term effectiveness of the surface barriers in the Central Plateau depends on maintaining...."</p> <p><i>Response: Revised text in Section C4.2.7.</i></p>	CLOSED
AH-79	Section C4.2.8, Page C4-8	<p>Section C4.2.8, page C4-8, should include a statement regarding groundwater protection standards. Recommended language is: "These activities would also satisfy groundwater protection standards." Revise the text to include the recommended language. AH</p> <p><i>Response: Recommended text added to Section C4.2.8</i></p>	CLOSED
AH-80	Section C4.3	<p>A major deficiency of the Tier 2 document is that Section C4.3 omits the category of groundwater protection standard as a standard with which compliance must be determined. The section must identify the groundwater protection standards of WAC 173-303-645(3) and must include applicable corresponding actions that USDOE will undertake to meet the groundwater protection standards. Revise the text to address this deficiency. AH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #4

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Comment Responses**

Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-45	Section C6.0, Pages C6-1 to C6-2	See comment for Section C4.2.1. Provide schedule information for the C-200 series tank retrieval closure actions. Additionally, include a date to provide schedule updates for the remaining known WMA C closure activities. The HFFACO M-45 implementation plan could be used as a mechanism to generate schedule updates for any WMA to be added to the SST closure plan through permit modifications upon approval of the implementation plan every two years. Requirement WAC 173-303-610(3) <i>Response: Comment will be resolved through development of permit conditions</i>	CLOSED Parking Lot #10 (DH)
DH-46	WMA C	Hold for NOD on missing General Requirements Many will be in the Framework section----- Jeanne Wallace/ Bob Wilson	HOLD
DH-47	Section C8.0	Postclosure Care Issue - Hold Alisa, Jeanne Wallace, Brenda BK	HOLD
JC-40	Page C8-1 Section C8.1.1	Integration with the Central Plateau regional groundwater monitoring system is acceptable, PROVIDED that the proposed groundwater monitoring system meets the needs for RCRA closure with waste left in place. <i>Response: Added "RCRA-compliant" to first sentence of Section C8.1.1.</i>	Closed
JC-41	Page C8-1 Section C8.1	Assuming that WMA C will be closed as a landfill, some provisions must be included for monitoring the performance of any barrier that is erected at the site. <i>Response: Added text to Section C8.1.2 to indicate subsurface monitoring systems will be part of barrier monitoring.</i>	Closed
SST CLOSURE ACTION PLAN SEPA CHECKLIST July 2003			
MJB-S1	Item A.10, p. 4 of 30	The text states that the USDOE must approve the reclassification of the residual waste as waste incidental to reprocessing that can be managed as low level waste. This statement does not reflect recent Court decisions that High Level Waste may not be reclassified by the USDOE. Please explain the USDOE's current plans to designate the waste left in the C-106 tank,	
MJB-S2	Item A.11, p. 5 of 30	¶ 4 states that nominally 114,000-L batches of 0.9 to 1.0 molar acid will be introduced directly into 241-C-106 then allowed to react with the residual waste for 1 - 7 days. The USDOE estimates that up to 210,000 gallons of acid will be required to dissolve 9,000 gal of sludge. Ecology requests that the USDOE address the addition of that large volume of acid to the Double Shell Tanks, including reactions with waste already stored in the tanks that might be released as a result of chemical interactions.	
MJB-S3	Item A.11, p. 5&6 of 30	¶ 7 on p. 5 and ¶ 1 on p. 6 indicate that the grout to be added during Phase I will be free flowing and of sufficient volume to cover the residual waste at the bottom of the tank and form a grout layer. Ecology noted that the grout performance objectives for Phase I require the material to cover the waste but not to mix with the waste. From the performance objectives, it appears that the grout will not combine with the waste to create a new waste form. Please confirm.	

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-S4	Item A.11, p. 7, ¶ 3	The text states that the HEPA filtration system will be used to control toxic or radioactive air emissions from the 241-C-106 tanks. Please explain how the HEPA filtration system will provide best available control technology (T-BACT) for air toxics.	
MJB-S5	Item A.11, p. 7, ¶ 4	Text states that contaminated equipment removed from the tank would be disposed as solid waste, and that fill equipment may be cleaned using water, which will then be disposed. Please provide more definite information about the destination of the equipment contaminated by tank waste; that is, whether it will be handled under the debris rule or considered as listed waste.	
MJB-S6	Item A.11, p. 7, ¶ 6	The text describes isolation measures planned but does not address nozzles and pipes that are present at the bottom and on the sides of the tank. Please explain what measures will be taken to seal those tank penetrations (i.e., grout flows will plug the risers and fill the lines). Also, please explain what measures will be taken to avoid intrusion via the engineered air handling system.	
MJB-S7	Item B.3.d	The text states that all pressurized raw and potable water lines feeding the 241-C tank farm were tested in July 2002; Ecology wishes to know if any water line leaks have occurred during the recent retrieval of waste from Tank C-106, with estimates of volumes lost, locations, and any corrective measures taken. In addition, Ecology wishes to know if line tests were conducted in July and any results that differed from July 2003.	
MJB-S8	Item B.4.b	The area around the 241-C tank farm is said to be "disturbed extensively". Please describe any herbicide application programs, soil stabilization efforts, or other activities conducted to control the growth of vegetation in that area.	
MJB-S9	Page 29 of 30.	Please add DOE /EA-1462, Rev. 0, <i>Environmental Assessment for the Accelerated Tank Closure Demonstration Project</i> , to the References	
MJB-S10	Page 28 of 30	Mr. Schepens' signature is lacking in part C. Please provide a Ecology a signed copy of the checklist.	
Attachment C-1 Single-Shell Tank 241-C-106 Component Closure Activity Plan			
DH-48	Section 1.0, Page C-1-1-1	Line 11. Replace "...are in accordance..." with the following: "...will comply with..." <i>Response: Accept</i>	Closed
DH-49	Section 1.0 Page C-1-1-1	Line 14. Insert "action" between "...closure..." and "...will..." <i>Response: Accept</i>	Closed
BBK-57	Section 1.0, last paragraph	Please revise the text to read: " <i>SST System Closure Plan</i> . Each component closure activity plan will constitute a modification of the <i>SST System Closure Plan</i> and require a modification to the Site-Wide Permit. Closure activities may also be integrated into the <i>SST System Closure Plan</i> as part of decisions made under corrective actions for past practices (Part IV of the Site Wide Permit) or a <i>Comprehensive Environmental Response, Compensation, and Liability Act</i> record of decision." <i>Response: Revised text in Section 1.0</i>	Closed
DH-50	Section 1.1, Page C-1-1-1	Line 28. Include the following additional text at the end of the sentence: "...as well as Section 6 of the HFFACO action plan." <i>Response: Accept</i>	Closed

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-51	Section 1.1.1, Page C-1-1-1	<p>Lines 30-36. Despite previous acknowledgement by DOE, this closure action plan neglected to include descriptions of closure actions for interconnected/adjacent components. This concept has been brought to the attention of DOE during numerous meetings with DOE and contractors. Without this detail, it is impossible to determine whether or not the C-106 closure action will adversely affect future closure actions for adjacent/interconnected components including soil. Conversely, DOE must also document how adjacent/interconnected component actions (and timing of those actions) would affect C-106 retrieval/closure actions. Revise the entire paragraph and section to include detailed descriptions of proposed closure actions for components interconnected or adjacent to C-106.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Partially accept. This section is a simple scope statement, however, a general sentence at line 32 was inserted. "A description of isolation activities for adjacent/interconnected components, including evaluations to determine impacts on future closure actions is included in Section 5.3."</i></p> <p><i>This old sentence was deleted: "The cascade line between C-106 and C-105 will be addressed in the component closure activity plan for C-105."</i></p> <p><i>Also, more detail was inserted into Section 5.3.</i></p>	<p>CLOSED 12/10/03</p> <p>Action List #25 (J von Reis)</p>
DH-52	Section 1.1.1, Page C-1-1-2	<p>Lines 1-5. Including descriptions of SST retrieval/closure actions in this closure plan is not just for informational purposes. Strike the entire paragraph and replace with the following: "Retrieval of SST waste constitutes a key SST System closure action. All retrieval actions will be approved through the HFFACO and scheduled, in advance, through HFFACO M-45 Milestones. Since retrieval actions are significant closure actions, detailed summaries of those actions will be included in the SST closure plan." Additional text is needed to describe the process for including the retrieval action summaries in the SST closure plan. Revise the text as indicated above.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Accept. The following paragraph was added: "Retrieval of SST waste constitutes a key SST System closure action. The C-106 retrieval actions will be approved through the HFFACO and scheduled, in advance, through HFFACO M-45 Milestones. Since retrieval actions are significant closure actions, detailed summaries of those actions are included in Section 2.4.3."</i></p>	<p>Closed</p>
DH-53	Section 1.1.1, Page C-1-1-2	<p>Lines 8-10. (See comment on Page C-1-1-2, Lines 30-36) Missing is a description of how actions for adjacent/attached components/soil will be coordinated with the C-106 retrieval/closure action(s).</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Accept. See response to DH-51</i></p>	<p>CLOSED 12/10/03</p> <p>Action List #25 (J von Reis)</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-Y1	Sec. 1.1.1, ¶ 2, p. C-1-1-2.	<p>Bullet 1 states that C-106 will be retrieved to the extent technically possible per HFFACO MM-45-00. Please add "and Appendix H" after M-45-00.</p> <p><i>Response: No text revision required. Explained that Appendix H is part of HFFACO M-45 milestone.</i></p>	Closed
JC-42	Page C-1-1-2 Lines 10-17	<p>What is the schedule and the technical and regulatory justification for the proposed addition of the various fill media for this tank?</p> <p>Requirement: Provide schedule as well as technical and regulatory justification for these proposed actions.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>
DH-54	Section 1.1.1, Page C-1-1-2, and throughout the document	<p>Lines 11-17. An acceptable justification has not been provided as to why a final closure action such as filling a tank with grout is needed so early in the closure process is missing. WMA-C has not been adequately characterized to allow a final grout filling of C-106 at this time. Ecology will not issue a closure action plan for a final closure action prior to proper characterization of either the component or the WMA in which it resides. Until it is documented that the tank retrieval results in a clean tank with no leaks, <u>and</u> DOE can document how adjacent/interconnected component closure actions relate to C-106 <u>and</u> that C-106 actions will not impact other closure actions, filling C-106 with grout will not be allowed. Furthermore, proposing such an action prior to completion of the SEPA process (EIS) and prior to a formal public comment period or prior to is not acceptable. Filling any tank with grout at this early stage of closure would eliminate the ability to remove additional residual waste, preclude further tank characterization, and eliminate other possible remediation options. Additionally, HFFACO Milestone M-45-05M-T01 does not require results of the C-106 retrieval including waste analysis until 2/27/04. Proposing a final closure action for public review prior to regulatory review of analytical data is not logical. A final component closure action that does not meet clean closure standards should <u>not</u> be allowed prior to sufficient characterization of WMA C. At this stage of characterization, uncertainty associated with current information and risk estimates is extremely high. Capping of tank openings would be an acceptable example an acceptable near-term closure action for WMA-C. Revise Attachment C-1 to delete filling of C-106 with grout as the closure action proposed at this time. Provide alternate closure actions that would not preclude future characterization or waste removal.</p> <p>WAC 173-303-610(3)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>Parking Lot #12</p> <p>CLOSED</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-55	Section 1.1.1, Page 1-1-2, and throughout the document	<p>Lines 18-26. The Characterization of C-106 as described in the C-106 DQO was limited by the number of available risers (one) and the lack of developed technology with the ability to reach locations inside the tank beyond just below the one riser. Additional tank characterization may be required in the future, depending on the results of the retrieval closure actions currently underway.</p> <p>WAC 173-303-610(3)</p> <p><i>Proposed revision In Ecology Review 12/4; Sent to Deborah Singleton per Dick Heggen's request 12/11 for her review by 12/12.</i></p>	Action List #27 (LM)
DH-56	Section 1.2.1, Page C-1-1-3, Lines 33-36 and Page C-1-1-4, Lines 1-4	<p>Strike all text beginning with "The actions..." The statements are unacceptable and incorrectly describe proper closure process. The actions proposed (filling with grout) are actually final closure actions that would only be allowed to occur after meeting performance standards as well as other criteria and considerations stated in the previous comments on Attachment C-1, Section 1.1.1.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #12
BBK-58	Section 1.2.1, third paragraph	<p>The text states "The three general closure performance standards defined in WAC 173-303-610(2)(i) are described in Sections 1.2.1.1 through 1.2.1.3. Removal or decontamination standards defined in WAC 173-303-610(2)(b) and WAC 173-303-640(8) are described in Section 1.2.1.4. Compliance with requirements will be documented in waste retrieval and closure demonstration project reports." Please add text explaining that these reports will be incorporated into the Site-Wide permit prior to subsequent actions being taken.</p> <p><i>Response: Revised text in Section 1.2.1. The last sentence in the last paragraph was revised to read: "Compliance with requirements will be documented in waste retrieval and closure demonstration project reports, and will be incorporated into the Site-Wide Permit as needed."</i></p>	CLOSED 12/10/03 Action #8
MJB-Y3	Sec. 1.2.1.2 ¶ 1, p. C-1-1-4	<p>Sentence 4 states that tank isolation may include administrative actions. Please describe what administrative activities will be performed, at what frequencies, and by whom. Please elaborate as to the protection of public health and the environment that the measures will afford.</p> <p><i>Response: Revised and inserted text in Section 1.2.1.2.</i></p>	CLOSED
JC-43	Page C-1-1-4, Line 21	<p>: "...at least three grout fill layers will be added."</p> <p>Requirement: Provide schedule as well as technical and regulatory justification for the addition of grout fill layers.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #12

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-57	Section 1.2.1.1, Page C-1-1-4	<p>Lines 18-23. There are likely other less permanent actions following retrieval, missing from this closure action plan, that could minimize the need for further maintenance such as capping lines, risers, covering the tank, and providing run-on controls. Assuming that proper run-on controls are in place why would Enraf or temperature probes be needed in a fully retrieved/stabilized tank? Also using a final closure action as the only example is not acceptable at this time. Revise the section to include other non-final closure actions as examples.</p> <p>Requirement: WAC 173-303-610(3)</p> <p><i>Response: Revised Section 1.2.1.1 to include requested actions.</i></p>	Closed
BBK-59	Section 1.2.1.1	<p>Please revise the text to read: "Component closure activities planned for C-106 are designed to minimize the maintenance required after the actions are complete. Waste will be retrieved from C-106 to meet HFFACO retrieval goals, the tank will be isolated from the system and at least three grout fill layers will be added. Please add text to explain if ANY inspections or maintenance will be necessary after the addition of grout.</p> <p><i>Response: The last sentence in the section was replaced with: "If the tank is filled as part of closure demonstration field activities, DOE will conduct annual visual inspections of the tank farm surface in the tank vicinity. If the tank is not filled as part of closure demonstration field activities, DOE will conduct annual visual inspections of the tank farm surface in the tank vicinity and will continue to operate any existing liquid detection or monitoring device, i.e., Enraf™."</i></p>	CLOSED Action Item #8 (J von Reis)
BBK-60	Section 1.2.1.2	<p>Please revise the text to read: "C-106 will be retrieved to the extent technically possible in accordance with criteria set forth in Milestone M-45 and Appendix H of the HFFACO. Component closure activities, as described in Section 5.0, will include stabilizing any remaining wastes, complete filling of the tank for structural integrity and intrusion prevention, and isolating C-106 from the SST system and the environment. Tank isolation activities may will include administrative actions and cutting or removing and sealing off all pipes or other connectors between C-106 and the balance of the SST system. All of these activities will serve to control the postclosure escape of remaining dangerous waste constituents. At a later point in the overall closure of the SST system, DOE will undertake final closure of WMA C. As part of WMA C closure actions, DOE will close ancillary equipment, may place a permanent barrier over WMA C if removal or decontamination of waste constituents is not practicably achievable, and may undertake other closure and postclosure actions for contaminated soil and groundwater as necessary to comply with the final status closure plan permit conditions and satisfy the associated closure performance standards. These actions will be assessed with regard to long term protection of human health and the environment through a comprehensive risk assessment of the tank, WMA, and SST system."</p> <p><i>Response: Accept. Deleted text.</i></p>	CLOSED

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-58	Section 1.2.1.2, Page C-1-1-5	<p>Lines 1-3. Missing in the risk assessment statements is a requirement to compare individual actions to cumulative risk which includes WMA-C together with other adjacent or nearby non-tank risk sources that potentially add to the cumulative risk numbers.</p> <p>Requirement: WAC 173-303-610</p> <p><i>Response: Accept. The following sentence was added: "Individual actions will be assessed for their impact on long-term cumulative risk (i.e., WMA C together with other adjacent or nearby non-tank risk sources)."</i></p>	Closed
MJB-Y2	Sec. 1.2.1.2 ¶ 1, p. C-1-1-4	<p>Sentence 3 states that the USDOE will close ancillary equipment. Please specify what measures will be used to close the equipment.</p> <p><i>Response: Explained that ancillary equipment closure outside scope of the C-106 closure activity plan as mentioned elsewhere in document. No text changes required.</i></p>	Closed
MJB-Y3	Sec. 1.2.1.2 ¶ 1, p. C-1-1-4	<p>Sentence 4 states that tank isolation may include administrative actions. Please describe what administrative activities will be performed, at what frequencies, and by whom. Please elaborate as to the protection of public health and the environment that the measures will afford.</p> <p><i>Response: The description of tank isolation activities in Section 5.3 was expanded. (See DH-70)</i></p>	CLOSED Action List #25
BBK-61	Section 1.2.1.3	<p>Please add text indicating what will happen above C-106 post tank closure and prior to closure of WMA C.</p> <p><i>Response: Revised Section 1.2.1.3.</i></p>	CLOSED
MJB-Y4	Sec. 1.2.1.4, ¶ 3, p. C-1-1-5	<p>Sentence 2 states that because the entire waste management area will not be closed with C-106, a contingent post-closure plan is not included for the tank. Please</p> <p><i>Response: Inserted reference to Section C8.1 in Section 1.2.1.4.</i></p>	Closed
DH-59	Section 1.2.1.4, Page C-1-1-5	<p>Lines 22-25. Clarify this paragraph by indicating that DOE must document the ability to clean close tanks, ancillary equipment and soils within WMA-C.</p> <p>Requirement: WAC 173-303-640(8)</p> <p><i>Response: Revised text</i></p>	Closed
DH-60	Section 1.2.1.4, Page C-1-1-5	<p>Lines 36-39. The text clearly indicates that evaluation of closure options has not been conducted relative to the final closure action proposed in this plan. This is further reason to not allow the closure action to proceed as proposed.</p> <p>Requirement. WAC 173-303-610(3) and 640(8).</p> <p><i>Response: Scheduling issues associated with this comment will be resolved through the drafting of permit conditions.</i></p>	CLOSED 12/10/03 Action List #28 (DH)
DH-61	Section 2.1.2, Page C-1-2-1	<p>Line 30. Provide additional information detailing the status of the remaining conduit as a potential pathway for contaminant release or intrusion.</p> <p>Requirement. WAC 173-303-610(3)</p> <p><i>Response: Additional information on tank isolation was added to Section 5.3.</i></p>	CLOSED 12/10/03 Action List #25

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-62	Section 2.1.2, Pages C-1-2-4 and C-1-2-5	<p>Figure 2-3 and associated text. Previous NOD #227 required a "scaled diagram indicating line numbers as well as the physical status of lines (and connections), attached pits, drains, risers, pumps, etc." Figures 2-3, 5-2, and associated text partially satisfies the original NOD. Provide additional text to comply with the original NOD.</p> <p>Requirement WAC 173-303-610(3)</p> <p><i>Response: No changes in Section 2.1.2 - as agreed; Additional information on tank isolation was added to Section 5.3.</i></p>	Closed
JC-44	Page C-1-2-6, Lines 7, 8	<p>What is the basis for declaring C-106 a sound tank? Without some type of integrity testing, the basis for declaring this tank sound is not justified.</p> <p>Requirement: Provide regulatory and technical basis for the declaration of C-106 as a sound tank.</p> <p><i>Response: A new Section 2.3 "Tank Integrity" was inserted.</i></p>	CLOSED 12/12/03 Action List #49
DH-63	Section 2.2, Page C-1-2-6	<p>Lines 7-9. DOE speculates that C-106 is a sound tank. DOE has not performed integrity assessments on any of the 149 SSTs to support the statement that "C-106 is a sound tank..." Also, characterization external to the tank has not been performed to support the claim that leakage to the soil would have been from lines, etc, but not the tank. Revise the paragraph as follows: "Although an integrity assessment, or soil/ancillary equipment characterization has not been performed relative to C-106, existing information does not indicate waste releases to the vadose zone from C-106. During the previous C-106 retrieval effort, groundwater monitoring indicated a dilution effect on Tc-99 groundwater contamination during the period of C-106 retrieval operations. To date an exact cause has not been established."</p> <p><i>Response: Ecology/ORP developed text for insertion into the new Section 2.3.</i></p>	CLOSED 12/12/03 Action List #29 (JWB/LM)
DH-64	Section 2.3, Page C-1-2-6	<p>Lines 16-19. This paragraph indicates that about 5,000 gallons of sludge remained in C-106 following retrieval. This does not match the 9,000 gallons of sludge described in Section 2.4.1. Revise the document to either explain the discrepancy or correct the data.</p> <p><i>Response: Sentence was revised. "Measurements at this time indicated approximately 97% of the sludge, 707 kL (187 kgal) of the estimated 727 kL (192 kgal), in C-106 was sluiced to double-shell tank (DST) AY-102."</i></p>	Closed
DH-65	Sections 2.4.1, 2.4.2, 2.4.3, Pages C-1-2-7 to C-1-2-9	<p>Lines 7-14. The description of 1) waste volume, 2) waste analysis, and 3) HFFACO retrieval criteria is inadequate and premature. To support a (proposed) final component closure action, data/review/analysis for all these categories must be presented in the closure plan, not just an esoteric discussion of how to gather the information. Therefore, until the above-described information is presented in this closure plan, the proposed action cannot be considered. Additionally, WMA-C has not been characterized to allow a comparison of the proposed action against overall WMA-C (cumulative) risk which further precludes a consideration of any final closure action not meeting clean-closure requirements or overall WMA-C risk at this time. The proposed closure action is to be placed on hold at this time. DH</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #12

