0074216

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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October 24, 2007

Mr. David A. Brockman, Manager
Richland Operations Office
United States Department of Energy
P.O. Box 550, MSIN: A7-50
Richland, Washington 99352

Re: 200 IS-1 and 200-ST-1 Remedial Investigation/Feasibility Study (RI/FS) and Unit Sampling Plan, DOE/RL-2002-14, Revision 1, Draft B Comments

Reference: Letter 07-AMCP-0198, dated June 27, 2007, from M. J. Weis, USDOE-RL, to J. A. Hedges, Ecology, "Tanks/Lines/Pits/Boxes/Septic Tank and Drain Fields Waste Group Operable Unit Remedial Investigation/Feasibility Study (RI/FS) Work Plan and Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Unit Sampling Plan; Includes: 200-IS-1 and 200-ST-1 Operable Units, DOE/RL-2002-14, Revision 1, Draft B" 0073164

Dear Mr. Brockman:

The Department of Ecology reviewed the referenced document. Enclosed are our comments in Review Comment Record form. In accordance with Section 9.2.1 of the Hanford Federal Facility Agreement and Consent Order Action Plan, we anticipate receiving an updated document 45 days from receipt of this letter.

If there are any questions, contact me at 509-372-7921.

Sincerely,

John B. Price

John R. Price
Environmental Restoration Project Manager
Nuclear Waste Program

laf/aa
Enclosure

cc: See next page

cc w/enc:

Nick Ceto, EPA
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Administrative Record: SST/Tank Waste Storage and 200-IS-1
Environmental Portal 200-ST-1

REVIEW COMMENT RECORD	Date 10/18/07	Review No.
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Document Number(s)/Title(s)	**Program/Project/Building Number**	**Reviewer**	**Organization/Group**	**Location/Phone**
Tanks/Lines/Pits/Boxes/Septic Tanks and Drain Fields Waste Group Operable Unit Remedial Investigation/Feasibility Study (RI/FS) Work Plan and Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Unit Sampling Plan; Includes: 200-IS-1 and 200-ST-1 Operable Units, DOE/RL-2002-14, Revision 1, Draft B, Released: May 24, 2007		John Price, Les Fort, Alisa Huckaby, Beth Rochette, Damon Delistraty, Jerry Yokel	Washington State Department of Ecology	3100 Port of Benton Blvd. Richland, WA 509-372-7984

Comment Submittal Approval: Agreement with indicated comment disposition(s) Status:

Organization Manager (Optional)	Date	Reviewer/Point of Contact	Date	Reviewer/Point of Contact
		Author/Originator		Author/Originator

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1.	General	The purpose of Phase I sampling requires modification/clarification within the document. It appears from the work plan that the intent of Phase I, which was discussed in the DQO as involving non-statistical sampling at locations with high likelihood of requiring pipe or soil removal, has changed to simply providing data to support remedial action. This may not be an efficient use of sampling resources, because judgmental sampling will not be defensible unless it leads to removal of contamination.			
2.	Section 1, Scope and Objectives, General Comment.	The section should clearly identify each unplanned release considered to be within the scope of this operable unit. Unplanned releases are unique to the scope described on lines 27-28 on page 1-2 in that the nature and extent of the contamination has not been determined. It is recommended that each unplanned release associated with this operable unit and considered to be within this plan's workscope be			

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		identified in its own section as included workscope. For example, it is recommended that the following unplanned releases be identified, by bullet or table: waste pipeline between 242-B Evaporator and 207-B Retention Basin, 200-E-112 leaking pipeline, UN-200-E-80, UN-200-E-1, 200-E-114 pipeline, UN-200-E-7, UPR-600-20, UN-200-E-3, UN-200-E-3, UN-200E-85, UN-200-E-103, UN-200-E-44, 200-E-111 pipeline, UPR-200-E-68, pipeline from 222-U/22-4 Building and 216-U-8/12, 216-U-8/12 piping, UPR-200-E-82, 241-B-151/152/153 Diversion Boxes, etc.			
3.	Section 1.0, Page 1-1, 1st ¶	Change Text to read: This work plan supports ~~the *Comprehensive Environmental Response,and Liability Act of 1980* (CERCLA)~~ remedial investigation/feasibility study (RI/FS) activities for the 200-IS-1 Tanks/Lines/Pits/Boxes Waste Group Operable Unit (OU). The U.S. Department of Energy (U.S. DOE) is completing an RI/FS to satisfy requirements under the *Comprehensive Environmental Response, and Liability Act of 1980* (CERCLA) and Washington's Hazardous Waste Management Act (HWMA). The HWMA and the corresponding regulations in Chapter 173-303 of the Washington Administrative Code (WAC) implement Washington's federally-authorized program under the *Resource Conservation and Recovery Act of 1976* (RCRA). As discussed in the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al., 1989b)(Tri-Party Agreement Action Plan), the RI/FS work plan is prepared to present information on how the remedial investigation (RI) and feasibility study (FS) processes will be conducted and eventually lead to proposed remedies for the waste sites in an OU. This work plan ~~also~~ integrates the CERCLA investigation/response and HWMA corrective action ~~*Resource Conservation and Recovery Act of 1976* (RCRA) facility investigation/correctives measures study (RFI/CMS)~~ requirements and uses the framework established in DOE/RL-98-28, *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program* (hereafter referred to as the			

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		Implementation Plan), which is the implementation plan for integrating the RCRA treatment, storage and disposal (TSD) unit closure process with ~~the OU~~ CERCLA RI/FS and RCRA facility investigation/correctives measures study (RFI/CMS) ~~process~~ processes.			
4.	Section 1.1, Page 1-3, Scope and Objectives, Lines 3-5.	The text states: "Information presented in the RI report will support the evaluation of the remedial alternatives and closure options...." In Section 3.4.1 through 3.4.3, information is provided about past releases. However, the proposed work plan does not appear to further characterize the known releases. Due to the lack of information associated with these releases (i.e., extent of contamination), "remedial alternatives and closure options" cannot be adequately evaluated/considered. The workplan either needs to identify that further characterization and/or remediation will be performed in relation to the known releases. It is recommended that the text differentiate between characterization of known releases versus characterization of potential releases. In addition, it is recommended that the text identify that adequate characterization information is not available associated with known releases to support evaluation of the remedial alternatives and closure options unless the remedial alternatives and closure options include removal and decontamination.			
5.	Section 1.1, Page 1-3, Scope and Objectives, Lines 8-9.	The text states: "This work plan focuses on identifying and gathering the information that will be needed for selection of the preferred remedy(s)." In Section 3.4.1 through 3.4.3, information is provided about past releases. However, the proposed work plan does not appear to further characterize the known releases. Due to the lack of information associated with these releases (i.e., extent of contamination), "preferred remedy(s)" cannot be adequately evaluated/considered. It is recommended that the text differentiate between characterization of known releases versus characterization of potential releases. In addition, it is recommended that the text identify that adequate characterization information is not available associated with known releases to allow selection of the preferred remedy(s) unless the preferred remedy for known releases is removal and			

