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## Department of Energy

Richland Field Office

P.O. Box 550

Richland, Washington 99352

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SEP 11 1992

92-ERB-162

Mr. Paul T. Day  
Hanford Project Manager  
U.S. Environmental Protection Agency  
Region 10  
712 Swift Boulevard, Suite 5  
Richland, Washington 99352



Mr. David B. Jansen, P.E.  
Hanford Project Manager  
State of Washington  
Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600

Dear Messrs. Day and Jansen:

RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA) REVIEW OF THE B PLANT SOURCE AGGREGATE AREA MANAGEMENT STUDY REPORT (AAMSR) DRAFT A

This letter transmits the responses to comments received from EPA and the State of Washington Department of Ecology on Draft A of the B Plant Source AAMSR.

If you have any questions regarding these matters, please contact Mr. P. M. Pak at (509) 376-4798.

Sincerely,

*Steven H. Wisness*  
Steven H. Wisness  
Hanford Project Manager

ERD:PMP

Enclosure:

cc w/o encl:  
L. D. Arnold, WHC  
R. A. Carlson, WHC  
R. E. Lerch, WHC  
J. L. Monhart, EM-442

cc w/encl:  
P. Beaver, EPA  
C. Cline, Ecology (2)  
A. DeAngeles, PRC  
M. K. Harmon, EM-442  
B. Kane, Parametrix  
J. Sprecher, Brown & Caldwell  
D. D. Teel, Ecology (3)



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1. Date 8/18/92

2. Page 1 of 33

3. Document Title/Number B Plant Source AAMSR, DOE/RL-92-05, Draft A

4. Lead Engineer/Scientist D. B. Erb

5. Organization

6. Location/Phone/MSIN Region 10 - Seattle

7. Reviewer Environmental Protection Agency, Paul Beaver

8. Organization

Sign and Print Name

Date

9. Location/Phone/MSIN

10. The document was reviewed, and the reviewer had no comments.

Reviewer

11. Date

12. I have reviewed the disposition of comments with the Lead Engineer/Scientist.

Reviewer

13. Date

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14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
G1.	Since this report is a guide for preparing a work plan for B plant, it should contain as much information as possible from available reference resources instead of merely citing references.	Reject (PUREX G.2.). Information essential to the AAMS has been provided within the report.
G2.	Although facility, process, and operational history descriptions are thoroughly presented, some information is missing for certain facilities and this concern is addressed in the specific comments section.	See specific comments.

HANFORD PROJECT OFFICE

SEP 11 1992

ENVIRONMENTAL PROTECTION AGENCY

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 2 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
G3.	<p>The types of waste received by each waste management unit (WMU) are identified. However, the origin of the waste generated and the suspected or known constituents in each waste type are not clearly discussed, but should be.</p> <p>The text should include more information on the following topics:</p> <ul style="list-style-type: none"> <li>y Overflow from the 201-B Settling Tank</li> <li>y Cell drainage and other liquid wastes</li> <li>y Decontamination construction waste</li> <li>y Basic difference between low salt and high salt neutral/basic waste</li> <li>y Second cycle waste supernatant from the 221-B Building</li> <li>y Construction waste from the 221-B Building (Section 2.3.3.5)</li> <li>y Scavenged tributyl phosphate supernatant waste from the 221-U Building (Section 2.3.3.12).</li> </ul>	<p>Reject (S Plant G.8.). It is recognized that the information is limited. The uncertainty associated with past process operations and plant configuration control limit the usefulness of this information.</p> <p>Accept. The requested information will be provided if available.</p>
G4.	<p>Instead of discussing sample collection and analytical parameters, results of analysis and the quality assurance/quality control aspects should be provided and discussed.</p>	<p>Reject. The AAMSR is a preliminary document. The requested information will be addressed in future Work Plans.</p>
G5.	<p>Dry well logs and radiation monitoring data for monitoring wells from each WMU should also be included in an appendix.</p>	<p>Reject. Table 4-16 provides a summary of Single-Shell Tank Farm vadose zone drywell geophysical logging data. If more information is needed than is provided in Table 4-16, then it will be addressed in future work plans. Data from monitoring wells is provided in Appendix A.</p>