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-Y5	Sec. 2.4.3, ¶ 5, pp. C-1-2-8&-9	<p>Paragraph 5 states that oxalic acid was used in tanks at the Savannah River Site and in Russian radioactive waste tanks. Please explain why that information relates to the use of the acid in Hanford tanks; i.e. similar contaminants, similar tank construction or use, similar results, etc.</p> <p><i>Response: Deleted sentence corresponding to comment.</i></p>	Closed
DH-66	Section 2.4.3, Page C-1-2-8	<p>Lines 29-36. Missing is a description of the C-106 retrieval process including the process involved in selecting oxalic acid as the initial retrieval technology. Retrieval is a major closure action and must be fully summarized in the component closure plan. Provide additional text to address this deficiency.</p> <p>Requirement WAC 173-303-610(3)</p> <p><i>Response: Additional text was added to this Section as a result of this and other NODs. The results of oxalic acid retrieval will be documented in the Waste Retrieval and Closure Demonstration Project Report required by TPA Milestone M-45-05H.</i></p>	Closed
DS-9		<p>What information do you have available to dispel the concern that the addition of oxalic acid presents a criticality concern because certain elements are less soluble than others? Where criticality evaluations performed? According to a memorandum (5/16/97) from DNFSB; partitioning of fissile materials presents a criticality concern when using an acid cleaning process. Post-cleaning residual sludge from the study tank had twice the concentration of Pu as those taken prior to treatment.</p> <p><i>Response: No text change required. Comment concerns are addressed in RPP-16537. Electronic copy of document given to commenter.</i></p>	Closed
JC-45	Page C-1-2-9, Lines 3-13	<p>Oxalic acid effects on the sludge are briefly mentioned. However, as a solvent for iron oxides, oxalic acid has the potential to cause serious problems with the integrity of a 60 year old, corroded carbon steel liner. The effects of oxalic acid on the liner in C-106 are not discussed. The potential effects of oxalic acid and the volume of neutralized waste to be added to AN-106 are also not discussed</p> <p>Requirement: Provide the technical and regulatory justification for use of oxalic acid and its potential effects on the carbon steel liner of C-106 . Also discuss the potential effects of the addition of waste to AN-106 in terms of waste acceptance criteria and volume/space limitations.</p> <p><i>Response: Text added to Section 2.4.3</i></p>	<p>CLOSED 12/12/03</p> <p>Action List #50</p>
MJB-Y6	Sec. 2.4.3, ¶ 8, pp. C-1-2-9	<p>The text indicates that the existing sluicer will be used to rinse off the inside of the tank. Please provide sluicing volumes and confirm that the rinsate will be pumped from the tank to DST 241-AN-106.</p> <p><i>Response: Revisions were agreed to and made</i></p>	<p>CLOSED</p> <p>Action List #43</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-46	Pages C-1-2-9 - C-1-2-12, LDMM System	<p>The proposed LDMM system is ineffective and unacceptable. Drywell logging is unlikely to detect a leak in a timely manner. Furthermore, no details are provided on the proposed schedule for logging, the depths to be logged, the tools to be used, logging rates to be employed and the frequency of logging. Nor is there any indication of the response to any detected leak. In addition, there has been at least 12 feet of vertical movement of Co-60 in drywell 30-06-10 since 1993 at depths well below the bottom of the C-106 tank. How will you distinguish this ongoing movement of unspecified cause from any possible leak during waste retrieval in C-106? The sensitivity of leak detection in the range of 4,000 to 12,000 gals using drywell logging is neither technically defended nor acceptable. Use of the ENRAF system has severe limitations, notably its location and inability to measure during operation of pumps. Mass balance monitoring of the waste retrieval in C-106 in 1999 was highly uncertain and could not determine whether a leak of less than 6,600 gals had occurred because of measurement uncertainty. Mass balance is too fraught with error to be acceptable. No mention is made of HRR which is proposed for the adjoining C-103 tank and could be used for C-106. In short, the proposed LDMM system does not pass the laugh test.</p> <p>Requirement: Propose an LDMM system that is functional and effective, including methods, data to be measured, data interpretation, frequency of data interpretation to demonstrate timely LDMM, and responses to any detected leaks.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #6
DH-67	Section 2.4.4, Pages C-1-2-9 to C-1-2-13	<p>The described baseline LDMM is unacceptable. Reference Ecology letter to James Rasmussen dated June 2, 2003 summarizing Ecology concerns over the DOE baseline LDMM. Using the DOE baseline LDMM, it will not be possible to adequately document the volume or location of potential tank leaks. Essentially, almost all SST retrievals will use methods that render tank mass balance calculations almost useless (+/- 70,000 gallons or more). Ex-tank dry well LDMM may be able to detect leaks if leaks occur near a dry well; however, DOE predicts up to a seven year time frame to detect leaks not located near a dry well. Additionally the DOE estimate of 18,000 gallons for a center tank leak is based on old transport models (Isaacson – 1980's) and Ecology questions the validity of the 18,000 gallon estimate. Describe how DOE will adequately characterize the area surrounding an SST to provide confident data to use in assessing risk and compliance with closure goals/requirements.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #6
MJB-Y7	Sec. 2.4.4.1, ¶ 3, p. C-1-2-11	<p>The text indicates that the timeframe required for leaks to migrate, detection of small volumes, and low percentage of soil limits use of the dry wells. Confirmation of leaks is said to be possible; however, it is not clear how the USDOE will determine that capability is needed. Please explain when use of the dry wells will begin and for how long monitoring will continue after the transfers end.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	CLOSED Parking Lot #6

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
MJB-Y8	Sec. 2.4.4.3, ¶ 4, p. C-1-2-12	<p>The text indicates that the air flow through C-106 will dissolve some of the acid, which would then be transported through the filters. It is not clear what impact that acid will have on the filter materials or their metal frames. Please provide information about the potential for releases of oxalic acid to the environment.</p> <p>Also, please address the potential for reactions between the waste in DST AN-103 and the sodium oxalate formed when the oxalic acid is neutralized in the DST. Please provide information about the potential for emissions from AN-103 that could result those reactions.</p> <p><i>Response: Section revised as agreed</i></p>	<p>CLOSED</p> <p>Action List #44</p>
JC-47	Page C-1-3-5, Table 3-2	<p>This table indicates that tanks C-103 and C-109 are leakers. Neither tank is listed in Hanlon as an "assumed leaker". Table 3.1 (RPP 16608, Rev. 0) indicates that some of the assumed leakers in Hanlon may not have leaked, but that C-105 (not listed as an assumed leaker in Hanlon) has leaked.</p> <p>Furthermore, the declaration is made in this closure plan that tank C-106 is sound. This conflicting information indicates that the basis for determining the integrity of tanks is highly suspect and must be resolved. This conflicting information certainly underscores the importance and significance of an effective LDMM system (see comment 5 above).</p> <p>Requirement: Provide a technical and regulatory basis for the declaration of tanks as sound; i.e., having integrity.</p> <p><i>Response: Updated table and inserted text in Section 3.3.2 and new Section 2.3 (Tank Integrity Summary).</i></p>	<p>Action List #51</p> <p>CLOSED 12/12/03</p>
JC-48	Page C-1-3-6 Line 19	<p>The statement is made that WMA C is not currently under assessment status. What is presumably intended is that WMA C is not currently in interim-status groundwater quality assessment monitoring under 40 CFR 265, Subpart F. True? Please clarify.</p> <p>Requirement: Clarify the meaning of this phrase.</p> <p><i>Response: Added RFI/CMS workplan reference and deleted "assessment status". Assessment status no longer drives the RFI/CMS process.</i></p>	<p>Closed</p>
JC-49	Page C-1-4-1, Line 25	<p>The statement is made that grout fill will be placed in the tank. What is the technical and regulatory justification for this action? When is it proposed to occur? Is this not an irreversible action that would not be acceptable until final tank closure?</p> <p>Requirement: Provide answers to the questions stated above; i.e., the technical and regulatory justification along with a schedule for grout fill placement in the tank.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>
DD-103	p. C-1-4-2, para 1	<p>Please clarify that this risk assessment for C-106 is focused on long-term impacts to groundwater and does not evaluate soil nor air pathways, as might be required in an intruder scenario or with short-term risks, respectively.</p>	

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
JC-50	Page C-1-4-5 Lines 5-8	<p>See comment JC-49 regarding the addition of grout fill to an SST before final closure. If this is an unacceptable action, then it can not be used as a base assumption for risk assessments.</p> <p>Requirement: Provide technical and regulatory justification along with schedule for grout placement in a tank.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>
DH-69	Section 5.2 All, Pages C-1-5-3 to C-1-5-7	<p>Revise the entire section. The proposed actions lack sufficient basis, are premature, and are counterproductive at this time. Additionally, until a complete description of closure actions related to ancillary equipment attached to C-106 is presented, neither interim nor final closure actions will be considered. Delete the description of the grout proposal. Provide a description of related ancillary equipment actions as well as alternative interim closure actions to replace the proposed final grout closure action.</p> <p>Requirement. WAC 173-303-610(3)</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>
JC-54	Page C-1-5-5, Line 23	<p>A stated purpose of the Phase 1 cementitious grout filling is to provide structural stability and compressive strength as a foundation for later addition (at some unspecified time) of Phase II and III grout layers. Later in the section, "gel time" is one of the sought parameters for the Phase 1 grout. All these comments indicate that the Phase I grout will harden and "gel", thereby making it non-retrievable and that constitutes an unacceptable irreversible action.</p> <p>Requirement: Provide the technical and regulatory justification for the addition of cementitious grout and the physical and chemical properties of each layer, including the role it will play in the satisfaction of the technical objectives for cementitious grout.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>
JC-55	Page C-1-5-5-5 through Page C-1-5-7, Sections 5.2.1 and 5.2.2	<p>DOE is expecting Ecology of the addition of cementitious grout to the tanks without providing a technical and regulatory justification and schedule for this material. Furthermore, the design parameters for the various phases of grout have as yet to be determined. No approval will be forthcoming for the addition of cementitious grout until this required, but missing information is provided.</p> <p>Requirement: Provide technical and regulatory justification as well as schedule for the addition of cementitious grout to tanks in various phases and provide the specific design properties of these various grout layers to Ecology. This will be required prior to any approval of this action.</p> <p><i>Response: Comment will be resolved through development of permit conditions</i></p>	<p>CLOSED</p> <p>Parking Lot #12</p>

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Comment Number	Position in Document	Comment/Response	Comment Closure Date
DH-70	Section 5.3 All, Page C-1-5-8	<p>Revise the entire section. Isolation of C106 from ancillary equipment cannot occur without first analyzing the impact of isolation on both the tank and ancillary equipment. For instance, the tank may be needed to flush line waste into prior to retrieval. The last sentence (Lines 28-29) is not acceptable. DOE must provide additional text summarizing the interrelated actions for tank(s) and ancillary equipment. A condition listing a schedule to provide this information may be necessary.</p> <p>Response: Revised text in Section 5.3.</p>	<p>CLOSED 12/10/03</p> <p>Action List #25</p>
DH-71	Section 5.4 LDR	LDR cannot be addressed until waste is adequately characterized. Issue – hold for internal discussion Bartus	HOLD
DH-72	Section 5.6	<p>General Requirements Issue – HOLD This section should be expanded to include general requirements not covered elsewhere in the permit, including a specific level of detail for C-106. Hold for final NODs</p> <p>Jeanne Wallace/Bob Wilson/ R. Heggen</p>	HOLD
DH-73	Section 5.8	<p>Schedule Issue – HOLD Not if the final action will not occur at this time.</p> <p>Perhaps a revised schedule for other less final actions. Additional NOD or condition DH</p>	HOLD
JC-56	Page C-1-5-14, Table 5-2	<p>This table indicates that a certified SST system closure plan was submitted to Ecology on 12/29/2002. In fact, Ecology has as yet to receive a “certified SST system closure plan”, so this milestone was technically not met.</p> <p>Requirement: Provide an SST system closure plan to Ecology that is certified to be true, accurate and complete, or submit a schedule as to when such a document will be submitted to Ecology. No approval will be forthcoming without receipt of a closure plan that is certified to be “true, accurate, and complete” in accordance with WAC 173-303-610.</p> <p>Response: Clarified to commentor that the table reflects milestone language. Added footnote to Table 5-2 that “Certification obtained for RPP-13774 Rev.0”</p>	Closed
DH-74	Section 6.0	<p>Care after C-106 + Post Closure ---Issues – Hold for additional NODs or conditions</p> <p>Jeanne Wallace/R. Heggen</p>	HOLD

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Item	Page #	Comment (s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	Hold Point	Disposition (Provide justification if NOT accepted.)	Status
BR-1.	General Comment	<p>This large multi-tiered document has no index. An index would be extremely helpful. If it is not possible to provide an index then much more cross-referencing to other sections of the document is needed.</p> <p><u><i>Response: The latter is preferable. Indices at this point would be time-prohibitive and aren't typically provided in closure plans. Better cross-referencing to other sections can be provided where specified.</i></u></p>		Accepted response (10/31/03)	No Action Required
BR-10.	Tier 1, Section 4.4.2, p. 4-14, Lines 16	<p>Direct exposure requires further explanation. It includes ingestion and inhalation, for rads and nonrads. Add additional pathways for direct exposure.</p> <p><u><i>Response, The impacts from accidents only examined the highest probable accident, in this case, ventilation accident, which is based on an air release pathway and not direct exposure or ingestion pathway.</i></u></p>		Accept response however, the air permit for the tank farms will be examined for non-rads.	Action, check air-permit for non-rads, and include them if possible
BR-11.	Tier 1, Section 4.5, p. 4-16, Line 8	<p>Replace WAC 173-303-7490(4)(b) with WAC 173-340-7490(4)(b).</p> <p><u><i>Accept, will change to the correct WAC number</i></u></p>		Accepted response (10/31/03)	Action, replace WAC Number
BR-12.	Tier 1, Section 4.5, p. 4-16, Line 14-15	<p>Add to this section the frequency of biological surveys, and whether they will happen before or after closure activities.</p> <p><u><i>Response, an ecological risk assessment will be done prior to system SST closure. Biological surveys conducted now would be misleading, because tank farm operations is managed in a manner to eliminate to the extent possible intrusion of plants, animals, and insects into the Waste Management Areas</i></u></p>		Conditional acceptance	Action, add text stating a need to determine when a biological survey needs to completed
BR-2.	Tier 1, Section 1.3, p. 1-14, Lines 10-13	<p>More details are needed regarding soil remediation. Applicable regulations include WAC 173-340 and potentially CERCLA; these should be mentioned. Also, the land disposal facility for the soil should be given (ERDF?).</p> <p><u><i>Response: This information is contained in other sections. Section 1.3 was intended to be a general overview of integration opportunities. See Sections 1.1.3, 1.3.1, and</i></u></p>		Deferred Ecology needed to speak to Brenda (10/31/03)	

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		<p><u>3.4.1 as examples.</u></p> <p><u>For the latter comment, the following could be added to the end of Section 3.2.2: Contaminated soil may be generated during WMA closure actions. The disposal site for soil will likely be the Low-Level Burial Grounds mixed waste trenches unless soil remediation is done under CERCLA. If CERCLA is the statutory authority for soil remediation, then ERDF may be used. However, soil remediation is expected to occur as part of RCRA corrective action or TSD closure, thus the LLBG would be the appropriate disposal unit. One exception could be soil remediation outside of the WMAs which may be remediated through the CERCLA process and referenced in the Site-Wide Permit.</u></p>		
BR-3.	Tier 1, Section 4.3, p. 4-4 line 28 – p. 4-5 line 2	<p>While it is good that this risk assessment addresses groundwater contamination, there should be some mention of the extent to which it addresses direct contact exposure.</p> <p><u>Response, an enhanced RCRA Subtitle C will be placed over the site. This barrier has a design life of 500 years and is designed to prevent bio-intrusion and human intrusion (DOE/RL-93-033)</u></p>	Accepted response, provided additional detail on the barrier is given (10/31/03)	Action, provide additional text and references to the barrier, included solid description of barrier in modeling section
BR-4.	Tier 1, Section 4.3, p. 4-5 line 2	<p>Explain in this section why evaluation of intruder risks is being deferred to future closure analyses. The information should be given in this document.</p> <p><u>Response, an enhanced RCRA Subtitle C will be placed over the site. This barrier has a design life of 500 years and is designed to prevent bio-intrusion and human intrusion (DOE/RL-93-033)</u></p>	Accepted response, provided additional detail on the barrier is given (10/31/03)	Action, provide additional text and references to the barrier, included solid description of barrier in modeling section
BR-5.	Tier 1, Section 4.3.1, p. 4-5, Line 19	<p>Strike “and the environment” from this line. The risk assessment just addresses human health risks. No consideration is given to ecological receptors.</p> <p><u>Response, during the December 13, 2002 seminar on risk assessments, it was agreed that ecological risk assessment will be done at system SST closure, the wording here reflects that intent. An ecological risk shall be completed before final closure of the WMA.</u></p>	Accepted response, provided additional detail on ecological risk (10/31/03)	Action, include information on when ecological risk will be done and why ER is deferred until WMA Closure
BR-6.	Tier 1, Figure 4-1, p. 4-7	<p>Add an arrow to show leaching of contaminated surface soil. Leaching often begins at the surface, so it applies to both surface and subsurface soils. Perhaps “surface soil” is also considered “subsurface soil” with respect to leaching (?). This is confusing to the reader; please clarify.</p> <p><u>Accept, will add an arrow to the figure</u></p>	Accepted response (10/31/03)	Action, include an arrow on figure

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BR-7.	Tier 1, Section 4.3.2, p. 4-8, Lines 15-19	Add here the number of COPCs that will be evaluated based on the DQO. <u>Accept, however for a number of chemicals listed in the DOO, IRIS has not published either reference dose nor slope factors. Therefore quantifying the risk from those chemicals may not be possible.</u>		Modify response (10/31/03)	Action, response will be modified to indicate a hierarchy of risk was examined, not just IRIS
BR-8.	Tier 1, Section 4.3.2, p. 4-9, Lines 1-8	Add in this section a bullet: No exceedence of WAC 173-340 standards for direct contact. <u>Accept, will add the bullet</u>		Accepted response (10/31/03)	Action, add bullet to text
BR-9.	Tier 1, Section 4.4.2, p. 4-14, Lines 4-6	Provide the basis and criteria for estimating accident frequencies. <u>Response, Accident frequencies are based on published documents, FSARs, DSA and other safety hazard analysis documents</u>		Accepted response (10/31/03)	Action, add sentence stating this
DD-1	Tier 1, p. 4-1, para 2	Although mention is made of protecting the environment, little detail is provided. Please specify that an ecological risk assessment (ERA) will be performed as part of the SST closure process. An ERA is specified in DOE/RL-99-36 (USDOE, 2000), as well as for the Tank Farm Feasibility Study and Tank Farm Closure Risk Assessment in RPP-14284, Rev. 0 (Mann et al, 2003). <u>Response, as agreed to in the December 13, 2002 workshop on risk assessments, an ecological risk assessment will be completed as part of the Tank Farm Feasibility Study, and WMA Closure. Presently, the tank farms are managed in a manner intended to eliminate, to the extent possible, the intrusion of plants and wildlife into the facilities. Furthermore, Ecological impacts will be much more impacted by the engineered features (for example, surface barriers, fill materials) and until these engineered features are better known.</u>		Accepted Response (11/04/03)	Action, rewrite paragraph acknowledging Ecological Risk Assessment, when it is due, and why it is being delayed
DD-10	Tier 1, p. 4-6, #2	This list of receptor scenarios should also include terrestrial and aquatic ecological receptors. <u>Response, terrestrial and aquatic ecological receptors will be evaluated during the ecological risk assessment at WMA Closure.</u> EDE for radionuclides and ILCR and HI for nonradionuclides should all be assessed for all receptors. Decisions should be based on all three of these metrics (not just EDE). <u>Response, all metrics (Dose, ILCR, and HI) are evaluated.</u>		Accepted Response (11/04/03) Accepted Response (11/04/03)	Action, include statement about ERA Action, modify text accordingly. Please note that there are DOE Orders that require us to evaluate Dose for these

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					receptors, but there are not regulations for us to evaluate ILCR and HI for Intruder and All pathways farmer.
DD-11	Tier 1 p. 4-8, #2	Please see my comments for HNF-SD-WM-TI-707, Rev. 2 (Rittmann, 2003). <u>Response, please see attached responses</u>		Accepted Response (11/04/03)	No action, document has been revised to Rev. 3 which addressed Ecology's comments. Rev 3 is a draft and needs to be reviewed.
DD-12	Tier 1, p. 4-8, #3	Provide the basis for including only Tc-99, I-129, Cr+6, nitrate, and nitrite. At a minimum, cite the "previous fate and transport simulation efforts at Hanford." What about assessing other COPCs. For example, the RPE for tank C-104 (RPP-7804, Rev. 0) lists C-14, Se-79, U-233/234/235/236/238, and total U, in addition to those COPCs mentioned here. <u>Response, will provide additional references for these CoC's. In the final risk assessment other CoCs will be addressed. Additionally, a table will be prepared that shows the CoCs that are the major contributors to the cumulative metric.</u>		Accepted Response (11/04/03)	Action, provide additional references and table.
DD-13	Tier 1, p. 4-9, #4	Define "C4 concentration." This appears redundant with the next bullet (i.e., 4 mrem/y EDE for beta/photon emitters in drinking water). <u>Response, there are two ways of calculating dose, one is target organ dose, while the other is EDE. The C4 concentrations are derived from the target organ dose. See section 5.2.2 of Appendix C for a complete discussion of dose calculation.</u> Why not also include BDAC standards (USDOE, 2002) for ecological receptors in soil, sediment, and water, based on 1 rad/d (for aquatic animals and terrestrial plants) and 0.1 rad/d (for riparian and terrestrial animals)? <u>Response, the appropriate standards for ecological risk will be included at WMA closure</u> Why not also include a dose limit to an RME individual (e.g., 15 mrem/y from WDOH [1997])? <u>Response, this list was not intended to be an all-inclusive list. The performance objectives listed here were derived from RPP-14283 and that should have been</u>		Accepted Response (11/04/03) Accepted Response (11/04/03) Accepted Response (11/04/03)	No Action Required No action required Rewrite section and

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		<u>referenced. RPP-14283 provide a detailed discussion of WDoH guidance document</u>			provide the correct reference
DD-14	Tier 1, p. 4-10, para 4	The bulleted "closure management alternatives" (i.e., retrieval efficacy/residual volume, tank fill effects, final cover efficacy) comprise independent variables influencing risk, rather than "alternatives" per se. Alternatives specify particular values within variable distributions. ????		Accepted Response (11/04/03)	Action, rename section to variables instead of alternatives.
DD-15	Tier 1, p. 4-12, para 1	It appears that short-term risk assessment considers only radionuclides. Please address nonradionuclide risk too. Response, The short-term worker exposure analysis will address nonradionuclides by examining the Air Permits for non-radionuclides.		Accepted Response (11/04/03)	Action, examine NOC air permit for non-radionuclides and update section with non-radionuclides
DD-16	Tier 1, p. 4-14, step 4	Are only inhalation and direct exposure (i.e., external radiation exposure) evaluated for mixed waste accidents? What about ingestion? Response, ingestion of material under these scenarios would be negligible compared to inhalation. The ingestion mechanism would only account for some fraction of the inhaled quantities which would deposit in the mouth and esophagus.		Accepted Response (11/04/03)	Action, state that this is a bounding calculation
DD-17	Tier 1, p. 4-14, step 5	Why are "involved workers" apparently excluded here? Response, omitted by accident will be included		Accepted Response (11/04/03)	Action, change text to include involved workers
DD-18	Tier 1, p. 4-15, step 7	Why are "involved workers" apparently excluded here? Response, omitted by accident will be included		Accepted Response (11/04/03)	Action, change text to include involved workers
DD-19	Tier 1, p. 4-15, step 8	Please list the ICRP (1991) dose-to-risk conversion factors for low and high doses. Response, For involved and noninvolved worker, ICRP 1991 dose to risk conversion factors are: 4.0 E-04 LCF/rem for low doses under 20 rem 8.0 E-04 LCF/rem for high doses over 20 rem For general public ICRP 1991 dose to risk conversion factors are: 5.0 E-04 LCF/rem for low doses under 20 rem 1.0 E-03 LCF/rem for high doses over 20 rem		Accepted Response (11/04/03)	Action, include dose to risk conversion factor