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		decontamination.			
6.	Section 1.1.1, Pages 1-4 – 1-5.	The following text is from the DQO: "The purpose of the Phase 1 investigation will be to gather limited data in support of existing information that indicates contamination likely is present at concentrations above preliminary cleanup levels." While the basis for binning is provided, the scope and objectives description of Section 1.1 does not appear to address characterization of unplanned releases from pipelines and/or pipeline structures. It is recommended that, where applicable (i.e., where unplanned releases have occurred) the workplan include characterization of unplanned releases associated with each waste category (i.e., bin). For example, UPR-200-W-29 and UPR-200-W-38 may represent releases of which characterization would support the above quoted purpose for Bin 5. As another example, contamination characterization associated with the suspected 216-A-10 pipeline leak would support the above quoted purpose for Bin 1.			
7.	Section 1.1, Page 1-3, Scope and Objectives, Lines 10-12	The text states: "Results of the characterization activities will be used for evaluating risk to potential receptors and for the FS remedial alternative analyses." The text neither identifies how the known releases will be characterized nor how the lack of characterization will allow risk to be evaluated. It is recommended that the sentence be re-written to indicate that after all characterization activities have been completed, risk will be evaluated. Consider: "Ultimately, after all characterization activities are completed, results will be used for evaluating risk to potential receptors and for the FS remedial alternative analyses."			
8.	Section 1.1, Page 1-3, Scope and Objectives, Lines 19-29	The referenced text does not clearly identify if known releases will be characterized. Although the text does identify the WIDS database as the "data-management tool" for listing waste sites and providing site-specific information, it does not specifically identify if the nature and extent of known releases will be characterized during this phase or another phase of this RFI. It is recommended that text be included which indicates if sampling will be conducted to characterize the nature and extent of contamination associated with known releases.			

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9.	Section 1.1.4.1, p. 1-8, 1st paragraph	Please revise the paragraph starting with the third sentence as follows: The purpose of the first phase (Phase 1) of investigation is to gather characterization data in support of existing information that indicates contamination likely is present. The characterization data collected will be used to determine ~~whether~~ if contaminants are ~~consistently~~ at concentrations above preliminary cleanup levels and remediation is required. ~~to support remedial decision making (other than the no-action alternative).~~ Preliminary cleanup levels are based on potential applicable or relevant and appropriate requirements (ARAR) and preliminary remediation goals, which are regulatory thresholds and/or standards or derived risk-based thresholds. Preliminary cleanup levels ~~also~~ are established based on the requirements of WAC 173-340 for non-radionuclide contaminants and total uranium as a toxic metal, and RESRAD modeling for radionclides. ~~taking into account levels identified in previous Central Plateau cleanup actions (e.g., RPP-PLAN-23827-R1, 200-UW-1 Proposed Plan, Single-Shell Tank Sampling and Analysis Plan~~ Preliminary remediation goals are provided in Tables 3a and 3b of the Data Quality Summary Report for the IS-1 Operable Unit Pipelines and Appurtenances (D & D-30262). Preliminary cleanup levels provide the basis for establishing final cleanup levels in the CERCLA record of decision….			
10.	Section 1.1.4.1, p. 1-9, lines 2-5	Please modify the text as shown: These data may be determined to be sufficient for proposing a remove, treat and dispose remedy. ~~a steamlined remedial decision making process (i.e., contingent remedy, plug-in approach, focused package, or observational approach for remedial action).~~ The purpose of Phase 1 sampling, as was discussed in the DQO, is to sample areas that are expected to be contaminated above cleanup levels so that cleanup can begin at those waste sites and pipelines.			
11.	Section 1.1.4.1, p. 1-9, lines 6-9	Please modify the text as shown: Phase 2 characterization activities will be initiated when there is ~~considerable~~ uncertainty concerning whether contamination above a preliminary cleanup level is present. The Phase 2 investigation will be used if Phase 1 results show a range of concentration values both			

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		above and below, ~~or~~ close to, or below preliminary cleanup levels. As previously discussed in the DQO process, Phase 2 will be used in all cases except those where contamination exists above cleanup levels and remove, treat and dispose is clearly necessary.			
12.	Section 1.2, Page 1-10, 3rd ¶	Correct to read: The content and structure of this work plan follow the CERCLA and HWMA format, with modifications to concurrently satisfy the additional RCRA closure requirements.			
13.	Section 1.2.1, Pages 1-10 – 1-11.	RCRA TSD ancillary equipment within work plan scope. Section needs to identify and describe ancillary piping associated with landbased TSDs (e.g., 216-U-12, 216-S-10, etc….). Closure performance standards are required for TSD ancillary equipment. Any characterization information obtained via this workscope should be acknowledged and documented for future use during RCRA TSD closure actions.			
14.	Section 1.2.1, Page 1-11, lines 9-11 and 29-33 and Appendix D.	The text generally describes the structures in the workscope and Appendix D lists the workscope structures in table form. The text references the WIDS database and the TPA Action Plan, Appendix C. There are so many pipelines and structures within the scope of this workplan, there needs to be a method for confirming that all pipelines are included. If the TPA action plan, the WIDS database, unit-specific maps/documents were compared there would very likely be different pipes and structures identified via each source. Because it is very difficult to determine which pipelines and structures are within the scope of this workplan, it is recommended that a process be included for querying the various sources. For example, for the WIDS database, the text should describe the various queries that were made to identify and determine which pipelines and structures are within the scope of this workplan. Similarly, for the TPA action plan Appendix C, the workplan should include an appendix which individually identifies all pipelines and structures identified by the TPA that are within the scope of this workplan. Lastly, the workplan should include a "crosswalk" between database queries and document "downloads" to identify pipelines and/or structures which are			

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		identified multiple times via different methods.			
15.	Section 1.2.1, Page 1-11, lines 31-33	The workplan should include a description of when addition of new waste sites and reclassification of accepted waste sites will be performed in relation to this workplan. If this is not within the scope of this workplan, the text should describe how the new waste sites will be tracked for entry into the WIDS database. Lastly, the workplan should clearly identify all "new" waste sites and proposed "reclassifications" which have been identified to date.			
16.	Section 1.3, Page 1-13, section heading and 1st ¶	Change to: ~~1.3~~ **STREAMLINING APPROACHES ~~TO THE CERCLA PROCESS~~** Five streamlining approaches ~~to the CERCLA process~~ for the regulatory pathway and documentation requirements have been identified as having application to the 200-IS-1 OU and are described below. The first four approaches also are discussed in the Implementation Plan (DOE/RL-98-28). The fifth approach, a graded approach, is a process that ensures that the level of analysis, documentation, and actions are appropriate for decision making associated with the pipelines. These streamlining approaches could be used to meet the requirements for site evaluations and/or for development of the ~~ROD~~ recommended remedy for the 200-IS-1 OU.			
17.	Section 2.1.3, Page 2-6, Vadose Zone.	The description of artificial recharge doesn't include routine applications of water for dust suppression. Also, the description of artificial recharge doesn't adequately acknowledge periodic recharge events associated with raw water line failures. For example, relatively recently, there was a raw water line failure in 200 West Area that resulted in the "release" or leakage of ~450,000 gallons of water. Such events can mobilize preexisting vadose zone contamination. It is recommended that the text include descriptions of such periodic and routine artificial water "recharges" or "applications."			
18.	Section 3.2.2.1, Page 3-6, Technetium-	The first paragraph describes one major plume for which concentrations exceed 900 pCi/L. There are actually two major technetium-99 plumes in the 200 East Area. The second plume occurs near A-AX WMA. PNNL-16346 describes the plume in Section			

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	99,1st paragraph.	2.11.1.5. It is recommended that a description of the second major technetium-99 plume be added to the first paragraph.			
19.	Section 3.3.1	Note that Sampling and Analysis Plans (SAPs) have been produced for Phase 1, II, and III Data Quality Objectives (DQO) reports, as well (i.e., DOE/RL-2004-42, Rev 0 [Phase I]; DOE/RL-2005-30, Rev 0 [Phase II]; DOE/RL-2006-27, Rev 0 [Phase III]). Incorporate into the document this information.			
20.	Page: 3-3, Line: 32,33	Provide and identify the relationship between pipe leaks and groundwater constituents where applicable; and correlate to the leak history described on page 3-15 (indicating a possible link to groundwater contamination).			
21.	Section 3.3.2	According to Table 3-1, in addition to Cs-137, Pu-239/240, Tc-99, Th-232, total Sr, U-234, and U-238, several other nuclides were detected in vegetation (i.e., Ac-228, Be-7, K-40, Pb-212, Pb-214, Ra-224, Se-79, Th-234). Please include wildlife radionuclide data from PNNL-13910. Please comment on the potential for other biological mechanisms of contaminant transport (e.g., deep rooting plants, burrowing mammals).			
22.	Section 3.4.4, p. 3-23, 2nd bullet	The limited list of major COPCs does not seem useful for the work plan or sampling because analysis will include contaminant suites and will include organic contaminants and cyanide. Notice how the contaminants detected in the 241-CX-71 neutralization tank sludge included MEK, xylene, toluene, and cyanide, and the 276 S-141 tank had 98.4% hexone as well as NPH and TBP. Please delete this assumption.			
23.	Section 3.4.5.4, p. 3-27, lines 16-19	The text mentions clean closure for the CX tanks but does not mention sampling soil to verify clean closure. Please add text mentioning that soil will be sampled to verify clean closure.			
24.	Section 3.6.1.2	An evaluation of unrestricted land use must be assumed to evaluate long-term effectiveness of the remedy, considering uncertainty about the likelihood of failure of institutional controls.			
25.	Section 3.6.1.2,	Ecology's expectations for risk assessments in the Core Zone are below. Please evaluate risk in the Core Zone using the scenarios			

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	p. 3-32, lines 21-23	listed below. For the next 50 years: Industrial exclusive with DOE HGET/GERT-trained workers and DOE trained Rad workers. From 50 to 150 years: **A. Industrial Scenario** – For non-radiological contaminants and uranium: 1) Soil direct contact concentrations are derived using WAC 173-340-745. 2) Soil concentrations must be protective of groundwater and are derived using WAC 173-340-747 Method B; any use of subsection (5), (7), (8) or (9) methods requires Ecology approval. 3) Soil concentrations must be protective of surface water and are derived using WAC 173-340-730, (not including subsections (2) and (4)) in combination with WAC 173-340-747 Method B. Tri-Parties may not agree on this issue. Site-specific groundwater modeling beyond waste site boundaries may be needed to address attenuation and anticipated concentrations at the Columbia River from Core Zone and down-gradient sources of contamination. 4) Groundwater cleanup levels are derived according to WAC 173-340-720, Method B. 5) Groundwater ingestion must be included as a pathway in risk assessments. 6) Site risk for individual carcinogens is not to exceed 1E-05. 7) Total site risk for carcinogens, for all contaminants, all pathways and all media, is not to exceed 1E-05. 8) Site hazard quotient for individual hazardous contaminants is not to exceed 1. 9) Site hazard index is not to exceed 1. 10) Air protection values are derived according to WAC 173-340-750. 11) Soil concentrations must be protective of terrestrial ecological			

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		receptors and obtained as specified in WAC 173-340-7490 and using Table 749-3. **B. Industrial Scenario** – For radiological contaminants: 1) 15 mrem/y dose limit (total effective dose from all pathways) applies to industrial workers (consistent with CERCLA risk range of 1E-4 to 1E-6 per OSWER 9200.4-18). 2) Groundwater concentrations are not to exceed MCLs for radionuclides from all current (e.g., groundwater plumes) and future (e.g., soil leaching) contaminant sources. 3) Groundwater ingestion must be included as a pathway in risk assessments. 4) Annual dose from the airborne pathways is not to exceed 10 mrem/y for the maximally exposed individual at the site boundary, based on National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61). 5) USDOE Biota Dose Assessment Committee (BDAC) methods should address site biota. Biota Concentration Guidelines (BCGs) represent the general screening phase and apply to soil, sediment, and water. Pathways to sediment and water should be protected to avoid exceeding BCGs at the river. BCGs correspond to 0.1 rad/d for terrestrial and riparian animals and 1 rad/d for terrestrial plants and aquatic animals. <u>Other scenarios to support remedy decisions:</u> • According to 40 CFR 300.515(f), the State may opt for an enhanced remedy, different than the remedy chosen using the CERCLA 9 criteria, if the State is willing to pay the additional cost. In order to evaluate enhanced remedies, the State needs an unrestricted use risk assessment for each remedial alternative to evaluate protectiveness. The State may choose a more protective alternative even if it is not the preferred alternative based on the CERCLA 9 criteria. • WAC 173-340 indicates that "traditional industrial use"			

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		requires that access by the general public be restricted; an unrestricted scenario may apply for the period after active institutional controls. • WAC 173-340-708(3)(d) states that Ecology can "use alternate reasonable maximum exposure scenarios to help assess the protectiveness to human health of a cleanup action alternative that incorporates remediation levels and uses engineered controls and/or institutional controls to limit exposure to the contamination remaining on the site." WAC 173-340-708(3)(d)(ii) states that other scenarios can be used for evaluating protectiveness of remedies. • Ecology may require evaluation of additional pathways for non-radionuclides. WAC 173-340-720(1)(d) states that "The department may require more stringent cleanup levels than specified in this section where necessary to protect other beneficial uses or otherwise protect human health and the environment." For example, inhalation of ground water during showering is an important pathway for Cr (VI) because it is carcinogenic by this pathway and it is expected to be a risk driver at Hanford. Other important pathways for Hanford contaminants include food ingestion pathways such as ingestion of garden produce (including fruit). For information purposes and remedial decision making, a scenario including inhalation of vapors or aerosols during showering with groundwater, and ingestion of garden produce grown on the site using groundwater, should be evaluated. • The Core Zone may shrink in the future. Areas near the current edge of the Core Zone may end up outside of the Core Zone if the zone shrinks. • CERCLA allows consideration of additional scenarios for remedial decision making. **A. Unrestricted Use** (restrictions on use of the site or natural resources affected by hazardous substance releases are not required to protect human health and the environment); both			

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		child and adult versions should be evaluated. For non-radiological contaminants and uranium: • Soil direct contact concentrations are derived using WAC 173-340-740. • Soil concentrations must be protective of groundwater and are derived using WAC 173-340-747 Method B; any use of subsection (5), (7), (8) or (9) methods requires Ecology approval. • Soil concentrations must be protective of surface water and are derived using WAC 173-340-730 (not including subsections (2) and (4)) in combination with WAC 173-340-747 Method B. • Groundwater concentrations are derived according to WAC 173-340-720, Method B. • Groundwater ingestion must be included as a pathway in risk assessments. • Site risk for individual carcinogens is not to exceed 1E-06. • Total site risk for carcinogens, for all contaminants, all pathways and all media, is not to exceed 1E-05. • Site hazard quotient for individual hazardous contaminants is not to exceed 1. • Site hazard index is not to exceed 1. • Air protection values must be derived according to WAC 173-340-750. • Soil concentrations must be protective of terrestrial ecological receptors (i.e., plants, soil biota, and wildlife) and are obtained as specified in WAC 173-340-7490 and using Table 749-3. **B. Unrestricted Use** – For radiological contaminants (both child and adult versions should be evaluated): 1) 15 mrem/y dose limit (total effective dose from all pathways) applies to all human receptors (consistent with CERCLA risk range of 10^{-4} to 10^{-6} per OSWER 9200.4-18). The 15 mrem/y dose limit is the target dose limit for the reasonably-			