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DD-2	Tier 1, p. 4-1, para 4	Section 4.0 discusses short-term and long-term risks, radionuclides, nonradionuclides, human health, and the environment. Please clearly state that 1) short and long-term risks from radionuclides and nonradionuclides will be evaluated in humans, and 2) long-term risks from radionuclides and nonradionuclides will be evaluated in terrestrial and aquatic ecological receptors. <i>Accept, but noting that ecological risks will be evaluated at Tank Farm Closure</i>	Accepted Response (11/04/03)	Action, rewrite paragraph acknowledging Ecological Risk Assessment with these statements
DD-20	Tier 1, p. 4-16, para 2	The WAC citation should be "WAC 173-340-7490(4)(b)." In addition to contaminated soil, note that ecological receptors may be impacted by contaminated groundwater (e.g., riverbank springs, irrigation scenarios) <i>Response, the correct citation will be given</i>	Accepted Response (11/04/03)	Action, Provide correct citation
DD-21	Tier 1, p. 4-16, para 6	Re an ERA, a food chain evaluation should be performed, independent of the amount of bioaccumulation that may be predicted. Exposure to COPCs via the foodchain has become fairly routine in ERA, especially for upper trophic level receptors (e.g., birds, mammals, fish). <i>Response, will add food chain evaluation to paragraph</i>	Accepted Response (11/04/03)	Action, add food chain evaluation to paragraph
DD-22	Tier 1, p. 4-16, para 7	A conceptual model should be developed for ERA which includes all source terms, exposure pathways, and terrestrial and aquatic receptors. Likewise, a range of spatial and temporal scales should be evaluated. <i>Response, as agreed to in the December 13, 2002 workshop on risk assessments, an ecological risk assessment will be completed as part of the Tank Farm Feasibility Study, and WMA Closure. Presently, the tank farms are managed in a manner intended to eliminate, to the extent possible, the intrusion of plants and wildlife into the facilities. Furthermore, Ecological impacts will be much more impacted by the engineered features (for example, surface barriers, fill materials) until these engineered features are better known.</i>	Accepted Response (11/04/03)	Action, add when a conceptual model for the ERA will be developed
DD-23	Tier 1, p. 4-17, para 1	Note that the specified data packages (i.e., RPP-14283, HNF-SD-WM-TI-707) focus on human health risk and largely ignore ecological risk to terrestrial and aquatic receptors. A parallel effort with data package development should be aimed at ecological risk. <i>Response, appropriate data packages will be developed for the ecological risk at during WMA closure.</i>	Accepted Response (11/04/03)	Action, add text to note that similar data packages, if necessary, shall be developed for the ERA
DD-24	Tier 1,	Please provide more detail on the independent merit review board. Will their review	Accepted Response (11/04/03)	No Action necessary

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	p. 4-17, para 5	<p>comments be incorporated into the SST closure risk assessment methodology?</p> <p><u>Response, the requirements for the independent merit review board are still developed. However, details of the review board are often discussed during the technical exchange on risk assessment that occurs every other week. Ecology is invited to those meetings.</u></p>			
DD-25	Tier 1, p. 4-18, para 1	<p>In addition to data on residual tank waste, please list data requirements for other source terms, as well (e.g., retrieval leaks, past leaks, ancillary equipment residuals, intentional discharges, etc.).</p> <p><u>Accept, will add additional data requirements for other source terms</u></p>		Accepted Response (11/04/03)	Action, will provide additional data requirements for other source terms
DD-3	Tier 1, p. 4-2, para 2	<p>Please provide a citation for the System Assessment Capability. Please see my comments for RPP-14284, Rev. 0 (Mann et al, 2003).</p> <p><u>Accept, please see attached responses, and will include reference to System Assessment Capability</u></p>		Accepted Response (11/04/03)	No action, document has been revised to Rev. 1 which addressed Ecology's comments. Rev 1 is a draft and needs to be reviewed.
DD-4	Tier 1, p. 4-2, para 3	<p>Please specify "multiple performance criteria."</p> <p><u>Accept, risk metrics will be spelled out</u></p>		Accepted Response (11/04/03)	Action, define multiple performance criteria in terms of Risk Metrics
DD-5	Tier 1, p. 4-4, para 3	<p>Risk assessment objectives (Section 4.2.2) should include ecological risk.</p> <p><u>Accept, will add ecological risk</u></p>		Accepted Response (11/04/03)	Action add Ecological Risk to numbered list
DD-6	Tier 1, p. 4-5, para 4	<p>Please see my comments for RPP-14283, Rev. 0 (Mann et al, 2003).</p> <p><u>Accept, please see attached responses</u></p>		Accepted Response (11/04/03)	No action, document has been revised to Rev. 1 which addressed Ecology's comments. Rev 1 is a draft and needs to be reviewed.
DD-7	Tier 1, p. 4-5, para 5	<p>Please specify source terms (i.e., COPCs, their inventory, and concentrations).</p> <p><u>Response, CoCs and Inventories are given in Tier 2 Addendum C1 and in RPP-15317</u></p>		Accepted Response (11/04/03)	Action, provide reference for inventories and CoCs
DD-8	Tier 1, p. 4-6, para 2	<p>The conceptual exposure model (Figure 4-1) should include terrestrial and aquatic ecological receptors, in addition to various human receptors (consistent with Figure 4-3</p>		Accepted Response (11/04/03)	Action, include a statement that says an ecological risk

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		<p>in DOE/RL-99-36, Rev. 1).</p> <p><u>Response, ORP has committed to doing an ecological risk assessment before closure of a WMA, a conceptual model figure will be developed for the ecological risk and will be added to the closure plan at that time.</u></p> <p>Is "Trespasser" (Figure 4-1) the same as "Intruder?"</p> <p><u>Response, trespasser is the same as intruder and the figure will be modified</u></p>		<p>conceptual model will be developed at the time an ERA is done.</p> <p>Action, change figure</p>
DD-9	Tier 1, p. 4-6, #1	<p>The institutional control period is described as 150 yrs (not 50 yrs) in the Tri Party response letter (7/11/02) to HAB Consensus Advice #132.</p> <p><u>Accept, the text will be changed to reflect this.</u></p>	Accepted Response (11/04/03)	Action, revise text to 150 years
JC-1	Tier 1, Page 4-1 Lines 1 and 2	<p>A risk assessment is required for closure of units as a landfill AFTER an adequate demonstration/analysis proves that clean closure is not possible. This statement needs to be added to this paragraph. Furthermore, since most agree that clean closure is unlikely, a technically credible risk assessment should be performed to evaluate the clean closure option. If, as suspected, clean closure is not feasible, then that risk assessment should be included in the Tier 1 Closure Plan as applicable to all tanks. (JC)</p> <p><u>Response, the risk assessment for the Clean Closure option is being conducted as part of the Tank Farm EIS</u></p>	Accepted Response 11/20/03	Action Item: Include a pointer to the EIS specifically stating that the Clean Closure Risk Assessment is being provided by the Tank Farm Closure EIS
JC-2	Tier 1, Page 4-4 Line 1	<p>For the risk assessment at the closure of a WMA, ACTUAL volumes of retrieval leaks will be needed, NOT hypothetical estimates. An effective LDMM system will provide this data. (JC)</p> <p><u>Response, this risk assessment was completed before retrieval began therefore the use of hypothetical retrieval leaks is appropriate, since no data on retrieval leak volumes are available. Furthermore, I believe that the LDMM system will be deployed on future retrievals and leak volumes calculated by the LDMM can be used to update risk assessments, but until actual volumes are available, a hypothetical leak will be used for the risk assessment. The LDMM is scheduled to be deployed for the retrievals at Tanks S-103, C-105, and C-103</u></p>	Accepted Response 11/20/03	Action Item: Remove "hypothetical" in front of retrieval leak. Add text that actual data will be used to examine retrieval leaks when that data becomes available.
JC-3	Tier 1, Page 4-4 Line 3	<p>For the risk assessment at the closure of a WMA, ALL liquid waste disposal sites both within and adjacent to the existing boundary of the WMA that will be covered by a barrier will constitute a new source term. Definitive inventories will be needed not just for the SSTs and facilities within the current perimeter fence of a WMA, but also for adjoining cribs, trenches, specific retention trenches, tile fields, reverse wells, French drains so that a credible risk assessment of this new composite source term can be</p>	Accepted Response 11/20/03	Action Item: Add explanation about SAC analysis to page 4-1 to address concerns from nearby facilities

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		performed. (JC) <i><u>Response, the System Assessment Capability is performing a composite risk analysis that will address this question. This will be reference along with the expected publication of the document.</u></i>			
JC-4	Tier 1, Page 4-6 Line 2	See comment for Page 4-4, Line 1. (JC) <i><u>Response, the risk assessment for the Clean Closure option is being conducted as part of the Tank Farm EIS</u></i>		Accepted Response 11/20/03	Action Item: See action item for comment 4-1 line 1
JC-5	Tier 1, Page 4-6 Lines 18-22	The emphasis here is on human receptors at various locations as depicted in Figure 4-1. Ecosystem risk is not mentioned here, but is in Section 4.5. A note that ecosystem risk is addressed later in the section would be appropriate to indicate that this element has not been ignored. (JC) <i><u>Response, will include a note in this section addressing the ecological risk</u></i>		Accepted Response 11/20/03	Action Item: Provide table about levels of risk assessment and it is included and evaluated at each level
JC-6	Tier 1, Page 4-8 Lines 20-24	Unless and until proven otherwise, uranium should be included in this list. (JC) <i><u>Response, uranium will be added to this list, please note the risk assessment provided for WMA C did include uranium.</u></i>		Accepted Response 11/20/03	Action Item: Add uranium to this discussion
JC-7	Tier 1, Page 4-12 Figure 4-2	This figure nicely depicts the process of reduction of uncertainty. How will uncertainty be quantitatively addressed to demonstrate the success of this process in a way that can be easily understood by stakeholders? Please address. (JC) <i><u>Response, the initial risk assessment biased the input parameters so that the results would be on the low side. For example, the hydraulic conductivity used in the modeling was 50 m/d, a higher hydraulic conductivity would shorten the travel time, but reduce the peak values because of more water flowing through the system. It was believed that a hydraulic conductivity of 50 m/d was on the low side. Therefore, when a RCRA monitoring well was installed just outside the WMA C Fenceline, it was requested that the monitoring well go all the way to the basalt, and that unconfined aquifer be tested. This was done in September, the drilling indicated the formation was open framework gravels down to the basalt, and aquifer tests indicate the hydraulic conductivity was between 1,000 and 6,000 m/d. We are doing the same with tank waste samples. In our model, we assume that Tc-99 in the sludge is 100% soluble with water, testing from PNNL laboratory indicates that in may only be 25% soluble. So, uncertainty is reduced by having a data collection program in conjunction with the risk assessment and applying the new data to the model.</u></i>		Accepted Response 11/20/03	Action Item: Refer to the uncertainty section in WMA Closure Plan
JC-8	Tier 1,	Emphasis on conceptual model development is focused on fate and transport through the		Accept Response	Action Item: Provide

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	Pages 4-4 to 4-12	<p>vadose zone. What is the approach to be used for groundwater transport to the potential receptors? Please specify. (JC)</p> <p><i>Response, the model incorporates groundwater transport to the fence line. At that point, it is assumed the water will be withdrawn from the aquifer at that location. For points downstream of the fence line, a streamtube analytic solution is used. Additionally, results from the vadose zone model are being transmitted to PNNL for use in the SAC model.</i></p>	(11/20/03)	add
JC-9	Tier 1, Pages 4-4 to 4-12	<p>As the models/codes are likely to be similar for all computations, some discussion of the modeling approaches and codes should be addressed. Please specify. (JC)</p> <p><i>Response, a modeling data package with this information was created and will be referenced.</i></p>	Accepted Response 11/20/03	Action Item: Refer to modeling data package to describe model setup.
MB-1	Tier 1, Sec. 4.3.2, Define the Conceptual Exposure Model, p.4-8	<p>In item 3, a number of contaminants of concern having long half-lives are listed. Absent is uranium; the State of Washington is concerned that no effort is made to include this toxic in those constituents with long-term impact.</p> <p><i>Response, Uranium will be added to this list, additionally in Addendum C1, a table will be prepared showing the contaminants of concern that are the top contributors to the risk metric</i></p>	Accepted Response 11/20/03	Action Item: add uranium to list of COPCs
MB-2	Tier 1, Sec. 4.4.2 Radiological Risk from Accidents Involving Mixed Wastes, p. 4-13	<p>This section indicates that radiological risk will be expressed as the number of latent cancer fatalities (LCF) resulting from accidents. In sec. 4.3.2, a parameter is listed that bounds the lifetime cancer risk (LCR) at 1E-5. It is not clear why radiological risk is confined only to LCF. Radiological risk clearly encompasses non-fatal cancers; explanation must be added to explain the choice of LCF alone. That explanation must address the bases that the USDOE used to choose LCF as representative of all cancer risk.</p> <p><i>Response, The latent cancer fatality is consistent with the methodology approval by Ecology in AX RPE and TWRS EIS and provides a means for comparison with these other documents including S-112 F & R, S-102 F & R and C-104 F & R. This methodology is consistent with the International Commission of Radiological Protection (ICRP) recommendations for calculating dose to risk. This methodology does not represent all cancer risk. The methodology for the long-term groundwater and soils risk in Section 4.3.2 is different than the LCF risk. This risk represents exposures to current worker and general public should the most bounding accident</i></p>	Accepted Response 11/20/03	Action Item: Add non-radionuclides to short term risk

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BR-28.	General note based on Tier 2, Sec. C5.1.2, Figure 5-3	<p><i>occur during closure activities only.</i></p> <p>Figure 5-3 shows exceedence of the I-129 MCL at the fenceline for the base case at about 2050 or 2100. This is the only COC that is projected to actually exceed an MCL. All others appear to remain well below their MCL. It appears that I-129 is a relatively significant problem and should always be discussed in tank risk documents along with Tc-99.</p> <p><u><i>Response, there is not an MCL for I-129, what is reported as an MCL is actually a MCL derived concentration relating dose from beta emitters to a 4 mrem in a year dose using target organ.</i></u></p>	Accepted response (10/31/03)	No action required
BR-13.	Tier 2, Figure C2-2, p. C3	<p>Some sites that were referred to in the History of WMA C section should be added to this figure: 202A building, 244AR vault, and 244A lift station. If these locations are outside the map area then add arrows pointing in their relative directions.</p> <p><u><i>Response, All three of the sites are to the south of WMA C. The map can be updated to show arrows labeled with the sites. (Note: I could not find reference to the 244A lift station in my version of the WMA C draft)</i></u></p>	Accepted response (10/31/03)	Action, include an arrow on figure
BR-14.	Tier 2, Section C2, p. C8, lines 11-13	<p>Provide more information about UN-200-E-27: type of release (liquid, solid), depth of contamination ("surface" could go down to 15 ft).</p> <p><u><i>Response, The UN-200-E-27 release was airborne particulate contamination, and the impact is limited to the ground surface.</i></u></p>	Accepted response (10/31/03)	Action, add sentence
BR-15.	Tier 2, Section C2, p. C8, lines 14-16	<p>Provide the thickness of clean soil that was used to cover UN-200-E68. This is important to evaluating compliance with WAC 173-340.</p> <p><u><i>Response, The WMA C text was taken from a document (PNNL-13024) that misquotes the source document – the WIDS report states "the affected areas (for UN-200-E-68) were either decontaminated to background radiation levels or covered for later decontamination", with no indication that it was covered with clean soil. The source of the wind-borne contamination was determined to be the 241-C-151 diversion box, which was opened, flushed, and sprayed with Turco Fabri-Film to physically fix contamination to the structure surface. This text can be added to the WMA C UPR discussion.</i></u></p>	Accepted response (10/31/03)	Action, add discussion
BR-16.	Tier 2, Section C2, p. C8,	<p>Provide the distance to the south of WMA C that UN-200-E72 is located. Also give its aerial extent, how the contamination is "fixed" in place, the source of the contamination, and its depth.</p>	Accepted response (10/31/03)	Action, add discussion

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	lines 17-21	<u>Response, The site is located near the 216-C-8 crib. The surface contamination was fixed in place with Turco Fabri-Film. The source of the contamination was determined to be from the burial of previously undocumented contamination material. The area was surrounded with a chain and posted as a Surface Contamination Area, however, the site is no longer marked or posted. No information regarding the buried material was given in the WIDS report, it is assumed that the contamination extends to the depth of the buried material, but the aerial extent and depth are not known.</u>			
BR-17.	Tier 2, Section C2, p. C8, lines 22-24	Give the direction for UN-200-E81 relative to 244 CR vault – is it N, S, E, or W? Also give the depth of the gravel cover. This is important to evaluating compliance with WAC 173-340. <u>Response, the unplanned release is to NE of the 244 CR vault, near the 241-CR-151 diversion box. The cover was comprised of 0.5 m (18 inches) of backfill and clean gravel.</u>		Accepted response (10/31/03)	Action, add discussion
BR-18.	Tier 2, Section C2, p. C8, lines 25-29	The location of UN-200-E82 is not clear. Is it between tanks C-104 and C-101? What is the depth of the gravel cover at this site? This is important to evaluating compliance with WAC 173-340. <u>Response, the release occurred at the 241-C-152 diversion box and flowed to the northeast, downgrade, until it pooled into an area, measuring approximately 0.46 m² (5 ft²), outside the WMA C fence, according to the WIDS report. The reference used for the text was erroneous, it will be updated to state that the source was determined to be the feed line running between tank C-105 and the 221-B building, and the underground waste line leak was discovered near the 241-C-152 diversion box. The depth of the clean gravel applied in 1969 was not provided in the WIDS report, however, it states that additional decontamination of the area was done in 1985.</u>		Accepted response (10/31/03)	Action, add discussion
BR-19.	Tier 2, Section C2, p. C8, lines 25-29	Where is UN-200-E-86? The previous revision of this document had a very useful figure showing the location of the UPRs and UN's relative to the tanks. With this figure deleted the descriptions of the locations for the sites require greater detail. Alternatively, add the UPRs and UN's to Figure C2-2. <u>Response, The WIDS report states that the release occurred near the southwest corner of WMA C, outside the fence. The site is an area measuring approximately 6 by 6 m (20 by 20 ft), with concrete AC-540 marker posts at each corner. The surface has been covered with "Shotcrete". It is posted with "Underground Radioactive Material" signs.</u>		Accepted response (10/31/03)	Action, add discussion

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BR-20.	Tier 2, Section C2, p. C9, lines 3-6	<p>Please add how UN-200-E99 was decontaminated.</p> <p><u><i>Response, The release site was not decontaminated (the reference used was erroneous); radiological surveys completed inside the posted Surface Contamination Area (in support of herbicide applications in 1981) found no detectable contamination, and the Surface Contamination postings were removed on March 5, 1981 and the area was released from radiation zone status, based on the radiation survey results. The reference used for the WMA C text states the release site as west of the 244-CR vault; the WMA C text will be corrected to say the release was a posted area located south of 7th street, directly south of the 244-CR vault, per the WIDS report.</i></u></p>	Accepted response (10/31/03)	Action, add discussion
BR-21.	Tier 2, Section C5.0, General	<p>There are many instances in which concentrations or doses, generally obtained via modeling, are reported to greater than 2 significant figures. This gives the reader the illusion that the estimates are quite good. Given the high level of uncertainty in the BBI, processes modeled and other inputs, there is little justification for exceeding 2 significant figures on any of the estimated concentrations or doses.</p> <p><u><i>Accept, numbers will be displayed with only 2 significant digits.</i></u></p>	Accepted response (10/31/03)	Action, only report to 2 significant digits
BR-22.	Tier 2, Section C5, p. C5-1, lines 21-23	<p>This statement should be rephrased to indicate that the dose is only a radiological dose. Also, the pathway of exposure should be given in this statement.</p> <p><u><i>Accept, statement will be re-worded.</i></u></p>	Accepted response (10/31/03)	Action, re-word statement and add pathway to exposure
BR-23.	Tier 2, Section C5.1.2, p. C5-10, lines 4-5	<p>Please rephrase this sentence: Estimated past leaks from C105 and ancillary equipment have released 13.26 Ci of technecium-99, to read <u>Past leaks from C105 and ancillary equipment have released an estimated 13 Ci of technecium-99.</u></p> <p><u><i>Accept, sentence will be changed to suggested text.</i></u></p>	Accepted response (10/31/03)	Action, re-word statement and add pathway to exposure
BR-24.	Tier 2, Section C5.1.2, p. C5-10, lines 16-18	<p>Please replace the expression "selected phase removal" with a more detailed explanation of this process. Also, please provide the reader with a reference for the HTWOS projected residuals.</p> <p><u><i>Accept, the inventory and terminology is described in addendum C1. A better reference to the appropriate sections will be provided.</i></u></p>	Accepted response (10/31/03)	Action, will provide reference to the appropriate sections in addendum C1
BR-25.	Tier 2, Section C5.1.2, Tables C5-3,	<p>Grouting of pipelines is not guaranteed. Therefore, a case with ungrouted pipelines should be added for all COCs.</p> <p><u><i>Response, ancillary equipment must be removed, isolated, and/or stabilized. Because</i></u></p>	Accepted response (10/31/03)	No action required