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		anticipated future land use. 2) Groundwater concentrations are not to exceed MCLs for radionuclides from all current (e.g., groundwater plumes) and future (e.g., soil leaching) contaminant sources. 3) Groundwater ingestion must be included as a pathway in risk assessments. 4) Annual dose from the airborne pathways is not to exceed 10 mrem/y for the maximally exposed individual at the site boundary, based on National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61). 5) USDOE Biota Dose Assessment Committee (BDAC) methods should address site biota. Biota Concentration Guidelines (BCGs) represent the general screening phase and apply to soil, sediment, and water. Pathways to sediment and water should be protected to avoid exceeding BCGs at the river. BCGs correspond to 0.1 rad/d for terrestrial and riparian animals and 1 rad/d for terrestrial plants and aquatic animals. **C. Scenario including additional pathways** – include all contaminants (non-radiological and radiological) and present a scenario that considers showering, inhalation during showering, and ingestion pathways for consumption of residential produce and livestock, and game (including fish from the Columbia River), in addition to all of the Unrestricted Use pathways; both child and adult versions should be evaluated. **D. Native American Scenario** – include all contaminants (non-radiological and radiological); the scenarios should be evaluated as specified by the tribes. **E. Intruder** - evaluate potential exposures to intruders with acute exposure (ex. driller, trencher, miner) to all contaminants (non-radiological and radiological). Include a scenario for post intrusion residents (children and adults) who raise produce (a garden) and have chronic residential exposure (including groundwater ingestion and groundwater use in the garden) to all contaminants (non-radiological and radiological).			

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26.	Section 3.6.1.4, p. 3-33, lines 4-6	Ecology appreciates that groundwater protection remediation goals for chemicals will be based on WAC 173-340-720. In order to protect groundwater, soil is protected using the methods in WAC 173-340-747. Please reference this regulation also. Additionally, the text states "Given the local hydrogeology at the 200-IS-1 OU, protection of the groundwater from the contaminants, by design, also will result in protection of the Columbia River." Unfortunately, some ambient water quality criteria for the river are lower than groundwater protection criteria based on WAC 173-340-720 (example: the hexavalent chromium groundwater protection criterion is 48 µg/L, while the water quality criterion is 10 µg/L). Because WAC 173-340-730(6)(b) requires assuming that there is no mixing zone at the groundwater – surface water interface, protecting groundwater is not always sufficient to protect surface water. This influences the concentration goals in groundwater and consequently the soil cleanup levels. Please discuss compliance with WAC 173-340-730 in the document and use remediation goals sufficient to protect surface water.			
27.	Section 3.6.3	Add groundwater to each bullet for ingestion, inhalation, dermal contact, and external radiation, consistent with Figure 3-4 for unrestricted groundwater (at least for areas outside the Core Zone). Sediments are specified as an exposure medium in the text but are absent in Figure 3-4. Please clarify use of this term.			
28.	Section 3.6.3, p.3-33, lines 23-26	Include a bullet for ingestion of contaminated groundwater. Industrial scenarios include ingestion of contaminated groundwater. The industrial scenario in WAC 173-340 (see WAC 173-340-720) includes drinking water in industrial areas. Also, Risk Assessment Guidance for Superfund (RAGS; EPA/540/1-89/002), Vol. 1, Part A, Exhibit 6-7 lists groundwater ingestion as a pathway for risk assessments for the commercial/industrial population. Please include this pathway in the evaluation.			
29.	Section 3.6.4, p. 3-35, lines 9-11	Please see the previous comment on Ecology's exposure scenario expectations for the Core Zone and delete the sentence: "Therefore, based on land-use decisions…."			

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30.	Section 3.7.1	Re: first bullet, specify half-life criterion. Re: third bullet, identify naturally occurring radionuclides. Re: fourth bullet, provide rationale for atomic mass exclusion. Re: fifth bullet, define "insignificant," and delete "and/or." Re: sixth bullet, treat COPCs with no toxicity factors as an uncertainty. Re: seventh and eighth bullets, these dilution exclusions should be deleted or need quantitative criteria. Re: the last bullet, define "persistent," and note that some transient COPCs (e.g., ammonia) may exert acute toxicity.			
31.	Section 3.7.1, p. 3-36, lines 3-29	Please include the following based on the DQO workbook (D&D-30262): "This project has elected to use general "suite type" analytical techniques, which yield results on many metals and organic compounds, providing a cost-effective approach for detecting waste constituents." This text can be placed before or after the bullets.			
32.	Section 3.7.2, Table 3-3	Re: "Semivolatile Organics," the parenthetical descriptor after PAHs (i.e., WHO congeners) should be appended to PCBs instead. Both PAHs and PCBs should be assessed with the toxicity equivalency factor (TEF) method. Dioxin-like PCB congeners use WHO TEFs (reference compound is 2,3,7,8-TCDD), while carcinogenic PAHs use MTCA/CalEPA TEFs (reference compound is benzo[a]pyrene). It is Ecology's understanding that dioxin-like PCBs will be evaluated in a subset of samples, supplementing Aroclor analyses.			
33.	Section 3.7.3, Table 3-4	Re: "Other Inorganics," formate, glycolate, and oxalate are not inorganics and should be analyzed as organic anions. Include degradation products of tributylphosphate (i.e., monobutylphosphate, dibutylphosphate). In addition to Aroclors, dioxin-like PCB congeners should also be evaluated in a subset of samples. The seven MTCA carcinogenic PAHs (i.e., BaA, BbF, BkF, BaP, Chry, DahA, IcdP) should also be included in Table 3-4 and evaluated with TEF methods.			
34.	Table 3-3, p. 3-38 and Table 3-4, p. 3-41	Ecology continues to expect analysis of PCB congeners on 20% of samples taken. These are not listed on the tables. Please add them to the tables.			
35.	Page: 4-3,	Provide, list, the preliminary cleanup goals. Describe how they where			

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	Line: 10	derived. This is a major data gap for this project.			
36.	Section 5.1, Page 5-3, 3rd ¶	Change to: An integration of CERCLA RI/FS work-plan and ~~RCRA RFI/CMS~~HWMA RI/FS work-plan requirements was used to develop this RI/FS work plan, which satisfies the content requirements of both regulations.			
37.	Section 5.1, Page 5-3, last	Change to: The RCRA closure options (i.e., landfill, ~~modified~~ alternative, and clean closure~~, as defined in Condition II.K of the Hanford Facility RCRA Permit [WA7890008967])~~ . . .¶			
38.	Section 5.3, p. 5-10, lines 23-26	Modify the text as follows: Based on the results of Phase 1, ~~an assessment will be completed concerning the need for additional data collection completed for each of the process waste pipeline bins. If the need for additional data collection is determined to be required to support risk assessment and remedial decision making,~~ planning for Phase 2 will be initiated. The Phase 1 sampling is to target sites that probably exceed cleanup levels. Since many locations will remain that are less obviously contaminated, Phase 2 will be needed for all bins.			
39.	Section 5.4, General	See the previous comment regarding Ecology expectations for Core Zone risk assessments and modify this section to be consistent with the expectations (ex. Section 5.4.3.1, p. 5-12 – 5-14, Section 5.3.3.3, p. 5-15, lines 4-8).			
40.	Section 5.4.2	Re: the second bullet, compare the data 95% UCL to the cleanup level. Re: the last bullet, if sufficient data are not available, collect sufficient data for statistical analysis. Exposure point concentrations (EPCs) for both human health and eco risk should use 95% UCL, rather than max (e.g., see p. 29 in: http://www.epa.gov/nerlesd1/tsc/images/prucl4user.pdf).			
41.	Section 5.4.3	Human health risk should be evaluated for both direct contact (e.g., soil ingestion) and indirect exposure (e.g., food pathways). The baseline risk assessment should also address protection of surface water (i.e. Columbia River).			
42.	Section	Re: the third bullet ("Land use will be industrial after 150 years"), this			