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	C5-4, C5-5	<i>of these requirements, it is expected the pipelines either removed or grouted, that is also the working assumption for the EIS.</i>			
BR-26.	Tier 2, Section C5.1.2, Lines 2-6	Chromium is given as the primary hazard index driver. However, given that uranium is also of concern from a hazard perspective (in addition to being a cancer risk) there should be a statement here about its role as a hazard, and it should be ranked relative to nitrate, nitrite and chromium. The ranking of the hazardous chemicals would be useful in this section. <i>Accept, will provide additional text on other contaminants</i>		Conditional acceptance (10/31/03)	Action, a ranking of contaminants per metric will be added, the table will include both HSRAM industrial and residential, a discussion of choice of scenarios will also be provided
BR-27.	Tier 2, Section C5.1.2, General	This section should include some discussion about grout failure in tanks via cracking and grout separation from tank walls. <i>Accept, additional text will be provided describing the advection case. The advection case would be similar to grout failure or grout separation from tank walls</i>		Accepted response (10/31/03)	Action, a discussion of the advection case will be provided. The advection case would be similar to grout failure
BR-29.	Tier 2, Section C5.1.2, Table C5-5	The value given for the residuals in 244-CR vault and catch tank release by diffusion is given as 0.0000, while other values are reported at levels as low as E-06. Is this a typo? Please put actual values in for this release even if they are low. <i>Accept, will provide the correct values</i>		Accepted response (10/31/03)	Action will provide correct values
BR-30.	Tier 2, Section C5.1.4 p. C5-17	Sensitivities to infiltration rates and diffusion rates out of the grout should also be examined. <i>Response, sensitivity to diffusion rates is provide in the addendum, for infiltration rates, we used conservative values. A table will be prepared giving major model parameter assumptions and the relative impact they have.</i>		Accepted response (10/31/03)	Action re-do uncertainty section
BR-31.	Tier 2, Section C5.1.4, Table C5-6, p. C5-19	The last row discusses Kd and indicates that as Kd increases from 0.0 to 0.01 the peak concentrations decrease by 5% at the fence line. Is this true for uranium? A Kd of 0.6 mL/g was used for U, which means that concentrations modeled are 3 times lower than they would be if a Kd of 0 was used. Some evidence suggests that sorption Kd values for U should be 0 for Hanford subsurface materials (BHI-01667). Please address how conservative the approach is for uranium. <i>Response, more recent studies, (Serne, 2003) suggest that uranium has a Kd of 0.2 to 4.0 mL/g. With the lower Kd being appropriate at high and low pH values.</i>		Accepted response (10/31/03)	No action required

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BR-32.	Tier 2, Section C5.2, p. C5-20, lines 29-30	Provide a sentence that describes the basis for choosing the scenarios that are discussed in this section. <u>Accept, the basis for choosing these scenarios will provided.</u>	Accepted response (10/31/03)	Action, provide basis for choosing risk scenarios
BR-33.	Tier 2, Section C5.2, p. C5-21, line 2	Please provide the revision of the document cited. <u>Accept, revision 3 of HNF-SD-WM-TI-707 was used.</u>	Accepted response (10/31/03)	Action, will provide the correct revision
BR-34.	Tier 2, Section C5.2.3, p. C5-27, Table C5-9	The table gives risk values for Cr(VI) as if it is a carcinogen. Are the values in this table for Cr (VI) cancer risk values, or hazard index values? If they are hazard index values please indicate this. <u>Response, These are ILCR number for Cr(VI). ILCR comes from inhalation during showering and dust inhalation from using groundwater for irrigation</u>	Accepted response (10/31/03)	Action, will provide stating the Cr(VI) ILCR is from inhalation from showering and dust inhalation from using groundwater for irrigation
BR-35.	Tier 2, Section C5.2.3, p. C5-27, Table C5-9	Notice that past leaks and unplanned releases result in risk exceeding 1E0-5 in the river in the year 2355 for the HSRAM residential scenario. Risks in groundwater at the fenceline and in the exclusion zone are higher than this at earlier dates. This is problematic, and remedial actions should be addressed in the closure plan. It would be helpful to the reader if a reference to the section of the closure plan that discusses remedial actions could be given on p. C5-26. Also, there seems to be an interchanging of the terms "exclusion zone" and "core zone". It would be best to chose one of these and use it consistently throughout. <u>Response, we have provided Columbia River water as undiluted. In reality, there would be a dilution factor applied for Columbia River surface water. We will use "core zone" boundary nomenclature</u>	Accepted response (10/31/03)	Action, exclusion zone boundary will be changed to core zone boundary throughout the document. Will provide additional language stating the calculations are biased toward the higher numbers
BR-36.	Tier 2, Section C5.2.3, p. C5-27, Table C5-9	What is Columbia River groundwater? Is this the springs along the river? If so, why are concentrations in the river the same, or in some cases higher, than those in the groundwater? Wouldn't dilution influence the concentrations in the river? <u>Response, Columbia River groundwater would be groundwater just before it enters the Columbia River. No dilution should occur in this water.</u>	Accepted response (10/31/03)	Action, explain the difference between surface water and groundwater, provide example of dilution.
BR-37.	Tier 2, Section C5.3.2, p.C5-31	This section only addresses exposure to rads. Please address exposure to non-rads such as gases like ammonia and H ₂ S. <u>Response, The short-term worker exposure analysis will address nonradionuclides</u>	Accepted response (10/31/03)	Action, check air permit for inventory and if possible include non-rads

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		<i>(i.e., chemicals) on new data from the waste retrieval of tank C-106</i>		
BR-38.	Tier 2, Section C5.4.1, p.C5-31, line 27	The document appears to have no Figure C5-9. Is the statement supposed to refer to Figure C5-8? <i>Accept, yes wrong figure caption, will be corrected</i>		Accepted response (10/31/03) Action, change figure caption
BR-39.	Tier 2, Section C5.4.1, p.C5-32, line 17-18	The discussion makes it sound as though groundwater flow is along rows in tank farms, rather than down gradient. Please clarify. <i>Response, at the present time the groundwater flow direction is to the Southwest due to the influence of B-Pond. Predicted long term flow direction is to the southeast, which is roughly parallel to the line of tanks. Assuming this flow direction is also the most conservative since it represents the shortest distance to the WMA C fenceline</i>		Accepted response (10/31/03) Action, provide additional text for groundwater flow directions
BR-40.	Tier 2, Section C5.4.1, p.C5-32, line 22-23	Please justify ignoring gas-phase transport of iodine. This also refers to Addendum C, p. C1-19, line 8. <i>Response, Monitoring of iodine-129 in groundwater indicates the transfer of iodine-129 from groundwater to air would be a minor. It is expected that air-transport of I-129 would be negligible. Additionally, although the numerical code to run air transport is available, they are computationally intensive and can take weeks to run one simulation. This maybe investigated in greater detail in the future.</i>		Accepted response (10/31/03) No Action Required
BR-41.	Tier 2, Addend. C, Section 2.0, p. C1-9, Lines 33-38	Please define "downstream" (is this down gradient?) and "near the site" (quantitatively if possible). <i>Accept, downstream is downgradient, text will be modified. Near the site is within the core zone boundary</i>		Accepted response (10/31/03) Action, change downstream to downgradient and define near the site
BR-42.	Tier 2, Addend. C, Section 3.1, Figure 3, p. C1-13	Please replace the expression "breakthrough curve" with "contaminant concentrations through time"; please mention that the "routing" will be done electronically. <i>Response, breakthrough curves are the standard nomenclature when discussing contaminant transport.</i>		Accepted response (10/31/03) Action, provide definition of breakthrough curve
BR-43.	Tier 2, Addend. C, Section 3.3.1, p. C1-17, Table 3 and General	There is proposed use of an enhanced RCRA C barrier. It is important to reference documents or sections of the closure plan that describe the characteristics of the barrier. In other parts of Hanford RCRA C barriers are expected to fail rapidly due to the cracks that can form in an arid climate, so the enhancements are important if the lifetime is to be 500 y, and the reader should know where to find these. <i>Accept, a description of the barrier and its performance will be added along with the</i>		Accepted response (10/31/03) Action, provide adequate description of modified RCRA Subtitle C barrier and appropriate references

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BR-44.	Tier 2, Addend. C, Section 3.3.1, p. C1-18, Line 11	<p><u>appropriate references for the barrier.</u></p> <p>Define "unit source inventory" or reference the section of the closure plan where it has been explained.</p> <p><u>Accept, unit inventory is discussed in Sections 4.1 and 4.2 of Addendum C1. All numerical models were simulated with an inventory of 1 Ci. The model results for each source term (past leak, retrieval leak, tank residuals, or ancillary equipment residuals) can then be multiplied by the actual inventory expected for the source term. This allows us to scale the results to the appropriate inventory. Inventory for the tanks are constantly changing.</u></p>		Accepted response (10/31/03)	Action, reference appropriate section in Addendum C1
BR-45.	Tier 2, Addend. C, Section 3.3.2, p. C1-19, line 28-30	<p>It is difficult to tell where the streamtubes begin and how contamination from the vadose zone connects with streamtubes – a figure would be very helpful.</p> <p><u>Accept, a 2-Dimensional cross-sectional model is used to model each within the vadose zone to the fenceline, however from the fenceline to the river a streamtube model is used. A figure will be provided</u></p>		Accepted response (10/31/03)	Action, add figure showing streamtubes and text describing streamtubes
BR-46.	Tier 2, Addend. C, Section 3.5.1, Table 5, p. C1-24	<p>Give the size of 216-C-8 french drain leak. Also, summarize briefly from RPP-15327 for UPR-200-C136.</p> <p><u>Accept, the amount of effluent discharged to the 216-C-8 french drain is 10,000 L (2,640 gal)</u></p>		Accepted response (10/31/03)	Action, include number of gallons discharged to 216-C-8 french drain to table
BR-47.	Tier 2, Addend. C, Section 3.5.2, p. C1-34, lines 1-4	<p>Explain more in the text about the dropping of C-14, cyanide and Se-79 from the list, and the addition of Cr (VI). Is the empirical groundwater information pertinent to the tank farm areas? What processes attenuate C-14, cyanide and Se-79, and which have introduced Cr (VI)?</p> <p><u>Accept, the CoCs presented in this risk assessment are ones that driven the dose, ILCR, and Hazard Index for previous risk and performance assessment and have made it through the vadose zone through the vadose zone to the groundwater from the monitoring program. Risk assessments are iterative in nature, additional CoCs are being examined and a chart or table will be provided that shows the cumulative radiological dose, hazard index, and ILCR and the CoCs that a major contributors to the metric</u></p>		Accepted response (10/31/03)	Action, a ranking of contaminants per metric will be added, the table will include both HSRAM industrial and residential

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BR-48.	Tier 2, Addend. C, Section 4.0, p. C1-35 Bullets 6&7 in shaded box	<p>These bullets are a bit misleading. Macropore flow can mobilize even contaminants with high Kds. Since we must resort to models in lieu of data it should be up front that not all processes of significance are understand accounted for. Please insert a bullet about model assumptions.</p> <p><u>Response, The vadose zone flow and contaminant transport modeling is based on continuum assumption. Potential discrete, preferential pathways such as clastic dikes and poorly sealed well casings are not included. Analysis for the S/SX field investigation report has shown that clastic dike effects on long-term risk under low recharge conditions are negligible.</u></p>	Accepted response (10/31/03)	No action required
BR-49.	Tier 2, Addend. C, Section 4.0, p. C1-36, lines 4-11	<p>This section is unclear. Please define "Minimal changes in groundwater impacts" and "groundwater impacts were reduced" relative to a reference point.</p> <p><u>Accept, paragraph will be re-written. Minimal changes in impacts refer to the different release rates (the peak concentration for a release that took place over 1 year was not very different from the peak concentration when the release from the tanks took 500 years)</u></p>	Accepted response (10/31/03)	Action will re-write the paragraph
BR-50.	Tier 2, Addend. C, Section 4.0 and 4.1, p. C1-36 and C1-37	<p>Please make the parameters on lines 1-3 on p. C1-36 consistent with those on lines 28-32 on p. C1-37. It is difficult to tell which parameters were actually tested for sensitivity.</p> <p><u>Accept, will provide a better discussion on page C1-37</u></p>	Accepted response (10/31/03)	Action will provide better discussion sensitivity
BR-51.	Tier 2, Addend. C, Section 4.2.1, p. C1-39, lines 9-10	<p>The solubility for sodium nitrate is given to be 72 g/L in the tank solution. It is given later in the document (Addendum C, p. C1-119) to be 1/5 of 360 g/L based on the literature. Please cross-reference the discussion in Addendum C here, or move that discussion to this section.</p> <p><u>Accept, however, although a solubility-release model was examined in this Risk Assessment, none of the results for the Risk Analysis used the solubility release model, since the waste in these tanks are sludge and not salt cake. A solubility release model was included to provide experience with this model before modeling salt cake</u></p>	Accepted response (10/31/03)	No action required
BR-52.	Tier 2, Addend. C, Figures 6 and 8	<p>Please provide the nuclides that have been modeled in these figures. Which nuclide is the mobile one, and which is the immobile one? Do the mobile and immobile have the same specific activities? Is figure 8 based on the unit source inventory?</p> <p><u>Response, In section 4.2 unit inventory is discussed generically in terms of different</u></p>	Accepted response (10/31/03)	No action require

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		<u><i>K_ds. Inventories for different source terms vary significantly and it becomes impossible to determine sensitivities, when the inventory is varies. The point to this section was to take out the impacts due to inventory by always leaving it at 1 curie or 1 kg. By doing this we can examine the impacts due to changing the release rate, the K_d, and the hydraulic conductivity of the aquifer. For example, in Figure 6 say the CoC is Tc-99, what is the relative impact if Tc-99 is modeled with a K_d of 0.1 mL/g instead of 0.0, from these figures, if Tc-99 had a K_d=0.1, the concentration would drop from 689 pCi/L to 103 pCi/L. For Figure 8, the impact to hydraulic conductivity was examined, in this case increasing the hydraulic conductivity from 4.8 m/d to 50.0 m/d, results in peak concentration drop from 689 to 83.9. These section was provided to show the sensitivity to different parameters</i></u>			
BR-53.	Tier 2, Addend. C Section 4.3.1, p. C1-49, lines 4-16	It is explained that the larger the volume of solution used in retrieval the more dilute the contaminants in the leaking solution. However, the more solution used in retrieval the longer the retrieval will take and the longer the tank will be leaking. Therefore, the total volume leaked will likely be larger than in a lower-volume retrieval situation. The reader will not get this from the discussion in this section, and it is misleading to imply that using more solution in retrieval is more conservative than using less when it comes to leaks. For a larger volume of solution in retrieval you should consider larger leaks. <u><i>Accept, the methodology used to calculate the retrieval leak has been re-examined, and will be re-written. In the methodology presented here, a concentration is calculated based on the volume of retrieval fluid. Instead of using this methodology, the concentration of the retrieval fluid will be taken from the Hanford Tank Waste Operations simulator</i></u>	Accepted response (10/31/03)	Action, re-write retrieval leaks section in light of the new data	
BR-54.	Tier 2, Addend. C, Figure 14, p. C1-57	Please change the symbols on this graph, since most people will only see a black and white version. The multi-directional triangles are hard to tell apart. <u><i>Accept, will change symbols on graph</i></u>	Accepted response (10/31/03)	Action, redo graph with better symbols	
BR-55.	Tier 2, Addend. C, Section 4.3, Tables 12, 13;	Notice that plumes of I-129, nitrate, nitrite and Cr (VI) (and possibly other contaminants) from leaks, late in this century and into the beginning of next, are expected to become diluted by about a factor of 10 between the fenceline and core zone boundaries. Travel time looks to be about 20 to 30 y. The dilution/dispersion process is worth discussion. Either discuss it in close proximity to the tables (more detail in Section 4.3.3) or reference the place in the document where it has been discussed. <u><i>Accept, dispersive spreading within and transverse to the main direction of flow causes the gradual dilution of the contaminant plume.</i></u>	Accepted response (10/31/03)	Action, provide discussion of dispersive spreading from fenceline out to river	
BR-56.	Tier 2,	Please provide a figure for uranium similar to Figures 17 and 18. The time scale can be	Accepted response	Action, add figure for	

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	Addend. C, Section 4.3.2, p. C1-65	different if necessary, but its behavior over the next 100 y is worth showing because U is an important COC throughout the site. Additional figures showing its behavior with a Kd of 0 would be helpful, because this Kd is being used in other areas of the site (300 area, for instance). <u>Accept and discussion point, will provide a figure for uranium, but in light of the recent PNL document (June, 2003), changing the K_d for uranium is in appropriate</u>	(10/31/03)	uranium
BR-57.	Tier 2, Addend. C, Section 9.0, p. C1-119 and C1-120	This section is very qualitative and brief and not very helpful. It would be good to highlight the parameters for which you considered several possible values and give a quantitative summary of how those changes influenced the peak concentrations. It would be helpful if the parameters that were not considered quantitatively could be addressed at the end of the section. So, the section could be divided into quantitative evaluations, and qualitative evaluations. This section is not a good place to introduce new information. <u>Accept, this section will be moved to just before the Risk Assessment results and the information and organization requested will be proved</u>	Accepted response (10/31/03)	Action, re-write limitations and uncertainty section. Section will also be move to just before the section 7.0
BR-58.	Tier 2, Addend. C-2, General	Because this document has no index it would be very helpful if each of the tables in this section had a footnote to direct the reader to where the corresponding discussion in the text can be found for each table. <u>Accept, will key tables to page numbers</u>	Accepted response (10/31/03)	Action, will key tables to text page numbers
BR-59.	Tier 2, Addend. C, Table 2-4, p. C2-16	The risk values for the Columbia River population are very large and orders of magnitude beyond 1E-05. Addendum C has minimal discussion about this. To prevent various panic attacks it would be helpful to discuss this scenario at length. <u>Response. Tables with Columbia River population should not have been included. Two factors were not taken into account when these stables are dividing the risk by the population (5,000,000) and dividing the risk by a dilution factor (dilution factor would be large, total estimated recharge of all of Hanford going into the Columbia River is 50 ft³ while the Columbia river flows at 120,000 ft³)</u>	Accepted response (10/31/03)	Action will remove tables with Columbia River Populations
BR-60.	Tier 2, Addend. C, Table 2-5, p. C2-17	It looks like Native Americans will be at a relatively high risk level (1E-05 is exceeded in many places and at many times), and this appears to be only groundwater and only Tc-99 – they may actually be at higher risk when all other pathways and contaminants are considered. And this is just one WMA. In this case there may also be panic attacks, so discussion is warranted. <u>Response, the risk framework HAB consensus advice #132, although it does not</u>	Accepted response (10/31/03)	Action will provide discussion on which risk scenarios were chosen and why

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		<u>directly apply to tank retrieval decisions, states the core zone will have an industrial scenario for the foreseeable future, and that other scenarios may be used for decision making. In this spirit, the risk assessment provides discussions of industrial, residential, and all-pathways farmer in the main discussion and provides additional exposure scenarios in Addendum C2.</u>			
DD-100	Tier 2, Add. C1, p. C1-127, para 2, bullet 5 (Conclusions)	Re pCi/L groundwater data cited, please reference Figure 10. Contrary to what the text indicates, the 3030 pCi/L peak concentration is without retrieval for the diffusion-dominated release model (see Figure 10). <u>Accept, you are right will modify text</u>		Accepted Response (11/04/03)	Action, fix text
DD-101	Tier 2, Add. C1, p. C1-128, para 3, bullet 2	Radiological EDE did not exceed dose targets at any location for residual waste, past leaks, nor retrieval leaks for all of the scenarios presented (Tables 22, 25, and 28). <u>Accept, you are right will modify text</u>		Accepted Response (11/04/03)	Action fix text
DD-102	Tier 2, Add. C1, p. C1-128, para 3, bullet 3	ILCR exceeded the 1E-5 target for the residential scenario for all sources at the fenceline (and several other downgradient points for past leaks) but not the industrial scenario for any source (Tables 23, 26, and 29). HI did not exceed the target for residual waste, past leaks, nor retrieval leaks for any of the scenarios presented (Tables 24, 27, and 30). <u>Accept, you are right will modify text</u>		Accepted Response (11/04/03)	Action fix text
DD-103	Tier 2, Add. C1, p. C1-130, Conclusions	Please cite the relevant data tables to support each of these conclusions, because most of these conclusions are not readily apparent. <u>Accept, will cite relevant data tables.</u>		Accepted Response (11/04/03)	Action, cite relevant tables
DD-26	Tier 2, App. C, p. C5-1, para 3	In the first sentence, "submissions" may be more appropriate than "agreements." <u>Response, on December 13, 2002, a seminar was held with Ecology in which the iterative nature of risk assessments for tank farms was recognized. During this meeting, it was determined that risk assessments would be done at different stages of tank closure. Seminar notes were transmitted to all participants on January 29, 2003. From those seminar notes, RPP-14284 was written to reflect what was expected for each risk assessment along the closure path.</u>		Accepted Response (11/04/03)	No Action necessary
DD-27	Tier 2, App. C, p. C5-1, para 4	Table C5-7 shows that dose for "past tank leaks and UPRs" is 1.15E-1 mrem/y at the 200 Area Core Zone boundary (not 0.01 mrem/y, as stated in the text here). Is this because 0.01 mrem/y is for UPRs only, excluding past tank leaks? Please clarify. <u>Accept, this is a typo, the 0.01 mrem/yr given for the past leaks and UPRs should be</u>		Accepted Response (11/04/03)	Action, fix typo

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		<p><u>0.1</u> Re Table C5-7, what proportion of the total radiological dose is due solely to Tc-99 and I-129? Re the same pattern in ILCR results, please show these data. <u>Accept, a table will be prepared showing the relative contribution of the top 2 or 3 CoC to the performance metric.</u></p>	Accepted Response (11/04/03)	Action, prepare table showing relative contribution of CoC to performance metric
DD-28	Tier 2, App. C, p. C5-1, para 5	<p>Re the first sentence, I cannot locate Section 5.10 in Addendum C1. Table C5-1 appears to be part of a sensitivity analysis. <u>Accept, this is a typo. For the analysis, a definitive number for the data was not available, therefore we made assumptions on values for those parameters or methodology. This table lists the assumptions, the assumptions and how we addressed them in the model.</u></p>	Accepted Response (11/04/03)	Action, fix typo
DD-29	Tier 2, App. C, p. C5-2, Table C5-1, Assumption #2	<p>Re release rates, please provide the rationale for using stabilized (grouted) tank waste, as opposed to an unstabilized waste form. <u>Response, the analysis also included unstablized waste form and shows a difference of approximately 3 between stabilized and unstablized waste. At the time of the analysis, it was assumed that a grout would be placed in the tanks. Please note, the diffusion coefficient for the grout is extremely high for a grout.</u></p>	Accepted Response (11/04/03)	Action, address unstabilized waste form in uncertainty section
DD-30	Tier 2, App. C, p. C5-2, Table C5-1, Assumption #3	<p>Why are retrieval leaks considered only for tanks C-106 and C-107? <u>Response, at the time of the analysis on tanks C-106 and C-107 were schedule for wet retrieval methods, all other tanks were scheduled for dry retrieval methods. However, since then the retrieval methods for other tanks within the WMA C have changed and the risk assessment will be updated to reflect those changes.</u></p>	Accepted Response (11/04/03)	Action, re-write retrieval leak section
DD-31	Tier 2, App. C, p. C5-4, para 4	<p>Re contaminants, specify the criteria employed to select and retain COPCs. <u>Accept, the criteria employed to select and retain COPCs is given in section 3.5 of Addendum C1. Additional a table will be made to show the relative contribution of the top 2 or 3 COPCs to the performance metric.</u></p>	Accepted Response (11/04/03)	Action, refer the reader to the appropriate section in the addendum and prepare table showing the ranking of COPCs to risk metric.
DD-32	Tier 2, App. C, p. C5-	<p>Why are retrieval leaks specified only for tanks C-106 and C-107? Is it not possible to have leaks even with "dry" retrieval methods?</p>	Accepted Response (11/04/03)	Action, re-write retrieval leak section