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	5.4.3.1, p. 5-14	assumption conflicts with text on p. 3-35 (lines 11-13) which states that an unrestricted land use will be assumed for pipeline systems located outside of the Core Zone.			
43.	Section 5.4.3.2	Re: the last bullet (p. 5-14, lines 18-19), this document has been updated with more recent guidance (EPA. 2002. Calculating the upper confidence limits for exposure point concentrations at hazardous waste sites, OSWER 9285.6-10), along with accompanying software (Singh et al. 2007. ProUCL, version 4.0, EPA/600/R-07/038). 95% UCL soil concentrations should be compared with WAC 173-340-745 (industrial) and -740 (unrestricted) cleanup levels. Cancer risks from non-radionuclide carcinogens and radionuclides should not be summed, due to methodological differences in derivation. RESRAD can evaluate both direct contact (e.g., soil ingestion) and indirect exposures (e.g., food pathways) to radionuclides.			
44.	Section 5.4.3.2, p. 5-14, lines 20-26	Change the text as follows: Human direct contact risks for non-radionuclides initially will be evaluated by comparison to risk-based standards such as WAC 173-340-745, "Soil Cleanup Standards for Industrial Properties," or WAC 173-340-740….[Insert the following:] Risks associated with the vadose zone and groundwater pathways will be evaluated in accordance with WAC 173-340-747 [prior to] "Contaminants present at concentrations exceeding…."			
45.	Section 5.4.3.2, p. 5-14, lines 33-35 and p. 5-15, lines 1-2	Modify the text as follows: Additional analysis may be performed using other appropriate fate and transport models when approved by Ecology and USEPA ~~(e.g., PNNL-12028, STOMP Subsurface Transport Over Multiple Phases, Version 2.0, Application Guide)~~ to assess impact to the groundwater from chemicals and radionuclides…. Ecology is still working with consultants to determine if STOMP is appropriate for waste-site scale modeling. Ecology has not yet accepted STOMP as an alternative fate and transport model.			
46.	Section 5.4.3.3, p. 5-15,	The text "The pipelines in each bin, with the exception of tank-farm waste-transfer pipelines, will be considered as one entire unit in risk calculations" is unclear. Explain. Ecology is not convinced that the			

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	lines 10-12	pipelines within a bin are homogenous enough to treat them as a single unit.			
47.	Section 5.4.3.3, p. 5-16, line 2	Replace the second bullet with: Concentrations of contaminants relative to concentrations considered protective of groundwater (e.g. compared with WAC 173-340-747 values).			
48.	Section 5.4.4	Re: the screening ERA to be performed in this risk assessment, please refer to soil concentrations in Table 749-3 (WAC 173-340-900) for non-radionuclides and soil biota concentration guides, i.e., BCGs (DOE-STD-1153-2002) for radionuclides. In order for the ongoing Central Plateau ERA to effectively encompass the 200-IS-1 OU, contaminant data from 200-IS-1 facility and tank farm processes (e.g., pipelines, transfer lines, soils) will have to be integrated into the Central Plateau ERA.			
49.	Section 5.5.1.2, p. 5-18, line 19	The text lists circumstances under which MESC/ICs/MNA may be preferable and includes "When contaminant concentrations are very close to remedial goals." Please delete this circumstance. If there are exceedences of non-degradable and non-radionuclide contaminates and/or uranium (as a toxic element), cleanup levels (even if close to remedial goals), natural attenuation and long-term maintenance of ICs cannot be assumed; active remediation would be necessary for compliance with regulations.			
50.	Appendix A, Page: A-1, General Comment	Provide in the introductory statements for the SAP that it has all the elements required in the EPA document QA/G-5 and Ecology publication 04-03-030.			
51.	Appendix A, p. A1-1, lines 18-19	Please provide citations/descriptions for "preliminary cleanup levels" for both human health and ecological risk.			
52.	Appendix A, p. A1-1, lines 33-34	Provide an introductory statement as to when will the Phase II SAP is to be prepared.			

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53.	Appendix A, p. A1-7, line 21	Given the relatively high concentrations of Pu-239/240 (38200000 pCi/g) and Am-241 (2590000 pCi/g), additional soil samples may be informative.			
54.	Appendix A, p. A1-9, line 18 and p. A1-12, line 28	Based on Aroclor results (9 mg/kg), PCB congener analysis may be appropriate near these pipelines.			
55.	Appendix A, p. A1-10, line 1-2	It may be informative to collect additional soil samples, as result of the relatively long length of the pipeline (5830 m).			
56.	Appendix A, p. A1-13, lines 29-32	It may be informative to collect additional soil samples, as result of the relatively large leak (1.1 ML).			
57.	Appendix A, p. A1-19 to A1-20, Table A-2	Please add pipeline length to table.			
58.	Appendix A, p. A2-3, lines 28-30	Please specify the percent of data that will be validated.			
59.	Appendix A, p. A2-7, lines 1-5	When regulatory standards or risk screening levels are unavailable for a particular COPC, this should be noted as an uncertainty. If a COPC is nondetect (but assumed to be present on site or has been analyzed with a poor/unconventionally high detection limit), one half detect limit should be employed in risk estimation.			
60.	Appendix A, p. A2-7 to A2-8, Table A-4	Note that max (or detected) value is allowed for Phase I but that 95% UCL is required for Phase 2 characterization (per the DQO).			
61.	Appendix A, p. A2-10, lines 28-34	It is difficult to see how "representativeness" can truly be achieved with the non-statistical approach in Phase I. Please acknowledge or clarify.			

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62.	Appendix A, p. A2-11 to A2-18, Tables A-6 and A-7	Please provide a footnote for the column, "Lowest Overall CUL" that cites the DQO report (D&D-30262) as the source for these values.			
63.	Appendix A, p. A2-16 to A2-17, Table A-7	PCB #123 has an incorrect description (should read "2',3,4,4',5-pentachlorobiphenyl"). Method 1668 for PCB congeners lists the detection limit for the 12 WHO congeners as 50 ng/kg (pptr) for soil. This is 20 times lower than the target detection limit listed in Table A-7 (0.001 mg/kg=1000 ng/kg). Dioxin-like PCBs should be quantified as 2,3,7,8-TCDD toxic equivalents (TEQ) with the WHO toxicity equivalency factor (TEF) method. PCB #126 has the largest TEF (0.1). For example, PCB #126 at 50 ng/kg (detection limit) yields 5 ng/kg TEQ. MTCA examples of dioxin CULs are 6.7 ng/kg TEQ (MTCA Method B soil ingestion), 1.7 ng/kg TEQ (MTCA Method B soil protection of groundwater), and 2 ng/kg TEQ (MTCA Terrestrial Wildlife, Table 749-3).			
64.	Appendix A, p. A2-21, lines 8-12	It should be noted that the non-statistical approach for Phase I sample collection precludes any type of statistical analysis. As such, Phase 2 samples may be needed for further characterization when Phase I is inconclusive.			
65.	Appendix A, p. A2-53 to A2-56, Table A-11	The small number of samples may result in considerable uncertainty and require either some type of action or Phase II sampling.			
66.	Appendix A, Page: A2-66 lines 32-35	Should the total volume of sample available be limited provide a priority listing of the volumes for the different sample methods.			
67.	Appendix A, A2-68 lines 4,5,6	Provide a statement as to whether all data is to be available before it is corrected and submitted. Furthermore, provide a discussion on the corrective action process for tracking data and re-testing samples if needed.			
68.	Appendix A,	Please define "verification" and "validation."			