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	6, Table C5-2	<p><u>Accept, at the time of the analysis on tanks C-106 and C-107 were schedule for wet retrieval methods, all other tanks were scheduled for dry retrieval methods. However, since then the retrieval methods for other tanks within the WMA C have changed and the risk assessment will be updated to reflect those changes.</u></p> <p>Clarify references to Tables 5-6, 5-7, 5-8b, 5-8c, and 5-9. Are these Tables 6, 7, 8b, 8c, and 9 in Addendum C1?</p> <p><u>Accept, will clarify references</u></p>		Accepted Response (11/04/03)	Action, clarify references
DD-33	Tier 2, App. C, p. C5-7, para 1	<p>Please provide the basis for the statement, "Tc-99 and I-129 account for 95% of the total dose and ILCR," while Cr is the primary HI driver." Is this for WMA C, as a whole?</p> <p><u>Accept, this is for the WMA C, and will provide an additional table that shows these metrics.</u></p>		Accepted Response (11/04/03)	Action, refer the reader to the appropriate section in the addendum and prepare table showing the ranking of COPCs to risk metric.
DD-34	Tier 2, App. C, p. C5-10, bullet #1	<p>In the last sentence, the reference to "(Figure C1-2)" should be to "(Figure C5-2)."</p> <p><u>Accept, will change text.</u></p>		Accepted Response (11/04/03)	Action, change text
DD-35	Tier 2, App. C, p. C5-11, bullet #3	<p>Re cumulative impacts (i.e., Base Case), it might be stated that the principal source driver for Tc-99 peak concentration is from past ancillary equipment leaks (Table C5-3).</p> <p><u>Accept, will add statement</u></p> <p>Excluding advection dominated release of residuals, the base case sum in Table C5-3 is about 682 pCi/L for Tc-99, whereas here and in Figure C5-2, the base case sum is 588 pCi/L. Why the discrepancy?</p> <p><u>Response, there is no discrepancy, you cannot add the peaks in the table to come up with the cumulative, the peaks occur at different times, therefore you cannot just add the peaks. The cumulative is calculated by adding each complete curve</u></p>		Accepted Response (11/04/03)	No action, although a statement might be added about why it is not appropriate to sum the values in the table.
DD-36	Tier 2,	This should be "Figure C5-3," not "Figure 5-3."		Accepted Response	Action, correct text

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	App. C, p. C5-13, Figure C5-3	<i>Accept, will correct</i>	(11/04/03)	
DD-37	Tier 2, App. C, p. C5-13, para 1	The federal (EPA) MCL for total Cr is 0.1 mg/L (not 0.05 mg/L). There is no MCL for Cr+6. <i>Accept, will correct</i>	Accepted Response (11/04/03)	Action, correct text
DD-38	Tier 2, App. C, p. C5-14, Table C5-5	The title of Table C5-5 specifies Cr+6. Is this correct? Please clarify the distinction between total Cr vs. Cr+6. <i>Accept, for conservative purposes we assumed all chromium was chromium+6.</i>	Accepted Response (11/04/03)	Action, will clarify the difference between Chromium (VI) and Chromium(III) and why Chromium(VI) was used
DD-39	Tier 2, App. C, p. C5-17, para 1	Where are assumed retrieval leaks (as an input variable)? In RPP-16525 (Rev. 1), it was shown that "ex-tank" risk coefficients (i.e., ILCR/Ci) for leaks were approximately 100 fold greater than "in-tank" risk coefficients for residual waste. Ex-tank risk coefficients included both past leaks and retrieval leaks. Aside from an assumed 8000 gallon leak vs. 2500 gallon residual and the 500-1000 y hold-up period for residual waste, why is it that ex-tank risk coefficients (leaks) are so much larger than in-tank risk coefficients (residuals) for a given exposure scenario? <i>Response, ex-tank leak coefficients are larger because they have already occurred when the recharge rate is 100 mm/y. The large recharge rate drives the risks associated with ex-tank releases. In-tank releases occur after a barrier has been placed over the site, once the barrier fails, the recharge rate only increases to 3.5 mm/y</i>	Accepted Response (11/04/03)	No action required
DD-40	Tier 2, App. C, p. C5-19, para 1	Why are all long-term risk metrics related to the groundwater pathway? For example, the intruder scenario (RPP-14283, Rev. 0) is typically modeled somewhere between 150 y post-closure (i.e., USDOE institutional control) and 500 y post-closure (i.e., NRC institutional control). If 150-500 y after closure is considered "long-term," then soil and air pathways should also be evaluated for risk (in addition to groundwater). <i>Response, a RCRA enhanced barrier will be placed over the site at closure. The barrier will be minimum of 15 ft thick with a design life of 500 years (DOE/RL-93-033). The design of the barrier incorporates provisions for bio-intrusion and human intrusion control. The barrier would eliminates soil pathways, and past performance assessments (200 East and 200 West burial grounds) have shown, that with a barrier in place, the air pathway is negligible contributor compared to the groundwater pathway</i>	Accepted Response (11/04/03)	Action, add clarifying text

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DD-41	Tier 2, App. C, p. C5-20, bullet 1#	Kd has units like L/kg or mL/g (not mg/L). <i>Accept, typo will be corrected</i>	Accepted Response (11/04/03)	Action, correct text
DD-42	Tier 2, App. C, p. C5-21, para 5	The residential drinking water scenario assumes 2 L/d (not 1 L/d). <i>Accept, typo will be corrected</i>	Accepted Response (11/04/03)	Action, correct text
DD-43	Tier 2, App. C, p. C5-22, para 1	It is stated that the dose for the industrial drinking water scenario (1 L/d) is "reduced by 50%, as compared to the residential scenario" (2 L/d). Besides intake rate, this would assume that other exposure factors (e.g., exposure duration, exposure frequency) are the same for both scenarios which seems incorrect. Please explain. <i>Accept, you are right, the industrial worker is only on site for 250 days vs 365 days and the industrial workers dose should be further reduced by 30 %. The total amount of drinking water consumed by a resident is 730 L, while for the industrial worker it is 250.</i>	Accepted Response (11/04/03)	Action, correct table
DD-44	Tier 2, App. C, p. C5-22, Table C5-7	Please explain the distinction between "Columbia River (groundwater)" vs. "Columbia River (surface)." <i>Response, The difference between Columbia River (groundwater) and the Columbia River (Surface Water) results is based on a difference in exposure routes included in each of the respective exposure scenarios evaluated. The groundwater dose/risk presented in Tables C5-7 and C5-9 are representative of groundwater concentrations modeled from the tank farm fence line to the Columbia River (exposure point). The Columbia River (groundwater) results reflect that the receptor uses the groundwater as a drinking water source, whereas the Columbia River (surface water) results reflect that the receptor is swimming in the Columbia River ; routes of exposure includes ingestion, vapor inhalation, and dermal contact. The Columbia River (surface water) results reflect that groundwater is not used as a drinking water source, rather it representative of concentrations of groundwater contaminants discharging in the Columbia River. The surface water scenarios conservatively assume that no dilution or mixing effects that occur once the groundwater is discharged.</i>	Accepted Response (11/04/03)	Action, add clarifying text
DD-45	Tier 2, App. C, p. C5-25, para 3	Re WMA C closure, please explain why the less conservative (i.e., allows higher risk) EDE method (USDOE) was selected over the more conservative target organ or dose equivalent method (EPA) for calculating drinking water concentrations, corresponding to 4 mrem/y. <i>Response, both methods are discussed and a comparison is made between them. Additionally the 4 mrem/y applies to drinking water systems, the groundwater at</i>	Accepted Response (11/04/03)	No Action, however it should be noted in WDoH Guidance on Radionuclides, they use TEDE

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		<p><u>chromium is chromium (IV), not chromium (III)</u></p> <p>Re hypothetical retrieval leaks for the HSRAM Residential scenario, risks from Cr+6 at the Exclusion Zone and Columbia River are 2.54E-8 and 8.46E-9, respectively, while total non-rad risk is listed as 1.59E-7. So, what are the other non-rad carcinogens? Same question applies to the HSRAM Industrial scenario for past leaks from Cr+6 at the Columbia River.</p> <p><u>Response, that is a typo, the totals were copied wrong, will fix, chromium is the only ILCR</u></p> <p>Please see comment for App. C, p. C5-22, Table C5-7. Response, see response for comment</p>		<p>Accepted Response (11/04/03)</p> <p>Accepted Response (11/04/03)</p>	<p>clarifying text.</p> <p>Action, fix table</p> <p>Action add clarifying text</p>
DD-48	Tier 2, App. C, p. C5-28, Figure C5-7	<p>Although all risks are below 1E-5 for the Industrial Worker, this is not the case for the Residential scenario. Please acknowledge this.</p> <p><u>Accept, will acknowledge this in the text.</u></p>		Accepted Response (11/04/03)	Action add clarifying text
DD-49	Tier 2, App. C, p. C5-29, para 1, bullet #2	<p>According to Table C5-7, dose resulting from any of the three sources (i.e., residuals, past leaks, retrieval leaks) did not exceed target dose at any location.</p> <p><u>Accept, the bullet will be changed to reflect the table.</u></p>		Accepted Response (11/04/03)	Action, fix bullet
DD-50	Tier 2, App. C, p. C5-29, para 1, bullet #3	<p>ILCR also exceeded the target risk at the Exclusion Zone for the resident due to past leaks, largely due to Tc-99.</p> <p><u>Accept, will add a 4th bullet to acknowledge this fact.</u></p>		Accepted Response (11/04/03)	Action, fix bullet
DD-51	Tier 2, App. C, p. C5-	<p>When will a "safety analysis that identifies accident scenarios for closure activities" be completed?</p>		Accepted Response (11/04/03)	No action

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	29, para 2	<u>Response, Safety analysis has not been done to date that identifies accident scenarios for closure activities. The best estimate of one being done would be for the Tank Closure EIS in December 2003 or January 2004</u>			
DD-52	Tier 2, App. C, p. C5-30, para 1, bullet #6	The dose commitment is calculated for 50 y, rather than 70 y (see Table A22 in HNF-SD-WM-TI-707, Rev. 3). <u>Accept, text will be changed to 50 years.</u>		Accepted Response (11/04/03)	Action, fix text
DD-53	Tier 2, App. C, p. C5-30, para 2	The first sentence refers to "probability of the accident." This should be "number of accidents." <u>Accept, text will be changed</u>		Accepted Response (11/04/03)	Action, fix text
DD-54	Tier 2, App. C, p. C5-31, para 1, bullet #2	Re an accident, what are the consequences of exceeding the 5 rem acute exposure limit for onsite workers? <u>Accept, The consequences would be a lethal dose and has been included in the text.</u>		Accepted Response (11/04/03)	Action, text will be reworded
DD-55	Tier 2, App. C, p. C5-31, para 5	Reference to "Figure C5-9" should be to "Figure C5-8." An obvious point is that this figure considers only risk due to a groundwater pathway and does not consider atmospheric or soil pathways that may be operative for an intruder scenario or for exposures to ecological receptors. <u>Response, a RCRA enhanced barrier will be placed over the site at closure. The barrier will be minimum of 15 ft thick with a design life of 500 years (DOE/RL-93-033). The design of the barrier incorporates provisions for bio-intrusion and human intrusion control. The barrier would eliminates soil pathways, and past performance assessments (200 East and 200 West burial grounds) have shown, that with a barrier in place, the air pathway is negligible contributor compared to the groundwater pathway. Air and Soil pathways are considered as part of the groundwater pathway due to using contaminated water for irrigation</u>		Accepted Response (11/04/03)	Action, fix figure, add text as to why only GW pathway was included
DD-56	Tier 2, App. C, p. C5-34, para 1	It is stated, "the hazards associated with these activities include potential occupational hazards resulting in physical trauma and radiological exposure resulting in LCFs." Why are nonradionuclide chemical exposures not considered, as well (e.g., VOCs)? <u>Response, the short-term worker exposure analysis will address nonradionuclides (i.e., chemicals) on new data from the waste retrieval of tank C-106.</u>		Accepted Response (11/04/03)	Action, look at NOC for air permit and use that to include non-radionuclide exposures
DD-57	Tier 2, App. C, p. C5-34, para 3	Re closure of a TSD facility, it is stated, "no further active site management is required." Is this consistent with activities related to post-closure care?		Accepted Response (11/04/03)	Action, remove sentence

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DD-58	Tier 2, App. C, p. C5-35, para 1	<p><u>Response, yes, this is consistent. The sentence was deleted, so as not to be confusing.</u></p> <p>In addition to uncertainties listed for inventory and environmental fate/transport of COPCs, it should be acknowledged that uncertainties exist in exposure scenarios. For example, exposure factors (e.g., intake rate) and toxicity factors (e.g., risk coefficients) contribute uncertainty to risk estimates. Also, it should be acknowledged that only a groundwater pathway is evaluated here.</p> <p><u>Response, will add additional text will be provided to address this. However, it should be noted that neither uncertainty nor sensitivity was presented in detail in HNF-SD-WM-TI-707. While many of the parameters in HNF-SD-WM-TI-707 have large uncertainties (some were imputed), the scenarios themselves are not well determined. The Post-intrusion and All Pathways Farmer (labels from prior performance assessments) are representative (average) individuals. The Native American represents a bounding individual. Numerous variations of these basic exposure scenarios are possible. Thus, the numeric uncertainty associated with particular variables is a minor issue compared to the potential range of individual lifestyles.</u></p>		Accepted Response (11/04/03)	Action, uncertainty section will be re-written
DD-59	Tier 2, Add. C1, p. C1-2, para 1	<p>If the risk assessment presented in this closure plan is considered "preliminary post-retrieval," is it actually part of the "post-retrieval tank risk assessment" described in Table 1?</p> <p><u>Response, yes it is. Modeling was set up for analyzing the risk following retrieval. We have taken steps to incorporate the inventories following retrieval into this model.</u></p>		Accepted Response (11/04/03)	No action
DD-60	Tier 2, Add. C1, p. C1-7, para 1	<p>Note that protection of the environment (i.e., ecological risk) is not addressed until later stages of the closure process, namely as part of the tank farm feasibility study and tank farm closure risk assessment (Table 1).</p> <p><u>Response, as agreed to in the December 13, 2002 workshop on risk assessments, an ecological risk assessment will be completed as part of the Tank Farm Feasibility Study, and WMA Closure. Presently, the tank farms are managed in a manner intended to eliminate, to the extent possible, the intrusion of plants and wildlife into the facilities. Furthermore, Ecological impacts will be much more impacted by the engineered features (for example, surface barriers, fill materials) and until these engineered features are better known.</u></p>		Accepted Response (11/04/03)	No action
DD-61	Tier 2, Add. C1, p. C1-7, para 5	<p>Please note that, re a tank farm closure risk assessment (see Table 1), additional receptors (e.g., farmers, Native Americans, ecological receptors) and additional environmental exposure media (e.g., soil and air pathways) would need to be included.</p> <p><u>Response, additional receptors were included.</u></p>		Accepted Response (11/04/03)	Add receptors and exposure media
DD-62	Tier 2,	Re footnote "a," note that the EPA drinking water standard (i.e., 4 mrem/y) is organ dose		Accepted Response	No action

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	Add. C1, p. C1-8, Table 2	<p>or "dose equivalent" (distinct from USDOE's "effective dose equivalent").</p> <p><u>See response to App. C, p. C5-25, para 3</u></p> <p>Re the 1 mrem/y standard for beta and photon emitters listed for surface water, I cannot find this in WAC 173-201A. According to WAC 173-201A-250 and WAC 246-221-290, it appears that the surface water standard should be 4 mrem/y. Please check this.</p> <p><u>Response, will check this. Further checking into WAC 173-201A-50 1(a) Deleterious concentrations of radioactive materials for all classes shall be as determined by the lowest practicable concentration attainable and in no case shall exceed 1/12.5 of the values listed in WAC-246-221-290 (Column 2 Table II). That table was evaluated and a dose calculated from that</u></p>	(11/04/03)	Accepted Response (11/04/03)	No action
DD-63	Tier 2, Add. C1, p. C1-10, para 2	<p>I think the acute exposure limit for the intruder should be 500 mrem, rather than 500 mrem/y (see Table 2).</p> <p><u>Response, you are right, the text will be changed</u></p>		Accepted Response (11/04/03)	Action, change text
DD-65	Tier 2, Add. C1, p. C1-75, para 4	<p>ILCR should be computed and presented separately for radionuclides vs. nonradionuclide carcinogens, due to differences in underlying methodology (e.g., see EPA's 1996 RERAM document: EPA 402-R-96-016). Re radionuclides, slope factors are based on epidemiological data and expressed as a central estimate of the mean, ionizing radiation damages the cell via free radical formation, external gamma exposure is unique to radiation, natural background is high, and radionuclides exhibit decay and ingrowth of progeny. In contrast, re nonradionuclide carcinogens, slope factors are based on animal studies and expressed as a 95% UCL on the mean, nonradionuclide carcinogens can damage the cell via both genotoxic (including free radical formation) and epigenetic (e.g., endocrine modifying activity, immunosuppression, cytotoxicity, peroxisome proliferation) mechanisms, dermal absorption can be significant for organic nonradionuclide carcinogens, natural background is typically low, and degradation products of nonradionuclide carcinogens may include other carcinogens.</p> <p><u>Response, ILCR is computed and presented separately for radionuclides and non-radionuclides</u></p>		Accepted Response (11/04/03)	No Action required
DD-66	Tier 2, Add. C1, p. C1-77, Table 19	<p>Add the "All Pathways Farmer" to the list under "Offsite Receptor."</p> <p><u>Response, a farmer is listed in the table under Offsite Receptor</u></p>		Accepted Response (11/04/03)	Action, add All-Pathways farmer
DD-67	Tier 2,	Why is "sleeping on soil contaminated by irrigation" broken out from "irrigating a		Accepted Response	Action, update table

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	Add. C1, p. C1-79, Table 21	garden?" <i>Response, this table come from an older version of the HNF-SD-WM-TI-707, and will be updated to reflect the latest revision of HNF-SD-WM-TI-707.</i>	(11/04/03)	
DD-68	Tier 2, Add. C1, p. C1-81, bullet 5	Note this "summary box" appears to have several errors (based on data presented in Tables in this section) flagged in the following comments. Radiological EDE did not exceed dose targets for residual waste, past leaks, nor retrieval leaks for all of the scenarios presented (Tables 22, 25, and 28). <i>Accept, bullet will be corrected</i>	Accepted Response (11/04/03)	Action fix bullet
DD-69	Tier 2, Add. C1, p. C1-81, bullet 6	ILCR exceeded the 1E-5 target for the residential scenario for all sources at the fenceline (and several other downgradient points for past leaks) but not the industrial scenario for any source (Tables 23, 26, and 29). <i>Accept, bullet will be corrected</i>	Accepted Response (11/04/03)	Action fix bullet
DD-70	Tier 2, Add. C1, p. C1-81, bullet 7	HI did not exceed the target for residual waste, past leaks, nor retrieval leaks for any of the scenarios presented (Tables 24, 27, and 30). <i>Accept, bullet will be corrected</i>	Accepted Response (11/04/03)	Action fix bullet
DD-71	Tier 2, Add. C1, p. C1-81, bullet 8	For the analytes shown, MCL is exceeded only for I-129 at the WMA fenceline, largely due to the past leak contribution (Table 31). <i>Accept, bullet will be corrected</i>	Accepted Response (11/04/03)	Action fix bullet
DD-72	Tier 2, Add. C1, p. C1-82, para 5	Although groundwater under WMA C is not presently a source of drinking water, it may be in the future. <i>Response, it is unlikely that groundwater would be a source of drinking water in the future. In December of 2003, the EPA has set MCLG of 0 for radionuclides, it is unlikely that water that does not meet that goal could become a source of drinking water.</i>	Accepted Response (11/04/03)	Action modify sentence
DD-73	Tier 2, Add. C1, p. C1-83, para 3	Does "Chromium" refer to Total Cr or Cr+6? <i>Response, this is another area in which we erred on the high side. We assume all chromium is chromium (IV), not chromium (III)</i>	Accepted Response (11/04/03)	Action, include in uncertainty section
DD-74	Tier 2, Add. C1, p. C1-84, para 2	What is the basis of selecting only two of the eight exposure scenarios, described on p. C1-76? <i>Response, HAB advice #132 recommends the industrial scenario for the 200 Areas Core Zone Boundary, but other scenarios maybe used for comparison purposes. We</i>	Accepted Response (11/04/03)	Action, provide rationale for choosing scenarios

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		<i>The values should come down as better estimates for these parameter become available. This process is shown in figure 4-2 of the closure plan on page 4-12.</i>		
DD-78	Tier 2, Add. C1, p. C1-90, para 2, bullet 2	<p>Contrary to what the text indicates, Table 26 shows that the 1E-5 ILCR target is exceeded for Tc-99 and total rad risk at the core zone boundary and at the Columbia River (surface water) for the residential scenario. Please revise.</p> <p><u>Accept, will revise text. However it should be noted for the Columbia river surface water is not diluted and it should be. See response to Add. C1, p. C1-86, Table 22</u></p> <p>Why are Cr+6 and total nonrad risk markedly higher (i.e., 6E-5 vs. 2.46E-7 or 3.89E-8) for the Columbia River (groundwater) than for upgradient points for the residential scenario? This seems reversed.</p> <p><u>Response, there is a mistake in the table, the number should be 1.39E-8</u></p>	Accepted Response (11/04/03)	Action, revise text
DD-79	Tier 2, Add. C1, p. C1-90, para 2, bullet 3	<p>According to Table 27, nitrite is a larger contributor than nitrate to HI. Please revise.</p> <p><u>Accept, you are correct, text will be changed</u></p>	Accepted Response (11/04/03)	Action revise text
DD-80	Tier 2, Add. C1, p. C1-90, para 3	<p>Note that retrieval leaks were assumed in all WMA C tanks in RPP-16525, Rev. 1 (C-200 Series Tanks Retrieval F&R).</p> <p><u>Accept, the time of the document, all tanks except C-106 and C-107 were going to be dry retrieved, that has change the risk assessment will be updated to reflect that.</u></p>	Accepted Response (11/04/03)	Action revise retrieval leak text
DD-81	Tier 2, Add. C1, p. C1-91, Table 25	<p>Are "Drinking Water Dose" dose estimates for an industrial or a residential scenario?</p> <p><u>Response, this is for a residential drinking water</u></p>	Accepted Response (11/04/03)	Action, revise text
DD-82	Tier 2, Add. C1, p. C1-98, para 4	<p>Re cumulative effects, why present the least conservative scenario (i.e., industrial) for ILCR and HI and a more conservative scenario (i.e., all pathways farmer) for EDE dose? Mixing scenarios makes relative comparisons more difficult. And why is the most conservative scenario (i.e., Native American) not presented for cumulative effects, since this would reveal a more bounding conservative result?</p> <p><u>Response, HAB advice #132 recommends the industrial scenario for the 200 Areas Core Zone Boundary, but other scenarios maybe used for comparison purposes. We have discussed the industrial scenario based on this advice and provided results on five other scenarios in Addendum C2. All-Pathways farmer is DOE derived scenario for</u></p>	Accepted Response (11/04/03)	Action, provide rationale for scenarios chosen