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	p. A2-69, lines 8-15				
69.	Appendix A, A2-69 lines 17, 22	Provide a discussion on the data validation protocol to be used for data validation.			
70.	Appendix A, p. A2-70, lines 11-13	Text states, "If the null hypothesis [Ho] is rejected, the overall performance of the sampling design should be evaluated by performing a statistical power calculation to assess the adequacy of the sampling design." According to EPA/240/B-06/002 (p. 22 in: http://www.epa.gov/QUALITY/qs-docs/g9r-final.pdf), this recommendation applies when the statistical hypothesis test fails to reject Ho (not when the test rejects Ho). Please address.			
71.	Appendix A, p. A3-3, lines 9-17	Re: pipeline interior samples, please provide rationale for specified screening criteria (i.e., if rad>3x background, then do rad analyses on available sample material; if VOC>1 ppm, then do organic analyses; if VOC<1 ppm, then do inorganic analyses).			
72.	Appendix A, Sections A.3.3.2 and A.3.3.3, pages A3-5 and A3-5.	The text describes direct-push soil boring. December 2006, well regulations (*Minimum Standards for Construction and Maintenance of Wells Chapter 173-160 WAC*) were revised. The regulations now include a definition for "driven well" (WAC 173-160-111). The regulations also include requirements for geotechnical soil borings (WAC 173-160-420) which include decommissioning and a notice of intent to construct or decommission. The text should reference the applicable regulations and describe how the standards will be satisfied.			
73.	Appendix A, Section A.3.3.3, page A3-5.	The text describes direct-push soil sampling and identifies sampling intervals. If possible, it is recommended that geophysical logging results be used to select biased soil sampling intervals/locations.			
74.	Appendix A, p. AA-5 and p. AA-14, Table ATT-2	TBP is not a PAH, as incorrectly shown. Please correct.			
75.	Appendix B,	Method 1668 is not included in this SAP. The Appendix A SAP has			

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	Table 5-1	included identification of Method 1668. Provide references to Method 1668 in this SAP for project consistency.			
76.	Appendix A, A-4 p 49	Provide a better description and process of the phrase "reviewing sample data against existing knowledge mean."			
77.	Appendix B, Table 6-3, p. 31-34	Please make the following changes to the table: • Add a detection limit for manganese • Add molybdenum • Set the silver cleanup level at 2 mg/kg to protect plants and soil biota • Add chloride and sulfate • Change the CUL for TCE to the updated value of 7.21E-04 mg/kg • Update the values for aroclors to 0.0942 mg/kg (Aroclor-1016), 0.0092 mg/kg (Aroclor 1221), 0.0394 mg/kg (Aroclor 1242), 0.0386 mg/kg (Aroclor 1248), and 0.072 mg/kg (Aroclor 1260); these values are for protecting groundwater; even lower values would apply for protecting surface water.			
78.	Appendix C, Table C-2, p. C2-5	Please make the list of contaminants equivalent to or longer than that of Table 3-6b in D&D-30262 (the DQO document). For instance, TBP and other complexing agents are not on this list but are on Table 3-6b.			
79.	Appendix C, C2-7 lines 6-11	Please describe in detail the reason for choosing a non-statistical sampling design. Provide this information, in detail, in this portion of the work plan.			
80.	Table C-3b, p. C2-9	Please change values in the table as follows: • Change the arsenic GW protection value to the Hanford site background value, 6.5 mg/kg; the GW protection value for arsenic is lower than the site background value. The terrestrial ecological value also needs to be decreased accordingly. • For Cr (VI) use a direct contact value of 2.1 mg/kg for inhalation/dust resuspension. • Change the GW protection value for Cr (VI) to 0.2 mg/kg, based on a site-specific Kd value of 0 mL/g and WAC 173-340-747(5). Ecology considers Cr (VI) to be a significant source of hazard at Hanford and considers it necessary to use a site-specific Kd value			

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		to protect human health and the environment. • Change the lead GW protection value to 270 mg/kg based on the 3-phase model and a Kd of 900 mL/g from ORNL. • Change the 1,1,2-trichloroethane direct contact value to 2300 mg/kg • Change the 1,1-dichloroethylene value to the updated value of 5.22E-04 mg/kg. • Change the methylene chloride GW protection value to 2.18E-02 mg/kg • Change the tetrachloroethylene value to the updated value of 243 mg/kg, and the GW protection value to the updated 8.59E-04 mg/kg • Change the toluene direct contact value to 2.8E04 mg/kg, and the GW protection value to the updated 4.65 mg/kg • Change the trichloroethylene direct contact value to the updated 328 mg/kg, and the GW protection value to the updated 7.21E-04 mg/kg • Add Method 1668 for PCBs for 20% of the samples • For the Terrestrial Biota column, use the lowest values from Table 749-3, rather than using just the wildlife values. Ecology has not yet determined that Hanford habitat qualifies as industrial according to WAC 173-340. • Please provide the source of the water and soil required target quantization limits.			
81.	Appendix C, Section C2.2.1, p. C2-17, lines 15-16	Change the text to: A non-statistical sampling design (professional judgment) was used to determine sample locations <u>for Phase I sampling at</u> this waste site.			
82.	Appendix D.	The following elements need to be validated: • The pipeline associated with the 241-B-361 Settling Tank and the 216-B-5 Reverse Well does not appear to have been included in Appendix D. Confirm the pipeline's inclusion.			

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		• The pipeline associated with the 291-C Filter Building, the 216-C-2 stack, and the 200-E-41 Stabilized Area does not appear to have been included in Appendix D. Confirm the pipeline's inclusion. • The pipeline associated with the 231-W-151 Vault and the 216-Z-10 reverse well does not appear to have been included in Appendix D. Confirm the pipeline's inclusion. • The pipeline associated with the 292-B Building and the 216-B-4 well does not appear to have been included in Appendix D. Confirm the pipeline's inclusion. • The pipeline associated with the 216-T-3 Reverse Well and 241-T-361 Settling Tank does not appear to have been included in Appendix D. Confirm the pipeline's inclusion. • Reverse well structures sometimes include "inlet lines," "vertically set concrete pipes," etc. Confirm if these "structures" should be included within the IS-1 workscope.			
83.	Appendix D, Table D-1.	The table includes five columns for "pipeline attributes." WIDS descriptions (e.g. 200-E-111PL) were noted to describe certain lines as "direct buried." The meaning of this term is not understood. As supporting information included in Appendix A includes the engineering drawing references for the pipelines, this information may already be available for inclusion in Table D-1. It is recommended that an additional column be added to Table D-1 which specifies whether the pipeline was constructed directly in soil, in fill material, in concrete, in an encasement, etc.			
84.	Appendix D, Table D-1	Several inconsistencies and missing information needs to be added to or modified as listed below: • Page D-4, Line LW-1. Piping associated with 224-T Building doesn't appear to be included. • Page D-3, Line CW-1. Information of 5 leaks in waste pipeline between 242-B Evaporator and 207-B Retention Basin is provided. It is requested that a WIDS UPR number be provided in the table. • Page D-3, Line CW-1. Information of a detected leaking line (200-E-112) is provided. It is requested that a WIDS UPR			