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		<u>DOE O 435.1</u>			
DD-83	Tier 2, Add. C1, p. C1-100, Figure 24	<p>Re HI, the y-axis numbering appears mislabeled with ILCR values rather than HI values. It looks like this is the same trace as for ILCR (Figure 23).</p> <p><u>Response, figures were mixed up and will be fixed</u></p>		Accepted Response (11/04/03)	Action fix graph
DD-84	Tier 2, Add. C1, p. C1-102, Table 31	<p>Note that the MCL listed for Cr+6 (0.10 mg/L) is for total Cr (not Cr+6).</p> <p><u>Accept, will fix</u></p> <p>Why are groundwater concentrations in the "Baseline Closure Conditions" column not an exact sum of concentrations in the four columns to the left (i.e., residuals, past leaks, retrieval leaks, ancillary equipment leaks)? Does this relate to the temporal aspect of peak arrival at the WMA fenceline? Please explain.</p> <p><u>Response, you are correct, timing of peaks do not allow you to sum the columns, however, if you do sum, the cumulative total will always be less than the sum.</u></p> <p>Re footnote on MCL, MCL=maximum contaminant level.</p> <p><u>Response, you are right</u></p>		<p>Accepted Response (11/04/03)</p> <p>Accepted Response (11/04/03)</p> <p>Accepted Response (11/04/03)</p>	<p>Action, fix table</p> <p>No Action</p> <p>Action fix text</p>
DD-85	Tier 2, Add. C1, p. C1-103, para 2	<p>Although physical trauma and LCFs are considered as short-term human risks, there is no mention of nonradionuclide chemical risks. Nonradionuclide risks should be included, as well.</p> <p><u>Response, The short-term worker exposure analysis will address nonradionuclides (i.e., chemicals) on new data from the waste retrieval of tank C-106.</u></p>		Accepted Response (11/04/03)	Action, get inventory information from air permit to address non-radionuclides
DD-86	Tier 2,	It is stated that short-term human risks need not be considered after final closure.		Accepted Response	Action, add statement

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	Add. C1, p. C1-103, para 4	However, an intruder scenario has an acute dose limit of 500 mrem, and an acute exposure is considered short-term. Please clarify. <u>Response Intruder scenario is not analyzed as a part of short-term worker human risks.</u>	(11/04/03)	that intruder is not a part of short term risk
DD-87	Tier 2, Add. C1, p. C1-105, para 3 (step 7)	Re the last sentence, inhalation rate (m3/s) is also used to calculate inhalation dose. <u>Response, Text was inserted to include breathing rates.</u>	Accepted Response (11/04/03)	Action, revise text
DD-88	Tier 2, Add. C1, p. C1-107, para 2	In addition to inhalation and ingestion pathways, GENII also evaluates external exposure. Please include external dose pathway too. <u>Response, For accident scenario, only the accident with the bounding case was analyzed, i.e., ventilation failure, therefore the direct contact was not included.</u>	Accepted Response (11/04/03)	Action, revise text to reflect this
DD-89	Tier 2, Add. C1, p. C1-112, para 3	Equation 8.2 needs a concentration term (pCi/L) on the RHS of the equation. <u>Response, IO is the respirable inventory.</u>	Needs additional information (11/04/03)	Action, Duwayne will check and verify units
DD-90	Tier 2, Add. C1, p. C1-113, para 1	There is no Cf term in Equation 8.2. Response, Removed Cf line from explanation.	Accepted Response (11/04/03)	Action, revise text
DD-91	Tier 2, Add. C1, p. C1-113, para 2	Equation 8.3 has an incorrect term (i.e., DF) on the RHS of the equation. The units are correct (rem/L), but this is not a dose conversion factor. This should be a "unit liter dose" (ULD) term (see WHC-SD-WM-SARR-037, Rev. 0). In addition to inhalation, there is a contribution to dose (and LCF) via ingestion which employs an ingestion ULD. <u>Response, Equation was changed to show ULD vs. DF</u> Please specify the source for values of the atmospheric dispersion coefficient (χ/Q).	Accepted Response (11/04/03)	Action, revise text
DD-92	Tier 2, Add. C1, p. C1-114, Table 34	What is the source of the MEI regulatory limit (2.0E-3 LCF)? <u>Response Deleted column for regulatory limit.</u>	Accepted Response (11/04/03)	Action, delete column
DD-93	Tier 2, Add. C1, p. C1-114, Table 35	Does this indicate that the LCF risk to the MEI involved worker from a ventilation failure accident for tank C-106 is certainty (i.e., 1.51E1>1)? <u>Response, Yes.</u>	Accepted Response (11/04/03)	No action

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		Again, what is the source of the MEI regulatory limit (2.0E-3 LCF)? <i>Response Deleted column for regulatory limit.</i>	Accepted Response (11/04/03)	Action delete column
DD-94	Tier 2, Add. C1, p. C1-115, para 2	I think this equation should be numbered 8.4 (not 5.4). <i>Response, Equation will be changed to 8.4.</i>	Accepted Response (11/04/03)	Action, fix number
DD-95	Tier 2, Add. C1, p. C1-116, para 1	Why do these GENII atmospheric dispersion coefficients differ from those presented on p. C1-113? <i>Response, GENII are chronic and calculated from extensive meteorological data. The values on p. C1-113 is acute for accident evaluation.</i>	Accepted Response (11/04/03)	No action
DD-96	Tier 2, Add. C1, p. C1-117, Table 37	Dose to populations should be expressed as "person-rem." <i>Response, Dose has been changed to reflect population dose being expressed as "person-rem". Regulatory limits have been changed to reflect MEI only. And 5 rem for workers and .1 rem for public.</i> Please note the source of the regulatory limit (5000 mrem/y). The EDE limit for the public is 100 mrem/y (ICRP Pub. 60). Also, these limits are for MEI, not populations.	Accepted Response (11/04/03) Accepted Response (11/04/03)	Action fix text Action add footnote
DD-97	Tier 2, Add. C1, p. C1-117, Table 38	Please specify that 0.5 rem was used as the dose for IW MEI and 14.81 person-rem was used for IW Pop. Are LCF risks in this table expressed as "per year," since doses in Table 37 are mrem/y? There appears to be some errors in LCF risks in the table. For example, for NIW MEI, the computation would be $(9.4E-5 \text{ mrem/y})(4E-4 \text{ LCF/rem})(\text{rem}/1E3 \text{ mrem})=3.76E-11 \text{ LCF/y}$ (not $3.76E-8 \text{ LCF/y}$). <i>Accepted. Table now reflects comment.</i>	Accepted Response (11/04/03)	Action, fix table
DD-98	Tier 2, Add. C1, p. C1-119, para 1	This section on limitations and uncertainties appears inadequate. In addition to inventory, release models, and environmental fate/transport models, there are other uncertainties embedded in risk models (e.g., food chain models, exposure factors, toxicodynamics, toxicokinetics, dose factors, risk factors, risk additivity). Please acknowledge these additional sources of uncertainty. In general, three main categories of uncertainty are the various models, parameters employed in these models, and exposure scenarios employed in the risk assessment. <i>Accept, this section will be beefed up and re-written</i>	Accepted Response (11/04/03)	Action, re-write uncertainty and limitations section
DD-99	Tier 2,	Re mrem/y groundwater data cited, please reference Tables 22, 25, and 28.	Accepted Response	Action, modify tables

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	Add. C1, p. C1-119, para 1	<i>Accept, will reference tables</i>	(11/04/03)	
JC-10	Tier 2, General Comment	<p>While it is assumed that SST WMAs will be closed as landfills, an evaluation of the clean closure alternative is required. A Tier 1 Risk Assessment that addresses worker safety as well as environmental threats should be conducted, with the resultant conclusion applicable to all tank farms and WMAs. Such an activity would also streamline the process so that this decision does not have to be made for each and every tank farm and component thereof. (JC)</p> <p><i>Response, the risk assessment for the Clean Closure option is being conducted as part of the Tank Farm EIS this also includes worker safety</i></p>	Accepted Response 11/20/03	Action Item: See action item for comment 4-1 line 1
MB-3	Tier 2, Sec. C.5.1.1, p. C5-7	<p>Note e on Table C5-2 Features of the WMA C Base Case states that after the modeling of the 241-C-106 tank inventory after retrieval was completed, the USDOE decided to change the method of retrieval to acid dissolution. The modeling is therefore suspect and the environmental impacts may be affected. Ecology requests that the USDOE provide added information about the risk of retrieval inherent in retrieval of acid waste. Ecology cannot evaluate the impacts on the environment of releases during retrieval, lacking that information.</p> <p><i>Response, Oxalic acid will be neutralized by the carbonate minerals naturally present in the soil and, given the amount and concentration of acid in an 8,000 gallon leak of 1M oxalic acid and the percent level of carbonate minerals in the soil, it is likely that the soil will neutralize the acid a short vertical distance (tens of feet or less) below the leak. The neutralized pH will likely be in the range of 7 to 8. Oxalic acid is fully deprotonated at a pH of about 4; therefore, above this pH all of the oxalate will be present in solution as the oxalate anion (C₂O₄⁻²). This anion will complex with uranium, although no where near as strongly as with other organic complexes such as EDTA. PNNL found that the formation of the uranium oxalate complex did not reduce the adsorption of uranium onto Hanford soils compared to an oxalate-free solution. However, PNNL, was not using 1M oxalate solutions so the results are not directly comparable; however, it is possible that the presence of oxalate will not significantly increase the mobility of uranium through the vadose zone.</i></p> <p><i>Additionally, no specific contaminants were used in the fate and transport model. Instead specific contaminants are modeled by assigning it to a sorption coefficient (K_d) bin. Contaminants like I-129 and Tc-99 were assigned a K_d of 0.0 ml/g, while uranium was assigned a K_d of 0.6 ml/g. If appropriate, the K_d could be adjusted.</i></p>	Accepted Modified Response 11/20/03	Action Item: run sensitivity to Uranium K _d in the interim data report. Strike 2 nd paragraph from response.

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MB-4	Tier 2, Sec. C5.2.2.3, p. C5-25	<p>Text in the section states that the USDOE used the effective dose equivalent method in calculating WMA C closure risk evaluation, although the USEPA chose to use the Target Organ Method. Compliance with a DOE Order 5400.5, applicable to the Hanford Site, does not appear to be protective of public health, even if concentrations of the I-129 are less than currently estimated. Please provide comparisons of risk using both methods to allow Ecology to evaluate the impacts on public health.</p> <p><i>Response, both methods of calculating total dose from radionuclides is discussed and a comparison is made between them. Additionally, the MCL derived concentrations for the COCs are provided throughout the results section. The MCL Derived Constituent Concentration are based on target organ dose. Furthermore, the 4 mrem in a year applies to drinking water systems, the groundwater at Hanford is not used for drinking water for the foreseeable future, however, we must comply with DOE O 5400.5 (II) (d).</i></p>	Accepted Modified Response 11/20/03	Action Item: provide both MCL derived constituent concentration and dose (EDE) in report. Strike last paragraph from response
MB-5	Tier 2, Sec. 5.0, ¶ 1, p. C1-76	<p>Sentence 4 states that Native Americans are assumed to use contaminated water at the fence line or the Columbia River. It is not clear what assumptions were made about the consumption/use of plants sacred to their culture. Please explain.</p> <p><i>Response, the Native American Scenario uses the scenario presented in <u>Columbia River Comprehensive Impact Assessment CRCIA (DOE/RL-96-16 Section 5.1.4.1)</u></i></p>	Accepted Response 11/20/03	No action required.
SD-1	Tier 2, Page C5-1, Line 22:	<p>Please give in concentration not just dose.</p> <p><i>Response: will provide in concentration, not just dose. However, concentration is given in other sections of the Risk Assessment</i></p>	Accepted Response 11/20/03	Action Item: provide both MCL derived constituent concentration (target organ) and dose (EDE) in report.
SD-2	Tier 2, Page 5-12, Line 6:	<p>This issue of composite iodine over the MCL is an issue. It seems to be glossed over and buried in the text</p> <p><i>Response, it is mentioned in the text that we are over the 1 pCi/L MCL Derived Constituent Concentration on page 5-11, and it is shown on the figure 5-3. It should be noted that we are pushed over the limit because of the hypothetical retrieval leak and past practices. Residuals in the tank and ancillary equipment are well under the 1 pCi/L MCL Derived Constituent Concentration. Additionally, aquifer testing on completed on a well just outside the WMA Fenceline, indicates the hydraulic conductivity in the vicinity of WMA C is approximately 20 to 100 times higher. The lower hydraulic conductivity results in a lower peak concentration. We are in the process of running a case with the new hydraulic conductivity to provide additional information on it's net affect.</i></p>	Accepted Response 11/20/03	Action Item: provide additional discussion about when I-129 will be below the MCL derived constituent concentration (target organ)

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SD-3	Tier 2, Page 5-20, Line 23-25:	<p>This issue needs to be elevated in the document. It needs to result in an NOD for establishing the release mechanism.</p> <p><i>Response, at the present time we are modeling 3 release mechanisms (diffusion, which would be appropriate for a grout; advection, which is appropriate for a sand and gravel fill or a failed grout, and solubility release model, which is appropriate for salt cake tanks). At the same time, we are having PNNL analyze residual waste for each retrieved tank to develop a release rate model. Over this past year, PNNL has analyzed sludge from Tank AY-102, which is a surrogate to C-106. They have found that the principal risk driving COC, (Tc-99), is only 25% soluble in water, and are in the processing of further testing to develop a release rate model for this tank. We are schedule to send PNNL post-retrieval C-106 samples, for them to validate their results from AY-102. It should also be noted that the diffusion coefficient used for the residual waste $6E-7 \text{ cm}^2/\text{s}$ is extremely high.</i></p>		Accepted Response 11/20/03	No Action
SD-4	Tier 2, Page 5-20, Line 13-15:	<p>This shows the need for retrieving at least down to the 1% goal and beyond.</p> <p><i>Response, comment noted</i></p>		Accepted Response 11/20/03	No Action
SD-5	Tier 2, Page C1-8:	<p>Don't you need to add the class C requirements for Cs etc. This section needs to talk about how the tank residuals and soil will meet class C or other intruder scenario.</p> <p><i>Response, when the decision is made that it is greater than Class C waste, the performance objectives will be modified to reflect the decisions concerning Class C waste.</i></p>		Accepted Response 11/20/03	No Action
SD-6	Tier 2, Page C1-8:	<p>Should include MCL for the COC also</p> <p><i>Response, this table is a summary table taken from the Performance Objectives document; a complete listing of MCLs for the COC is given in the Performance Objective Document.</i></p>		Accepted Response 11/20/03	Action Item: modify the performance objectives to include MCL derived constituent concentration
SD-7	Tier 2, Page C1-9	<p>A bullet should be added for meeting drinking water standard</p> <p><i>Response, clarification is needed, where and when should it meet the drinking water standard? At the present time, the existing groundwater conditions preclude the use of the groundwater for drinking water. The peaks in groundwater contamination from residuals left in Tank and ancillary equipment do meet the drinking water standard, however, past a composite of the hypothetical retrieval leaks and past leaks do not meet</i></p>		Accepted Response 11/20/03	Action Item: Add discussion on approximate time frame on when the aquifer could be used for drinking water (i.e. when the existing

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		<i>the drinking water standard and will not for the next 200 years</i>			groundwater plumes or either remediated or have naturally attenuated
DD-104	Tier 3, Att., p. C-1-4-2, para 1	<p>Please clarify that this risk assessment for C-106 is focused on long-term impacts to groundwater and does not evaluate soil nor air pathways, as might be required in an intruder scenario or with short-term risks, respectively.</p> <p><u>Response, a RCRA enhanced barrier will be placed over the site at closure. The barrier will be minimum of 15 ft thick with a design life of 500 years (DOE/RL-93-033). The design of the barrier incorporates provisions for bio-intrusion and human intrusion control. The barrier would eliminates soil pathways, and past performance assessments (200 East and 200 West burial grounds) have shown, that with a barrier in place, the air pathway is negligible contributor compared to the groundwater pathway. Air and Soil pathways are considered as part of the groundwater pathway due to using contaminated water for irrigation</u></p>		Accepted Response (11/04/03)	Action, refer reader to barrier section
DD-105	Tier 3, Att., p. C-1-4-2, Table 4-1	<p>It might be stated that "base case" retrieval for C-106 results in about one order of magnitude reduction in ILCR, HI, and EDE.</p> <p><u>Response, it is almost 2 orders of magnitude</u></p>		Accepted Response (11/04/03)	Action, add text
DD-106	Tier 3, Att., p. C-1-4-5, para 2	<p>Reference to "Section 3.4" should be to "Section 4.4."</p> <p><u>Response, will correct</u></p>		Accepted Response (11/04/03)	Action, fix text
DD-107	Tier 3, Att., p. C-1-4-5, Table 4-2	<p>Why does the pre-retrieval HI (5.68E-3) for the industrial worker differ from the corresponding HI in Table 4-1 (3.68E-3)?</p> <p><u>Response, this is a typo and will correct</u></p>		Accepted Response (11/04/03)	Action, fix text
DD-108	Tier 3, Att., p. C-1-4-7, Table 4-3	<p>It might be stated that ILCR, HI and EDE results for the industrial worker are the same as those presented in Table 4-1 for the C-106 closure condition, demonstrating that retrieval leaks drive long-term risk for C-106.</p> <p><u>Response, retrieval leaks will drive the long term risk.</u></p>		Accepted Response (11/04/03)	Action add text on retrieval leaks
DD-109	Tier 3, Att., p. C-1-4-8, para 1	<p>It may be worthwhile to evaluate similar results for the residential scenario (in addition to the industrial worker) and also for peak fence line concentrations (in addition to average fence line concentrations).</p> <p><u>Response, we can provide the results for the residential scenario. A 3-dimensional model is being developed for the S/SX WMA, this model will provide insight on how to</u></p>		Accepted Response (11/04/03)	Add residential results

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		<u>scale the results from 2-D to 3-D to get true peak fenceline peaks and will be report in the WMA S/SX risk assessment.</u>			
DD-110	Tier 3, Att., p. C-1-4-12, para 1	<p>Although inventory, waste release mechanisms, and environmental fate/transport modeling are identified as sensitive and uncertain inputs (Table 4-5), it should be acknowledged that other inputs for overall risk prediction are also uncertain and potentially sensitive. These inputs are applied after prediction of groundwater concentrations and are not trivial. These other inputs might include various models (e.g., food chain model, toxicokinetic model) and model parameters (e.g., food chain transfer factors, exposure factors, dose factors, risk factors). Although these models and parameters in this tank waste analysis have typically been reduced to a single risk or dose coefficient for a defined exposure scenario (e.g., ILCR per pCi/L for an all pathways farmer, mrem/y per pCi/L for the Native American), these coefficients incorporate all of the uncertainties in many underlying variables (see HNF-SD-WM-TI-707, Rev. 3). Please acknowledge this.</p> <p><u>Response, will refer reader to new uncertainty section in Tier II.</u></p>		Accepted Response (11/04/03)	Action, uncertainty section will be changed to show this
DD-111	Tier 3, Att., p. C-1-4-14, para 1	<p>Why was the less conservative EDE method (USDOE) selected over the more conservative target organ or dose equivalent method (EPA) for calculating drinking water concentrations, corresponding to 4 mrem/y? For example, for I-129, the concentration corresponding to 4 mrem/y EDE is 21 times higher than the MCL corresponding to 4 mrem/y (see Table C5-8).</p> <p><u>Response, both methods are discussed and a comparison is made between them. Additionally the 4 mrem/y applies to drinking water systems, the groundwater at Hanford is not used for drinking water, however we must comply with DOE O 5400.5 (II) (d). Additionally, the impacts to the MCL Derived Constituent Concentrations for the radionuclides are provided throughout the results section. The MCL Derived Constituent Concentrations for a constituent are based on the target organ dose calculation.</u></p>		Accepted Response (11/04/03)	No Action

04-TPD-010

ATTACHMENT 4

State Environmental Policy Act Environmental Checklist

Consisting of 31 pages,
including the coversheet

**STATE ENVIRONMENTAL POLICY ACT
ENVIRONMENTAL CHECKLIST**

**FOR THE
ACCELERATED TANK CLOSURE DEMONSTRATION PROJECT
TANK 241-C-106**

**MODIFICATION OF HANFORD FACILITY RCRA PERMIT
THROUGH ADDITION OF THE SST SYSTEM CLOSURE PLAN**

JANUARY 2004

**WASHINGTON ADMINISTRATIVE CODE
ENVIRONMENTAL CHECKLIST
[WAC 197-11-960]**

A. BACKGROUND

1. Name of proposed project, if applicable:

Accelerated Tank Closure Demonstration (ATCD) project for single-shell tank (SST) 241-C-106 (C-106).

This *Washington State Environmental Policy Act* (SEPA) environmental checklist is being submitted concurrently with the application to modify the Hanford facility *Resource Conservation and Recovery Act* (RCRA) permit (WA7890008967) by adding the SST system closure plan in support of the ATCD project.

2. Name of applicant:

U.S. Department of Energy (DOE)

3. Address and phone number of applicant and contact person:

Roy Schepens, Manager
Office of River Protection
U.S. Department of Energy
P.O. Box 450
Richland, WA 99352
(509) 376-6677

4. Date checklist prepared:

January 2004

5. Agency requesting checklist:

Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

6. Proposed timing or schedule (including phasing, if applicable):

The ATCD project, which involves component closure of tank 241-C-106, is scheduled to be completed by December 2004.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

The ATCD project will collect information on 1) the ability to dissolve and retrieve residual tank waste utilizing an acid wash, 2) the physical response and behavior of a Phase I grout fill in an actual tank, 3) field deployment of grout production equipment and 4) the conduct of component closure activities of 241-C-106. This information will be used in determining future closure actions of the remaining SSTs and tank farms at the Hanford Site.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

This SEPA Checklist is being submitted to the Washington State Department of Ecology (Ecology) concurrently with the application to modify the Hanford Facility RCRA permit. An ATCD component closure activity plan will provide the basis for regulatory approval and modification of the RCRA permit. An environmental assessment has been prepared for the ATCD project in accordance with the *National Environmental Policy Act* (NEPA) and DOE implementing regulations and DOE has issued a Finding of No Significant Impact (FONSI).

General information concerning the Hanford Facility environment can be found in the *Hanford Site National Environmental Policy Act (NEPA) Characterization* report (PNNL-6415). This document is updated annually by the Pacific Northwest National Laboratory (PNNL) and provides current information concerning climate and meteorology, ecology, history and archaeology, socioeconomics, land use, noise levels, geology and hydrology. These baseline data for the Hanford Site and past activities are useful for evaluating proposed activities and their potential environmental impacts.