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		number be provided in the table. • Page D-5, Line TW-1. Information stating: "leak suspected – unplanned release site" is included. It is requested that a WIDS UPR number be provided in the table. • Page D-6, Line IS-1. Information stating: "leak suspected – unplanned release site" is included. It is requested that a WIDS UPR number be provided in the table. • Page D-7, Line UW-1. The statement: "leaks suspected because of joint condition" is included in the table. In addition, information is included about "rad survey pattern." It is requested that a WIDS UPR number be provided in the table. • Page D-8, Line UW-1. The statement: "leaks suspected because of joint condition" is included in the table. In addition, information is included about contamination near "dislodged" joints. It is requested that a WIDS UPR number be provided in the table. • Page D-8, Line UW-1. The statement: "leaks suspected because of joint condition" is included in the table. In addition, information is included about soil/vegetation contamination. It is requested that a WIDS UPR number be provided in the table. • Page D-9, Line Waste Management Area. The text indicates there is an unplanned release site, but does not include the UPR number. It is requested that a WIDS UPR number be provided in the table. • Page D-9, Line Various. The text indicates there was a pipe leak, but does not include the UPR number. It is requested that a WIDS UPR number be provided in the table. • Page D-11, Line 2. The text indicates the tank leaked, but does not include an UPR number. It is requested that a WIDS UPR number be provided in the table. • Page D-11, Line 7. The table indicates "none" for "Radiation Survey/Soil Sampling Information." However, WIDS indicates for UPR-200-E-84 (which is also 241-ER-151 Catch Tank Leak) a survey result of "90,000 counts per minute inside the chain link			

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		fence." It is requested the information be included in the table. • Page D-16, Line 38. Related to UPR-200-E-3, the WIDS entry states: "The exact date of the occurrence is unknown, but the reference document, HW-22610, was written on November 21, 1951." It is recommended that this information be inserted in the "dates of operation" column. • Page D-16, Line 39. Related to UPR-200-E-42, the WIDS entry indicates that "cleanup activities" occurred in 1972. It is recommended that the information entered under the "dates of operation" column indicate contamination was detected in 1972 and that "cleanup activities" occurred in 1972. • Page D-16, Line 40. Related to UPR-200-E-44, the WIDS entry indicates the UPR is a duplicate of UPR-200-E-103. It is recommended that under the "associated UPR waste site(s)" column, it be indicated that UPR-200-E-103 is a duplicate. Also, the WIDS entry indicates the Occurrence Report for UPR-200-E-103 for the release indicates March 1972 rather than August 1972. • Page D-17, Line 44. The description of UPR-200-E-80 doesn't describe the cave in. The WIDS entry states: "After covering the contamination, the dose rate was reduced to 100 millirad per hour." It is recommended that this survey information be included in Table D-2. • Page D-17, Line 50. The WIDS entry states: "In 1950, the 241-TX-155 Diversion Box overflowed and ran down the hillside to the west, contaminating the soil. No information related to the approximate radioactive contaminate levels spilled to the ground are available." It is recommended that this description be added to Table D-2. • Page D-18, Line 52. The WIDS entry indicates there are multiple releases associated with UPR-200-W-28. The description on line 52 should reflect the occurrence of multiple releases from the 241-TX-155 diversion box. • Page D-13, Line 24. It is noted that UPR-200-W-135 describes releases from the 241-TX-155 Diversion Box. It is recommended			

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		that line 24 include a reference of UPR-200-W-135 under column entitled "Contaminant Inventory/Volume Released." It is also recommended that the radiation survey estimate of 300 rad per hour be included under column entitled "Radiation Survey/Soil Sampling Information." • Page D-19, Line 59. It is recommended that the line identify detection of Sr-90 and Cs-137 found in Russian thistle growing over the site. • Page D-20, Line 61. The WIDS entry describes a radiation survey on 8/9/99 and notes: "while surveying the underground pipelines in the vicinity of the 241-TX-155 Diversion Box, widespread contamination was identified, extending approximately 1.5 acres north of the diversion box." If the widespread contamination is associated with the 241-TX-155 Diversion Box, Table D-2, it is recommended that line 61 include this information. • Page D-20, Line 62. The WIDS entry describes the release and includes pertinent information about what was released. It is recommended that the line include information that the release resulted from a leak in the TBP feed jumper and that attempts to neutralize the released material resulted in an eruption from the catch tank riser causing surface contamination. • WIDS UPR-600-20 identifies 3 associated structures (241-ER-151 Diversion Box, 241-EW-151 Vent Station, and 241-UX-154 Diversion Box). However, Table D-2 appears to only include 2 of the associated structures (241-ER-151 Diversion Box and 241-EW-151 Vent Station) that are specifically called out. Although UPR-600-20 on page D-22 describes the three associated structures, the table doesn't specifically identify 241-UX-154 Diversion Box by line. It is recommended that a line for 241-UX-154 Diversion Box be included in the table.			
85.	Appendix D, Table D-1, page D-9, Line Waste	The table indicates that "samples may be collected near corners of Diversion Boxes..." From the wording, it is not clear whether samples will be collected or not. Clarify text.			

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	Management Area				
86.	Appendix D, Table D-1. Page D-1, Line PW-2.	The statement: "Leaks suspected since acidic waste destroyed VCP integrity" is included in table. Similarly, on page D-3, Line CW-5, the statement is included: "leakage suspected." Similarly, on page D-3, Line CW-1, the statement is included: "leaks inferred in Table 2-6. Such statements are not consistently included in the WIDS site descriptions. If information of releases or probable releases has been obtained through this workplan's generation, it is recommended that information be provided to the WIDS database contact to be used to update the database descriptions. As the workplan acknowledges that not all pipelines within the 200-IS-1 OU workscope are mapped and/or identified, provision of information to the WIDS database contact will be necessary.			
87.	Appendix D, Table D-1, Page D-1, Line PW-2	The WIDS description states: "On April 19, 1962, the clay distributor pipe to the 216-A-10 crib collapsed and caused a surface depression. A new distributor (replacement) line was installed parallel to the collapsed line. The replacement line failed in 1966." It is requested that this information be included in Table D-1.			
88.	Appendix E	Appendix D provides excellent information concerning integrity of certain pipelines. However, the source of the information isn't consistently provided. If routine line leak tests were conducted, this information may be valuable to include as an appendix. It is requested that either an additional appendix be added which provides all available line leak test information for all pipelines within the scope of this workplan or available line leak information be added to Appendix D, Table D-1.			
		Suggested changes for document clarity; formal disposition of these comments is not required.			
89.	Section 1.1, Page 1-2, Scope and Objectives, Line 29.	The text identifies "RCRA TSD tanks" as being within the scope. However, later, the text indicates tank "systems" are within the scope. It is recommended that Line 29 read "RCRA TSD tank systems."			

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90.	Section 1.1.1, Pages 1-4 – 1-5.	The section describes the DQO that the workplan follows. It is recommended that consideration be given to including the DQO as an appendix.			
91.	Section 1.2.1, Page 1-11, line 8.	The text indicates the workscope includes pipelines and/or structures that haven't been included in WIDS. This work plan should include a process for identifying and tracking WIDS "candidates" until the pipelines and/or structures have been included in WIDS.			
92.	Section 1.2.2, Page 1-12, lines 12-14.	The text states: "Sampling for waste designation will be addressed through a waste designation DQO process before the field-characterization activities begin." Elsewhere in the document, the intent to dispose of the waste at ERDF is identified. In addition, it is also identified that certain wastes will be considered investigation derived wastes. It is recommended that the word "designation" be changed to "management" as the word "management" includes waste designation, meeting ERDF waste acceptance criteria, disposal, etc.			
93.	Section 1.2.2, Page 1-12, lines 19-20.	The text states: "Analytical results will be used in assessment of the disposal options for the remaining waste, if removal of the tank is performed." RCRA closure performance standards of WAC 173-303-610 include decontamination and/or removal. The way the sentence is currently written could be interpreted to mean that unless the tank is to be removed, the analytical results will not be used in assessment of the disposal options. It is recommended that the sentence be re-written as: "Analytical results will be used in assessment of the removal and/or decontamination options for the tank."			
94.	Section 1.2.3, Page 1-12, Milestones, line 24.	Editorial comment: typically, use of the word "major" as applied to milestones does not include interim or target milestones. The note associated with Appendix D of the TPA indicates that major milestones are indicated by a -00 suffix.			
95.	Section 2.1.2, Page 2-2, Geology Ringold Formation.	The second sentence describes the formational material using the standard hydrogeologic terminology. It is recommended that the geologic terminology be used and the hydrogeologic terminology be placed in parentheses. In other words, reverse the unit designations.			
96.	Section	The last sentence states: "The portion of this plume that exceeds 1			

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	3.2.2.1, Page 3-5, Iodine-129, 2nd paragraph.	pCi/L concentration now appears to extend to the 200 West Area boundary (PNNL-16346)." It is an accurate statement that iodine-129 groundwater concentrations exceeding 1 pCi/L have been observed to occur to near the 200 West Area boundary. However, the iodine-129 concentrations observed near T Plant may not be from the same source as those occurring near the TX-TY Waste Management Area (WMA). Although PNNL-16346 (Figure 2.8-13) depicts the iodine-129 concentrations as one plume originating near the TX-TY WMA, the iodine-129 concentrations observed at wells 299-W11-14 and 299-W11-37 may be due to a different source than the iodine-129 concentrations observed near the TX-TY WMA. Due to the lack of data collected from wells near the TX-TY WMA and the lack of data due to well locations between the TX-TY WMA and the T Plant, it may not be accurate to imply the iodine-129 concentration observations are from the same source. It is recommended that the text identify that iodine-129 concentrations have been observed at wells 299-W11-14 and 299-W11-37 (located near T Plant and the 200 West Area boundary) which may or may not be from the same source as the iodine-129 concentrations observed near the TX-TY WMA.			
97.	Section 3.2.2.1, Page 3-5, Iodine-129, 2nd paragraph.	It is recommended that the text identify that well 299-W11-14 is located very close to the 200-W-173-PL pipeline which will be sampled as part of this characterization effort.			
98.	Section 3.2.2.1, Page 3-6, Strontium-90, 1st paragraph.	The first paragraph describes 200 East Area strontium-90 plumes - three major plumes and one small plume. Strontium-90 concentrations have also been observed at wells 299-E28-18 and 299-E28-9. At well 299-E28-18, the strontium-90 concentrations decreased from almost 50 pCi/L (1981) to non-detect (1988 to 1995). Well 299-E28-18 does not appear to have been sampled for strontium-90 after 1995. At well 299-E28-9, periodic elevated strontium-90 concentrations were measured through the late 70s. However, well 299-E28-9 does not appear to have been sampled for strontium-90 after 1977. Therefore, it is unknown if there is a fourth strontium-90			

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		plume near these wells. It is recommended that the text describe the strontium-90 measurements at these two wells and identify that it is unknown if there is a fourth strontium-90 plume in the 200 East Area.			
99.	Section 3.2.2.1, Page 3-6, Strontium-90, 1st paragraph.	It is recommended that the text identify that well 299-E28-9 is located close to the 200-E-160-PL and 200-E-162-PL pipelines which will be sampled as part of this characterization effort.			
100.	Section 3.2.2.1, Page 3-6, Technetium-99, 1st paragraph.	It is recommended that recent 200 East Area gross beta measurements also be acknowledged in the first paragraph. It is noted that there are several wells located east of PUREX which have elevated gross beta measurements where few technetium-99 measurements have been made for the same sampling dates. For example, recent gross beta measurements from wells 299-E28-23 and 299-E28-25 are in the thousands of pCi/L even though only a few technetium-99 measurements for corresponding dates have been collected.			
101.	Section 3.2.2.1, Page 3-7, Tritium, 1st complete paragraph	Modify accordingly the second sentence of the paragraph describes the tritium contamination observations near the T and TX-TY WMAs as "one large plume extending northeast from waste-disposal facilities near WMAs T and TX-TY." From HEIS data and PNNL-16346, there appears to be two distinct tritium plumes (concentration contouring exceeding MCL of 20,000pCi/L). Furthermore, there appears to be a localized tritium source near 200-W-79-PL.			
102.	Section 3.2.2.1, Page 3-7, Uranium, 1st paragraph.	Although uranium concentration observations at well 299-E28-17 haven't exceeded MCL, they have come very close (29.3 µg/L). In addition, uranium concentrations in this well are trending upward. It is recommended that the upward trend of uranium concentrations and the observation of uranium concentrations near the MCL at well 299-E28-17 be mentioned in the first paragraph.			
103.	Section 3.2.2.1, Page 3-7, Uranium, 2nd paragraph.	It is recommended that uranium concentrations exceeding the MCL at well 299-W11-14 be noted in the second paragraph.			

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104.	Section 3.2.2.1, Page 3-8, Chromium, 2nd paragraph.	It is recommended that the text describe chromium observations from T Farm extending west and north to T Plant. In particular, it is recommended that the chromium observations at well 299-W11-14 be described in the second paragraph.			
105.	Section 3.2.2.1, Page 3-8, Nitrate, 2nd paragraph.	It is recommended that the 200 West Area description of nitrate contamination also describe the nitrate concentrations (plume) near wells 299-W11-14 and 299-W11-37 (located near T Plant).			
106.	Appendix A, Table A-4, DR #2.	The first sentence addresses contamination concentrations in the "vadose zone." A reasonable conceptual model may include pipeline fill material through which contamination migrates laterally. It is recommended that the sentence include contamination concentrations within "fill material, if present."			
107.	Appendix A, Table A-4, DR #4.	The first sentence addresses contamination concentrations in the "vadose zone." A reasonable conceptual model may include pipeline fill material through which contamination migrates laterally. It is recommended that the sentence include contamination concentrations within "vadose zone soil or fill material (where present)".			
108.	Appendix A, Section A.2.2.1, page A2-21.	The second paragraph uses words like "surrounding soil" and "vadose-zone soil contamination." From the text, it is unclear if fill material was used during installation/construction of pipelines. Depending on volumes released, fill material could affect contamination migration (i.e., lower volumes could be expected to migrate laterally while large volumes could be expected to migrate laterally, but mostly vertically). It is recommended that this issue be clarified and/or addressed.			
109.	Appendix A, Section A.2.2.1, page A2-21.	The third paragraph does not include mention or description of fill material used during installation/construction of pipelines. If fill material was used or not used, it is requested that the text identify it.			
110.	Appendix A, Figure A-4, page A2-22.	The figure doesn't show fill material associated with the pipe. If pipelines have been constructed/installed within fill material, the conceptual model for contamination potentials could be affected.			

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		Depending on volumes released, fill material could affect contamination migration (i.e., lower volumes could be expected to migrate laterally while large volumes could be expected to migrate laterally, but mostly vertically).			