The following information has been developed that is related to this demonstration project:

- *Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement* (DOE/EIS-0189)
- *Supplement Analysis for the Tank Waste Remediation System* (DOE/EIS-0189-SA3)
- *Environmental Assessment for the Accelerated Tank Closure Demonstration Project* (DOE/EA-1462)
- *Waste Retrieval and Storage Data Package* (RPP-14147) and
- *Tank System Closure and Facility D&D Data Package* (RPP-14148).

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

No other applications are pending for approvals of other proposals affecting the property covered by this proposal.

10. **List any government approvals or permits that will be needed for your proposal, if known.**

Ecology is the lead regulatory agency authorized to approve the application for modification of the Hanford Facility RCRA permit and for toxic air emissions. The following air permits have been obtained for this project: WSDOE Approval Order 97NM-001 Rev. 2, 2/24/03 and Rad Air Approval AIR031102, 11/10/03. In addition, DOE has compliance requirements under DOE Order 435.1 as described in more detail in the SST System Closure Plan which will also be addressed as part of this project. No other permits are known to be required at this time.

11. **Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

The ATCD project will identify the technical and regulatory framework under which SST closures will be conducted. DOE and Ecology recognize that this initial demonstration in and of itself does not constitute final closure. This demonstration of a component closure action of SST 241-C-106 is one of the phases that will contribute to the closure of the WMA C tank farm. The project will not "remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as dangerous waste", as required by WAC 173-303-640(8) for closure of a tank system.

The ATCD project is a component closure action of C-106. The majority of the waste in 241-C-106 has been removed in previous sluicing/retrieval efforts. This has resulted in residual sludge remaining in the tank that consists of three or four piles of waste. These piles are up to 5 ft high and are widely spaced. This demonstration project involves the dissolution of approximately 9,000 gallons of waste. The demonstration project will evaluate the efficiency of using a chemical wash of oxalic acid to dissolve this waste. Past sluicing efforts have utilized supernate from AY-102. Use of oxalic acid is a variation of the past sluicing efforts with the added purpose of dissolving all or a significant portion of these waste piles.

The chemical wash with oxalic acid will involve the following steps:

- The remaining supernate in the tank will be pumped out.
- The piles will be leveled using water and the existing sluice nozzles.
- The water will be pumped out.
- Acid will be added to the tank to react with the residual sludge. The acid will be added into the tank in a series of batch loadings.
- Following appropriate reaction times, each acid batch containing dissolved waste will be pumped out.

Between 38 kL (10 kgal) and 132 kL (35 kgal) of 1 M oxalic acid at a time will be introduced directly into C-106. These batches will be allowed to react with the residual sludge piles from one to seven days after which the acid and dissolved waste will be pumped to a receiving tank. Up to 200 kgal of acid could be used during the course of this campaign. The transfers will take place in a hose-in-hose transfer line. All transfers will be through a dedicated, fully encased line thus eliminating possibilities of misrouting or cross-connections. A waste compatibility study was conducted during the planning of this project. Excess caustic was added to the receiving double-shell tank prior to the acid transfer to maintain the contents of the DST within specified concentration limits. A mixer pump is operated in the DST during and following the transfer to facilitate neutralization of the acid.

Oxalic acid was chosen because many sludge species readily form complexes with the oxalate to provide solubility. The other benefit of oxalic acid is a low corrosion rate for black iron. This means that the primary tank will not be subjected to any significant degradation.

The demonstration of acid dissolution of C-106 residual waste sludge piles is expected to achieve improved waste removal and provide advantages over supernatant sluicing for the following reasons:

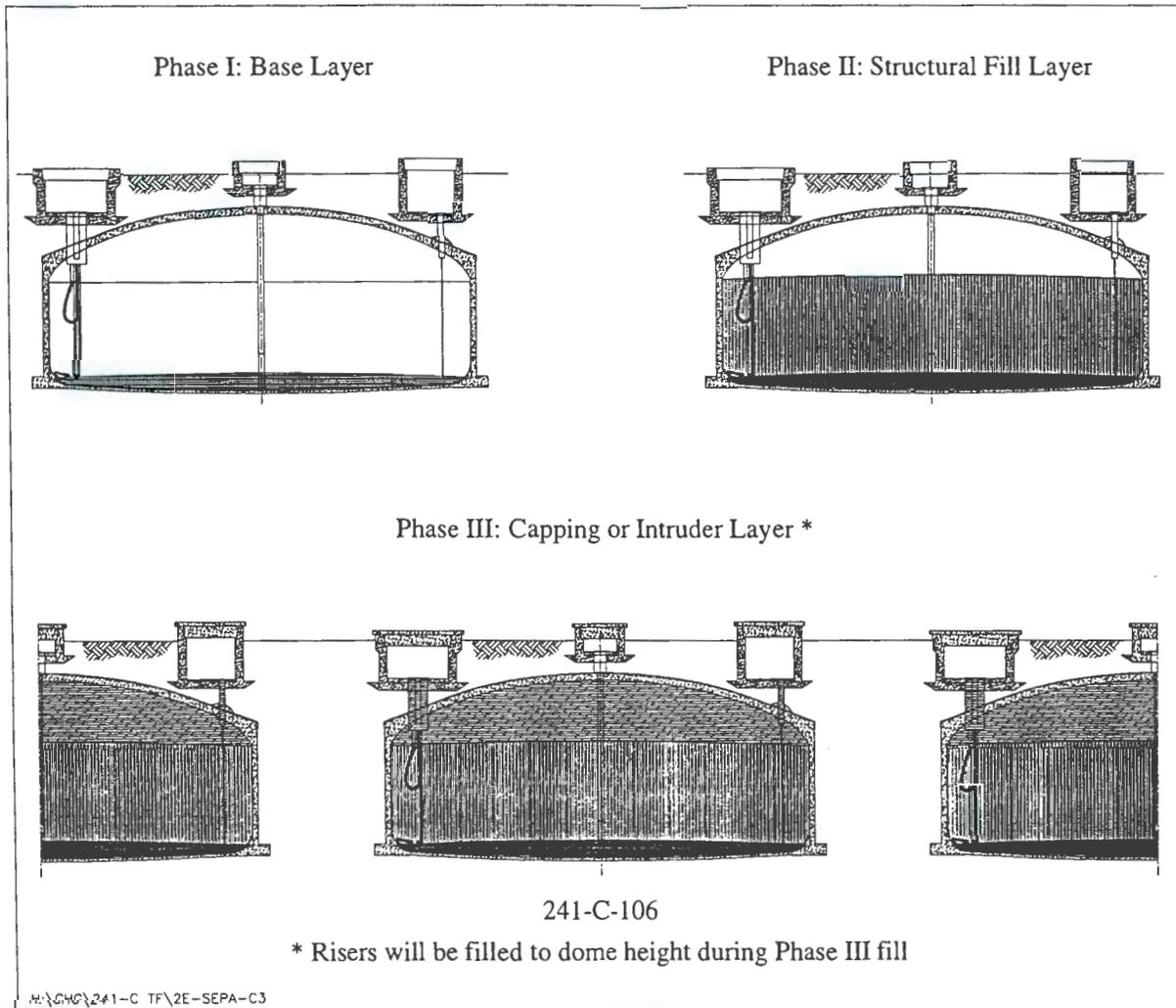
- There is a smaller waste inventory in C-106 since the acid is a reagent – not a waste.
- The acid is not highly corrosive to black iron.
- There is a dedicated route with a fully contained hose-in-hose transfer line.
- This will not involve recycling of the acid, as is the practice in sluicing with supernate.
- The concentration of the waste being transferred will be lower than during sluicing. Sluicing transferred up to 8% solids. Acid dissolution is expected to result in 3 to 5 % dissolved waste in the acid, with no significant transfer of solids.
- 1 M oxalic acid would be used; this is not considered a strong acid. Insignificant heats of dilution, neutralization, or reactions are expected.
- The acid reacts with the oxides, hydroxides, and carbonates that are common in sludges. This tends to neutralize the acid so that the transferred solution will have a lower acid strength than the starting acid.

- Acid will be brought to the site in a tank truck and will not be mixed or stored on site.

The retrieval of waste from C-106 will be completed prior to initiating this interim closure action. Retrieval will be completed following the criteria in the *Hanford Federal Facility Agreement and Consent Order* (HFFACO) (Ecology et. al. 1989) M-45 series and Appendix H.

Following waste retrieval, Ecology and DOE will review the success of the acid wash retrieval campaign. If it is determined that sufficient waste has been removed to proceed with the demonstration project, a phased approach will be used to achieve component closure of C-106. Phase I will involve placement of an initial layer of grout fill material. Between 30-cm (12-in.) and 90-cm (36-in.) of grout would be placed in the Phase I placement (~126 to 380 m³ or ~160 to 500 yd³). The remaining phases leading to tank closure are not part of this demonstration. Figure 1 displays the proposed multi-phased approach to component tank closure.

Figure 1. Conceptual Component Closure



Phase I: Base Layer

The initial conditions of the tank following retrieval and prior to the addition of a base layer assumes that the liquid and solid wastes have been reduced to such a volume that HFFACO requirements are satisfied. A cementitious grout will be placed in the tank and flow over any remaining residual waste and around any in-tank equipment or miscellaneous debris. The purpose of placing this base layer is to evaluate the ability to place a foundation layer in a tank that would support future structural fill layers.

Cementitious Grout Production. Cementitious grout for this demonstration will be produced off site and transported by truck to the C Tank Farm.

Grout Performance Objectives. Phase I will place a layer of cementitious grout in C-106. The specific grout mix design constituency is under development and is intended to meet the following performance objectives.

- Provide sufficient compressive strength to support a bulk tank fill layer.
- Create a cover of grout that will minimize liquid infiltration, which restricts waste residuals from being re-mobilized.
- Reduce the leachability of the contaminants of concern (CoCs).

In addition to these performance objectives, the current engineering design (RPP-12331) identifies additional attributes of the grout to support emplacement within the tank:

- Exhibit a relatively low heat of hydration
- Be free-flowing and self-leveling

The grout will be formulated to be free-flowing and of sufficient volume so as to cover the residual waste at the bottom of the tank and form a base grout layer. The grout may be placed in approximately 30-cm (12-in.) lifts of 126 m³ (165 yd³) through an existing riser (RPP-12331). Up to three lifts may be placed in the tank. Although an uneven residual waste surface is expected, sufficient grout will be placed in the tank to cover the residual waste volume at the bottom of the tank and hence substantially reduce in-tank dose rates. Some of the liquid remaining in the tank may be less dense than the grout and displaced upwards. This may require the additional of a dry grout to absorb this liquid. This bound liquid would be covered with the next layer of grout to immobilize the contaminants in the liquid. Additives/getters that reduce the mobility or leachability of various CoCs may be added to create a more robust grout mixture. The performance of any additives or getters will be demonstrated in the laboratory; not as part of this field demonstration. Grout placement (flowability) may be affected by the addition of getters. If additives or getters are incorporated into the grout, any effects on flowability will be evaluated. An in-tank video system will be used to document and provide information to confirm the placement and lift thickness.

Some debris may not be encapsulated by Phase I grouting (e.g., discarded equipment may protrude above the stabilization layer, and/or residual waste attached to the walls above the grout level). The only direct tank penetrations are the cascade pipeline and nozzles high on the tank wall/side and the risers in the top. The plan for the cascade lines, which are sloped, is to fill up to them. Then fill only enough to cover the inlet and let the grout set for a short period of time to form a solid cap in the end. This would isolate the line. The risers will have external caps/flanges on top and be filled in the tank up to the dome top level as a part of filling the tank. Transfer lines and drain lines coming into the pits above the tank will be capped to prevent accidental waste addition. Some lines will be cut and capped. The ventilation riser will be filled as well during the tank fill process. Water infiltration controls will continue to be maintained following placement of the base layer until the WMA closure action is completed. The base layer provides additional assurance against potential contaminant release, by covering waste residuals left in the tank. Contaminated equipment

removed from the tank would be disposed as solid waste, and that fill equipment may be cleaned using water, which will then be disposed. The contaminated equipment is considered listed waste. It is treated per the Alternative Treatment Standard (40CFR268.45) and disposed of on the Hanford Site.

Active ventilation with a high-efficiency particulate air filtration system will be used during grouting activities to control potential emissions to the environment. The following air permits have been obtained for this project to control radiological and toxic emissions, WSDOE Approval Order 97NM-001 Rev. 2, 2/24/03 and Rad Air Approval AIR031102, 11/10/03. Existing passive ventilation will be used following grout placement until further action is required. Information will be obtained during the placement of the Phase I layer of grout on how operations are affected, such as impact on HEPA filter change-out.

The impacts associated with alternatives for the retrieval, treatment, and disposal of tank waste from the SSTs were evaluated in the Tank Waste Remediation System Environmental Impact Statement (TWRS EIS). This document was co-authored by DOE and Ecology and satisfied NEPA and SEPA requirements for the evaluation and public disclosure of the impacts from retrieval, treatment and disposal of tank waste. DOE, in its Record of Decision (ROD) for the TWRS EIS, selected the Phased Implementation alternative as its preferred alternative. The impacts of retrieval have been previously evaluated and disclosed.

Several retrieval technologies were identified in the TWRS EIS that could be used including hydraulic sluicing (past practice sluicing), a robotic arm using sluicing liquids (including alkali and acid solutions instead of water), mechanical retrieval, robotic crawler, and pneumatic retrieval. From among these technologies, DOE selected hydraulic sluicing and robotic arm-based retrieval for detailed analysis in the TWRS EIS. However, as indicated in the TWRS EIS, the other retrieval technologies could "be used to retrieve tank waste during any of the ex situ alternatives." The *Supplement Analysis for the Tank Waste Remediation System* (DOE/EIS-0189-SA3) determined that program changes including the use of alternative retrieval technologies (e.g., a crawler based system) for retrieving waste did not require further analysis. The impacts of retrieving waste from C-106 are bounded by the analysis in the TWRS EIS and are not subject to decisions associated with the request for a RCRA Permit modification or this SEPA checklist. DOE has and continues to conduct retrieval activities at C-106 in preparation for the ATCD project.

Compliance with NEPA requires that DOE actions taken during the demonstration project will be reversible. NEPA requires that research, testing, and demonstration projects do not result in a commitment on the part of the agency that would foreclose the consideration of future alternatives. The reversible action associated with the ATCD project is the placement of Phase I fill material in the tank. The potential exists that the closure action of the WMA C tank farm would not be consistent with this demonstration of component closure of tank C-106 and would require removing the Phase I fill material placed in the tank to meet regulatory requirements for WMA closure.

The tank closure EIS (TC-EIS) will evaluate landfill and clean closure alternatives of the single-shell tank farm systems. The basic landfill closure alternative consists of adding

grout in layers into retrieved tanks. The first layer (Phase I) would be composed of a grout with possible addition of getters for one or more CoCs. The second layer (Phase II) would be composed of a higher compressive strength grout than the first layer, but without getters. This layer would provide structural stability and fill the majority of the tank volume. The third layer (Phase III) would be composed of the highest compressive strength grout that could add a benefit of protection to an inadvertent intruder by providing an obvious layer that would resist drilling activities to the extent that the inadvertent driller would likely move away from the tank area

This demonstration project cannot foreclose future options concerning the closure of C-106. As stated above, following retrieval, Ecology and DOE will review the success of the retrieval efforts. If it is determined that sufficient waste has been removed from the tank then DOE would proceed with the placement of the Phase I fill portion of the demonstration. If it is determined that sufficient waste has not been removed to proceed with the demonstration then DOE would not place any fill material in the tank and would suspend component closure activities for C-106 pending the completion of the TC-EIS and issuance of the ROD. The TC-EIS is evaluating alternatives for closure of WMAs and the SST system. These alternatives include landfill closure, modified clean closure and clean closure. This approach to the ATCD Project does not foreclose implementation of any of these alternatives. This demonstration preserves all future options for final closure of C-106.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The ATCD project site is located in section 2, Township 12 N, Range 26 E on the eastern edge of the 200 East Area in the Hanford 241-C tank farm (C farm). The C farm is north of the PUREX Plant and East of B Plant. The 244-CR process vault, an inactive facility used as a lag storage and waste transfer station for various waste streams, is located near the south corner of C farm (Figures 2 and 3).

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other**

Flat.

b. What is the steepest slope on the site (approximate percent slope)?

The approximate slope of the land is less than 2 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The surface and near-surface soils in the 200 Areas generally are not well developed and consist of a number of soil types such as Rupert sand, Burbank loamy sand, and Ephrata sandy loam.

- Rupert sand consists of coarse sand and covers the majority of the 200 West Area and approximately one-half of the 200 East Area.
- Burbank loamy sand is coarse-textured and covers approximately one-third of the 200 West Area, a small portion of the 200 East Area, and the majority of the area between the 200 Areas.
- Ephrata sandy loam is a medium-textured soil that covers the northern portion of the 200 East Area.

Soil at C farm has been previously disturbed extensively during the construction and installation of the buried SST in the C farm. There would be only a small amount of soil disturbance during the ATCD project. At the ATCD project site, there would be temporary soil disturbance outside the tank footprint, primarily in the trample zone around work areas, heavy equipment traffic areas, and material lay down areas. Temporary impacts would include soil compaction. None of the soils that would be disturbed have been designated as prime or unique farmlands.

Figure 2. Location Map of WMA C and Surrounding Facilities in the 200 East Area.

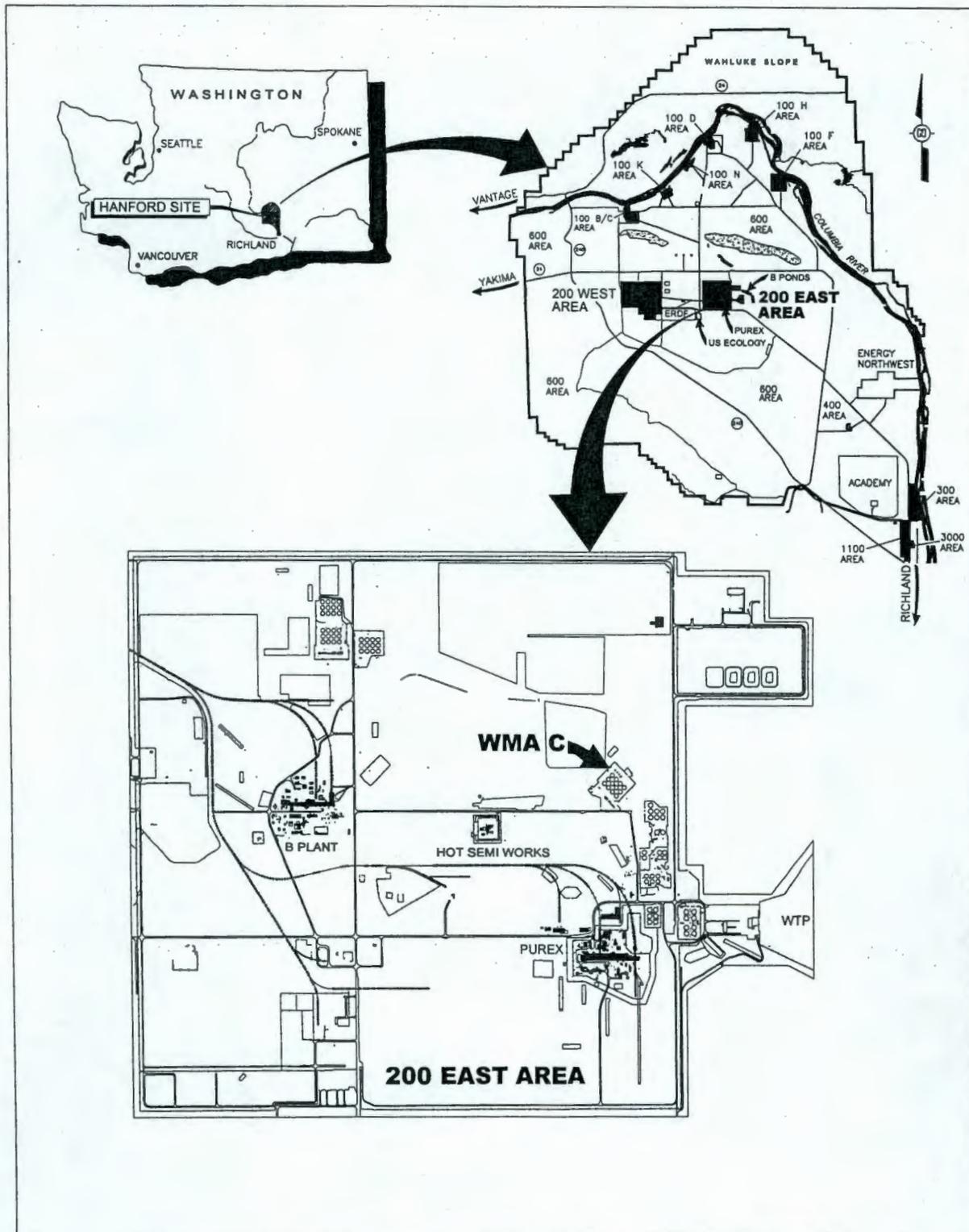
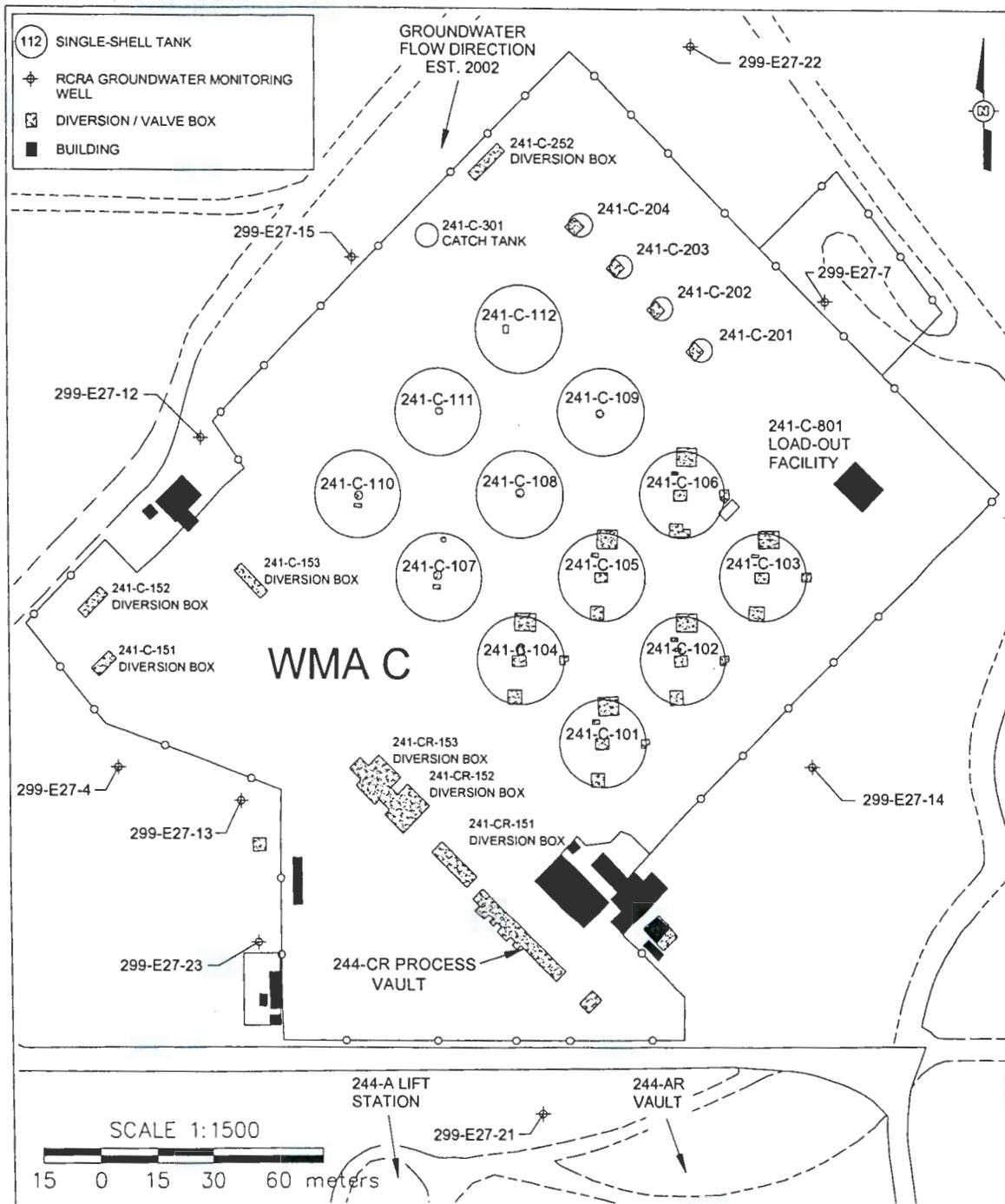


Figure 3. Location of WMA C (241-C Tank Farm) and Surrounding Facilities.



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- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.**

No unstable soils have been identified.

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

It is estimated that between 30-cm (12-in.) and 90-cm (36-in.) of grout would be placed in the Phase I placement (~126 to 380 m³ or ~160 to 500 yd³). There would be no filling or grading outside of the tank.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.**

There is not expected to be any increase in erosion as a result of the ATCD project.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

It is not anticipated that there will be a need to place impervious surfaces following completion of the demonstration project. Weather-tight seal systems currently in place will be established above the tank after the Phase I fill has been placed into C-106. The tank will be monitored and inspected until final closure.

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

Standard construction practices for erosion and sediment control will be used at equipment staging locations and around C-106. Standard erosion/sediment control techniques may include sediment fences, straw bales, or other similar sediment catchments.

2. Air

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

Routine construction traffic and activities in and around the tank farms could generate some fugitive dust. The atmosphere in C-106 is influenced by the presence of radioactive and hazardous material that is stored in the tank. Accessing the interior of the tank provides a release pathway into the atmosphere. There would be no releases as part of the site preparation. During grouting operations active ventilation with high-efficiency particulate air filtration will be used to control potential release of contaminants to the environment. Appropriate air permits will be obtained which will provide appropriate mitigating

controls. Following grout placement, existing passive ventilation will be used until further action is required.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odors that would affect the conduct of the ATCD project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

No substantial additional emissions would occur as result of the ATCD project. Construction traffic could generate some fugitive dust.

Active ventilation with high-efficiency particulate air filtration will be used during grouting operations to control potential release of contaminants to the environment. Appropriate air permits will be obtained which will provide appropriate mitigating controls.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The Columbia River is 5.6 miles north of the Central Plateau (200 Areas). There are no naturally occurring water bodies near the Hanford tank farms. The SSTs are land-based facilities as defined in WAC 173-303-282(3)(h). WAC 173-303-282(6)(c)(i)(B)(II) requires that land-based facilities be located at least 402 m (1,319 ft) from any perennial water body. WAC 173-303-282(6)(d)(ii) requires that land-based facilities be located at least 402 m (1,319 ft) from any wetlands, designated critical habitats, habitats designated by the Washington State Department of Wildlife as essential to the maintenance or recovery of any state listed threatened or endangered wildlife species, natural areas that are acquired or voluntarily registered or dedicated by the owner, or state or federally designated wildlife refuges, preserves, or bald eagle protection areas.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The ATCD project will not require any work over, in, or adjacent to any surface water.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

There will be no fill or dredge material placed in or removed from surface water or wetlands.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

All water for the 200 East Area is supplied from the Hanford Site water system. Water is distributed throughout the area by the following separate systems:

- Raw water system – Raw water is untreated, non-chlorinated water used primarily for cooling, flushing, and dilution.
- Sanitary water system – Sanitary water is treated (filtered, purified) and used for drinking and sanitary facilities.

Raw water is available from an existing 30.5 cm (12 in.) fire water line through a 5 cm (2 in.) supply line into the 241-C-73 air and water service building located outside and to the east of the C farm fence. The water requirements for the ATCD project will rely on existing developed water supply capabilities and would not require new surface water withdrawals or diversions. All pressurized raw and potable water lines feeding C Farm were leak tested in July 2002. No leaks were detected; two abandoned water lines of uncertain status were cut and capped. Active pressurized water lines serving C Farm have backflow preventers.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No, the ATCD project does not occur within a 100-year floodplain.

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

There will be no discharge of waste material to surface waters.

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

There would be no groundwater withdrawals or discharge of water to the groundwater as part of the ATCD project. No surface, ground, or run-off water impacts are expected. All pressurized raw and potable water lines feeding C Farm were leak tested in July 2002. No leaks were detected; two abandoned water lines of uncertain status were cut and capped.

Active pressurized water lines serving C Farm have backflow preventers. Surface runoff and storm water would be directed to natural drainage areas and/or depressions. Work areas, roadways, and parking lots would be crowned or sloped to drain to localized drainage areas such as ditches or swales for evaporation or percolation into the ground.

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals, agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

The question is not applicable to the ATCD project.

c. **Water runoff (including stormwater):**

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The Hanford Site receives 15 to 18 cm (6 to 7 in) of annual precipitation. Precipitation runs off the existing buildings and seeps into the soil on and near the buildings. The ATCD project will not increase the runoff volume in the 200 Area.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

There is no potential for waste material to enter groundwater or surface waters from the ATCD project actions.

d. **Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

No surface, ground, or run-off water impacts are expected. All pressurized raw and potable water lines feeding C Farm were leak tested in July 2002. No leaks were detected; two abandoned water lines of uncertain status were cut and capped. Active pressurized water lines serving C Farm have backflow preventers. Surface runoff and storm water would be directed to natural drainage areas and/or depressions. Work areas, roadways, and parking lots would be crowned or sloped to drain to localized drainage areas such as ditches or swales for evaporation or percolation into the ground. As previously noted, standard construction practices for sediment/erosion control will be used as appropriate.

During retrieval water would be supplied using a hose from AY Farm to provide the water used in sluicing and not the C-farm infrastructure that was tested. The AY water supply hose would be above ground allowing for immediate identification of any potential leaks which could be immediately corrected. Only minor leakage in C-Farm from the water hose line connections has been observed. These were immediately corrected.

4. Plants

a. Check or circle types of vegetation found on the site:

deciduous trees: alder, maple, aspen, other

evergreen trees: fir, cedar, pine, other

shrubs

grass

pasture

crop or grain

wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other

water plants: water lily, eelgrass, milfoil, other

other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

The area around C farm has limited vegetation consisting of grasses and shrubs. The area has been disturbed extensively by past activities. The amount of vegetation that may be removed or altered would be less than one acre. This area is under a continuous vegetation management plan that includes the use of herbicides to prevent the encroachment of vegetation into the tank farm.

c. List threatened or endangered species known to be on or near the site.

There are no endangered or threatened species of plants in the C farm.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Not applicable.

5. Animals

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site: birds: hawk, heron, eagle, songbirds, other; mammals: deer, bear, elk, beaver, other; fish: bass, salmon, trout, herring, shellfish, other.

Information on animals can be found in PNNL-6415.

b. List any threatened or endangered species known to be on or near the site.

There are no endangered or threatened species or their habitats in the area of the ATCD project nor are there any known nesting areas in the vicinity of the ATCD project, therefore, there would be no impacts to this resource or habitat. Two federal and state listed threatened or endangered species have been identified on the 1,517 km² (586 mi²) Hanford Site along the Columbia River, the bald eagle and the peregrine falcon. In addition, the state listed white pelican, sandhill crane, and ferruginous hawk also occur on or migrate through the Hanford Site. The Columbia River is about 9.3 km (5.6 mi) from the 200 East Area.

c. Is the site part of a migration route? If so, explain.

The Hanford Site is a part of the Pacific Flyway. The Hanford tank farms are not utilized by waterfowl.

d. Proposed measures to preserve or enhance wildlife, if any:

This project contains no specific measures to preserve or enhance wildlife.

6. Energy and natural resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Equipment will use diesel fuel, gasoline, and electricity during ATCD activities.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, the ATCD project would not impact the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Energy consumption is not anticipated to be substantial, and energy conservation features are not applicable to the ATCD project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

The ATCD project consists of short-term activities involving the retrieval of tank waste, transport of grout and the placement of the Phase I grout layer. Waste retrieval from the

tank farm system was evaluated in the TWRS EIS. Therefore, any human health risks associated with retrieval of the initial tank fill material from C-106 are bounded by the risk assessment of the TWRS EIS. To evaluate human health and safety issues, the ATCD project only requires consideration of short-term effects. Long-term health and safety and risk issues would be evaluated when final closure plans for C farm are developed.

The short-term human health risks include routine (non-accident) and accident conditions resulting from activities associated with the ATCD project. Operators would not come into physical contact with chemicals because they will be required to wear protective clothing. In addition, air monitoring and filtration will be used to identify and control any air emissions from C-106 during the period it is open. All personnel working in the tank farm will receive health and safety training appropriate for working in this environment.

The following describes the three categories of short-term risks associated with conducting the closure demonstration activities. As stated in the response to A.11 and above, the impacts of retrieving waste, from C-106 are bounded by the analysis in the TWRS EIS and are not subject to decisions associated with the request for a RCRA Permit modification or this SEPA checklist. DOE has and continues to conduct retrieval activities at C-106 in preparation for the ATCD project.

Occupational Accident Risk

The potential exists for accidents (e.g., cuts and falls) resulting from transportation and fill placement activities associated with the ATCD project. The bounding occupational accidents for the demonstration would be within the estimates presented in Appendix E of the TWRS EIS. Based upon the analysis in Appendix E, occupational accident risks are not considered to be significant.

Routine Radiological Exposure Risk Results

People have always been exposed to radiation from natural sources. The average resident of the United States receives an annual radiation dose from natural sources of about 300 mrem (0.3 rem). Exposure to large amounts of radiation (50,000 to 600,000 mrem [50 to 600 rem]) can cause serious illness or death. Exposure to small doses of radiation, such as in medical x-rays, may cause no biological damage to humans, although the probability of cancer may be slightly increased. At the Hanford Site, DOE activities have involved manmade radiation sources from nuclear processing. The DOE annual radiation dose limit for a member of the public is 100 mrem (0.1 rem).

To estimate health effects for radiation protection purposes, it usually is assumed that a collective dose of 2,000 person-rem in the general population will cause one extra latent cancer fatality (ICRP 1991). It does not matter whether 20,000 people each receive an average of 0.1 rem or 2 million people each receive an average of 0.001 rem. In either case the collective dose would equal 2,000 person-rem, and thus one additional latent cancer fatality would be expected.

Demonstration activities require work in radiation zones during the installation of

equipment, and during operations. Due to the nature of the work in a radiation zone, the workers could be exposed to and receive an occupational radiological dose from ionizing radiation. Atmospheric emissions also may result from demonstration activities. Every effort is made to eliminate exposures to the workers from air emissions. Risk from these exposures is measured in terms of latent cancer fatalities.

The bounding latent cancer fatality risks from the demonstration activities would be within the estimates presented in the TWRS EIS, Appendix D and Appendix E. Based upon the analyses in Appendices D and E, there would be no significant risks due to latent cancer fatalities as a result of conducting the ATCD project.

Radiological Accident Risk Results

Radiological accidents are unplanned events or a sequence of events that result in undesirable consequences. The potential exists for radiological accidents resulting from the closure demonstration activities. Radiological accidents could result in the unmitigated release of radiological constituents to the atmosphere, exposing the involved worker, noninvolved worker, and general public resulting in a latent cancer fatality risk. The probability of the accident occurring is taken into consideration. When the consequences of the accident or latent cancer fatality risk is evaluated with the probability of the accident occurring, the product of the two is referred to as the point-estimate latent cancer fatality risk.

The bounding latent cancer fatality risks for the demonstration activities would be within the estimates presented in Appendix E of the TWRS EIS. Personnel will receive safety training and be outfitted with appropriate protective clothing that will minimize any exposure from a release. These steps will significantly reduce the risks from postulated releases.

1) Describe special emergency services that might be required.

Hanford Site security, fire response, and ambulance services are on call at all times in the event of an emergency. Hanford Site emergency services personnel are specially trained to manage a variety of circumstances involving chemical and/or mixed waste constituents and situations.

2) Proposed measures to reduce or control environmental health hazards, if any:

All personnel are trained to follow proper procedures during disposal operations to minimize potential exposure. Chemical and radiological safety hazards would be mitigated by preventing direct contact with the residual chemical constituents, wearing protective clothing, providing appropriate training of project personnel, controlling ingress and egress to the ATCD project site, and using respiratory protection by on-site personnel as necessary.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The Hanford Site is an industrial complex and generates noise at levels that are consistent with the various activities conducted within the complex boundaries. Noise levels are maintained within prescribed limits. The ATCD project would use industrial equipment that would generate noise; the noise levels generated would be within levels currently generated and would not constitute an increase in noise levels. Because of the size of the Hanford Site, its scattered facilities, and its largely undeveloped nature, activities generally have no off-site noise impacts. The noise levels from the ATCD project would be short term, limited to the duration of project activities, and would not be permanent or long term.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Noise impacts associated with the project are described above. There would be no substantial change in noise levels due to the ATCD project.

3) Proposed measures to reduce or control noise impacts, if any:

In the unlikely event that Occupational Safety and Health Administration noise standards would be exceeded (*Noise Control Act of 1972*), appropriate measures to protect personnel would be employed (ear muffs, ear plugs, etc.).

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

The Hanford Site is a single RCRA facility identified by the U.S. Environmental Protection Agency (EPA)/State Identification Number WA7890008967 that consists of over 60 treatment, storage, and disposal units conducting dangerous waste management activities. These treatment, storage, and disposal units are included in the *Hanford Facility Dangerous Waste Part A Permit Application* (DOE/RL-88-21). The Hanford Site consists of all contiguous land, structures, other appurtenances, and improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous waste, which, for the purposes of RCRA, are owned by the U.S. Government and operated by DOE (excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest, and lands owned by or leased to Washington State).

The current use of the Hanford Site includes a series of tank farms that are used to store hazardous and radioactive wastes including liquids and sludges.

b. Has the site been used for agriculture? If so, describe.

The Hanford Site has not been used for agriculture since 1943. Prior to 1943 portions of the Hanford Site, particularly near the abandoned Hanford town site, supported fruit orchards. Based upon review of available documents, the ATCD project site was not used for agriculture.

c. Describe any structures on the site.

There is a substantial amount of ancillary equipment (i.e., pits, transfer lines, ventilation equipment, vaults, diversion boxes) in C farm that will require disposition at or before closure of the entire tank farm. The cesium load-out facility (241-C-801) is located in C farm and was operated until 1976 as a transfer facility for cesium-rich waste. The cesium load-out facility is located near the east corner of the tank farm and would not interfere with component closure activities for C-106. Support facilities were installed in the vicinity of C-106 to support the C-106 waste retrieval campaign in the late 1990s (project W-320). The ancillary equipment is not part of the ATCD component closure action.

d. Will any structures be demolished? If so, what?

There will be no structures demolished as part of the ATCD project.

e. What is the current zoning classification of the site?

The Hanford Site is zoned as an unclassified use district by Benton County.

f. What is the current comprehensive plan designation of the site?

The 1985 *Benton County Comprehensive Land Use Plan* designates the Hanford Site as the "Hanford Reservation" (BCBCC 1985). Under this designation, land on the Hanford Site can be used for "activities nuclear in nature." Nonnuclear activities are authorized "if and when DOE approval for such activities is obtained." The Hanford Comprehensive Land-Use Plan Environmental Impact Statement Record of Decision (64 FR 61615) stated that the Central Plateau (200 Areas) geographic area is designated industrial-exclusive.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable to the ATCD project site.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No.

i. Approximately how many people would reside or work in the completed project?

The ATCD project does not produce opportunities for habitation or new employment.

j. Approximately how many people would the completed project displace?

The ATCD project would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Does not apply.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Does not apply (refer to Section 8f).

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable. No housing units would be provided.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable. No housing units would be eliminated.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable. There are no housing impacts associated with the ATCD project.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The visual features of the tanks farms and surrounding area will not be affected by the ATCD project. All features and equipment associated with the project can be considered to be at ground level.

b. What views in the immediate vicinity would be altered or obstructed?

There will be no views altered or obstructed as a result of the ATCD project.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No, there will be no new light sources or glare created from the ATCD project.

c. What existing off-site sources of light or glare may affect your proposal?

There are no off-site sources of light that would affect the ATCD project.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable, there are no impacts associated with lighting or glare created by the ATCD project.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

There are no designated or informal recreational opportunities in the immediate vicinity of the ATCD project.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No, the ATCD project would not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not applicable, there are no impacts on recreation or recreation opportunities created by the ATCD project.

13. Historic and Cultural Preservation

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

The waste storage tanks could be considered of potential historical significance because they are an element that contributes to activities that were associated with World War II and Cold War periods of United States history. The ATCD project might require making modifications to the existing tank structures. Typically, contaminated structures of historical value would have their history and use documented but would not be preserved intact. DOE has received an exemption that would allow documenting only one SST, one DST, and one inactive miscellaneous underground storage tank rather than documenting each tank individually (DOE/RL-96-77). The ATCD project would not affect the ability for this documentation to occur.

The tank farms underwent extensive excavation when the tanks were installed underground. It is unlikely that any archaeologically significant resources would be encountered during the ATCD project, and any that were encountered would likely not be in their original cultural context. Notwithstanding this situation, in the event cultural resources were encountered during the ATCD project, work would be halted and the NEPA compliance officer and State Historic Preservation Officer would be notified to determine the appropriate disposition of the resource and any mitigative actions that would be required prior to continuing with the project.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

Consideration of impacts to cultural resources is mandated under Section 106 of the *National Historic Preservation Act* implemented by 36 CFR 800. Requirements identifying significant historic properties that may be impacted by the proposed action or alternatives within the project's area of potential effect. Historic properties are defined as archaeological sites, standing structures, or other historic resources listed in or determined eligible for listing in the *National Historic Preservation Act*. If adverse effects on historic, archaeological, or cultural properties are identified, agencies must attempt to avoid, minimize, or mitigate the impacts to these resources.

The Hanford Site as a whole contains extensive prehistoric and historic archaeological sites. However, the 200 Areas contain very few known prehistoric or historic archaeological sites. A comprehensive archaeological resources review for the fenced portions of the 200 Areas was conducted in 1987 and 1988 (PNNL-6415). Two historic archaeological sites, four isolated historic artifacts, one isolated cryptocrystalline flake, and an extensive linear feature (White Bluffs Road) were the only material greater than 50 years old discovered during the field survey. Only the White Bluffs Road was determined eligible for listing on the National Register of Historic Places. This road, which passes

diagonally southwest to northeast through the 200 West Area, originated as a Native American trail. Segments of the White Bluffs Road that are located in the 200 West Area have been determined to be non-contributing. Such non-contributing segments of the White Bluffs Road are those that do not add to the historic significance of the road but retain evidence of its contiguous bearing.

c. Proposed measures to reduce or control impacts, if any:

The ATCD project activities might require making modifications to the existing tank structures. During the ATCD project, C-106 would be filled with between 30-cm (12-in.) and 90-cm (36-in.) of grout (~126 to 380 m³ or ~160 to 500 yd³) that would alter the integrity of the tanks' historical context. Typically, contaminated structures of historical value would have their history and use documented but would not be preserved intact. DOE-Richland Operations Office, the Advisory Council on Historic Preservation, and the Washington State Historic Preservation Office entered into a programmatic agreement for the maintenance, deactivation, alteration, and demolition of the built environment on the Hanford Site in August 1996. Through this agreement, DOE received an exemption allowing them to document only one SST, one DST, and one inactive miscellaneous underground storage tank rather than individually documenting each tank. No further consultation or action is required concerning historic preservation issues related to the tanks.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on-site plans, if any.

Does not apply.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The Central Plateau is not accessible to the public and is not served by public transit.

c. How many parking spaces would the completed project have? How many would the project eliminate?

Does not apply.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

There would be no new permanent roads, streets, or improvement to the road network.

- e. **Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No.

- f. **How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

The traffic volume to and from the Hanford Site as well as in the vicinity of the C farm will not change from current volumes. There will be no increase in labor force to conduct the ATCD project.

- g. **Proposed measures to reduce or control transportation impacts, if any:**

Not applicable.

15. Public Services

- a. **Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

No.

- b. **Proposed measures to reduce or control direct impacts on public services, if any.**

Not applicable.

16. Utilities

- a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

Electricity, potable water, refuse service, telephone, and a sanitary sewer system are available in the 200 East Area.

- b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

The following utilities are currently available at the C farm and would be used temporarily during the ATCD project.

- SST electrical power system – The electrical power capacity available to the C farm will be 1,000 kVA of 3-phase power at 13.8 kV and 60 Hz.

- SST raw water – The raw water available in the C farm flows through a 5 cm (2-in) line to the 241-C-73 air and water service building at 1,000 kPa (145 lb/in² gauge).
- SST service air system – The service air available to the C farm is 25 ft³/min of dry compressed air with a dew point of -40 °C at 690 kPa (100 lb/in² gauge).

Staging would occur in previously disturbed areas within the 200 East Area near C farm. Equipment for materials storage, mixing, and delivery of fill materials would be trucked to the ATCD site and set up in designated fenced areas of less than one acre, near C farm. Trailers for contractor personnel also would be provided. Grout production would occur off-site and be delivered to the C farm. All contractor equipment and facilities would be located in previously disturbed areas.

The staging area would require limited preparation because of the relatively level topography in the 200 East Area around C farm. Fencing would be provided around the contractor facilities. Water and power would be provided from existing on-site sources and temporary connections would be made to these services.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.



Roy Schepens

Date

11/19/04

U.S. Department of Energy

REFERENCES

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WAC 173-303-282, "Siting Criteria," *Washington Administrative Code*, as amended.

"Washington State Environmental Policy Act (SEPA)," Chapter 43.21C, *Revised Code of Washington*, as amended.

WHC-SD-WM-SAD-024, 1995, *Safety Assessment for Tank 241-C-106 Waste Retrieval Project W-320*, Rev 0, Westinghouse Hanford Company, Richland, Washington.