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 3 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
G6.	Lists of chemicals discharged to each WMU should be tabulated and referenced in the text. If a list of chemicals discharged to each WMU cannot be obtained, then it will be necessary to tabulate a list of chemicals used at the B Plant, chemicals that were stored at the B Plant Aggregate Area, <u>and</u> a list of chemicals that were used at any and all areas that sent waste to the B Plant Aggregate Area.	Reject. Available data has been presented in tables. Table 2-1 provides source descriptions and volumes received (if known). Table 2-3 provides radionuclide inventory. Table 2-4 provides chemical waste inventory. Table 2-7 provides a summary of waste-producing processes including major chemical constituents. Table 2-8 provides a list of chemical used in separations/recovery processes. Table 2-9 provides a list of radionuclides and chemicals disposed of to B Plant WMUs.
G7.	There is no indication of the time frame for the submission of the limited field characterization activities report to meet DOE's objective to "conduct limited new site characterization work if data or interpretation uncertainty could be reduced by the work" (Section 1.2.2, page 1-5 and Section 1.3, page 1-9). Some of the unplanned releases and WMUs (Table 5-1) are evaluated as low-priority sites on the basis of hazard ranking system (HRS) scores and radiation monitoring data. For example, the 216-B-Trench is evaluated as a low-priority site. This WMU received a substantial amount of scavenged tributyl phosphate waste, which contained 4.4 Ci of <sup>60</sup> Co; 1,500 Ci of <sup>137</sup> Cs; 790 Ci of <sup>90</sup> Sr; 1.3 g of plutonium; and 350 kg of uranium (Section 2.3.5.15). The November 1991 survey detected spots of up to 80,000 dis/min beta activity. The text states that this is an increase from the previous survey (Section 4.1.2.5.20). Limited field characterization data gathered from samples collected at these unplanned releases and WMUs may indicate current risks to human health and environment and may thus support decisions for expedited, interim, or limited actions.	Accept (same as U Plant, G1.). Limited Field Investigations are being conducted in support of the AAMS including spectral borehole and groundwater monitoring. Spectral borehole logging results will not be available to support source AAMSRs but will be reported in separate topical reports and will be used to support future work plans. Preliminary groundwater data will be used to support groundwater AAMSRs and final results will be reported in a topical report. No characterization work was conducted to evaluate data uncertainties since no data were found that could be enhanced by additional field investigations within a time frame to support the AAMS.

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 4 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
G8.	The B Plant process description on page 2-6 is very helpful and should be included in other AAMS.	Reject. Process descriptions are informative but not essential to the AAMS.
G9.	Tables 2-3 and 2-4 are excellent sources of information and should be included in all 200 Area AAMS.	Accept. Both tables are included in other AAMSRs (excluding groundwater AAMSRs).
1.	<b>Figure 1-5, Page 1F-5.</b> A legend is needed for this figure to interpret the shaded areas.	Accept. A legend will be added to Figure 1-5 to define the shaded areas.
2.	<b>Section 2.3.1.1.5, Page 2-8, lines 23-26.</b> According to the text, the source wastes will be addressed under a separate decommissioning and decontamination program. A list of the various source wastes located within the B Plant aggregate area should be provided at the beginning of this chapter under section 2.3, and the reason(s) for not including them in this document must be given to avoid confusion and misinterpretation.	Reject. The text states that the 222-B laboratory will be addressed under a separate decontamination and decommissioning program but that the waste from the building was disposed of in the 216-B-6 Reverse Well and the 216-B-10A Crib. These waste management units and the waste that they received are not covered under the decommissioning and decontamination program but are instead included in this AAMS document. The wastes are described in broad categories in section 2.4 and are described specifically by waste management unit in sections 2.3, 4.1, 5, and 9. There does not seem to be a need to add an additional list to the AAMSR document.
3.	<b>Section 2.3-1-1.6, Page 2-8.</b> Justification is needed for not including 292-B building. This comment is also for Section 2.3.1.1.7, 242-B building.	Reject. Section 2.3.1. states "Plants and buildings are not generally identified as past practice waste management units..." No further justification is needed for including them as waste management units.
4.	<b>Section 2.3.2.1.2, Page 2-13, lines 16-17.</b> The text states, "The . . . tank has undergone initial stabilization and interim isolation and considered sound." Provide the date of interim isolation. Provide the type of integrity tests used and the date they were conducted. This comment is applicable for other SSTs described in the text.	Reject. This data is beyond the scope of this AAMS. However, a "reference locator" table will be provided which will include the appropriate document for the requested information.  NOTE: This section will be deleted under the new SST format requested by DOE/RL

9 2 1 2 6 6 3 1 4 3 3

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 5 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
5.	<b>Section 2.3.2.3, Page 2-24.</b> The text should make some reference to radiation monitoring wells for the 241 BY Tank Farm. This comment is applicable for other Tank Farms also.	Reject. This data is beyond the scope of the AAMS.  NOTE: This section will be covered under Sec. 2.3.2 per the new SST format requested by DOE/RL.
6.	<b>Section 2.3.2.5, Page 2-30 second paragraph.</b> If available, the text should state the volume of waste released. This comment is applicable for all other unplanned releases.	Accept. All available data regarding unplanned releases will be included. However, for the referenced unplanned release (UPR-200-E-77) there is currently no data available regarding the volume of material released. However, this will be further researched.

9 2 1 2 6 6 3 1 4 3 4

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 6 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
7.	<p><b>Section 2.3.2.12, Page 2-33, lines 19-24.</b> The text should contain the results of past leak detection and air monitoring either in this section or, if elsewhere, a statement is needed in this section describing its location in the text.</p>	<p>Accept. The available data from the leak detection and air monitoring will be incorporated or referenced. However, the incorporation or reference will be placed in the SST section (2.3.2) since it does not apply to the 244-BXR Vault. The subject sentence will be deleted.</p>
8.	<p><b>Section 2.3.3, Page 2-33, lines 40 and 41. <u>Deficiency:</u></b> The discussion of water retention capacity in this section and others is generally inaccurate and misleading and should be corrected. Section 2.3.3 notes that "most cribs, drains, and trenches were designed to receive liquid until the unit's specific retention or radionuclide capacity was met. The term "specific retention" is defined as the volume of waste liquid that may be disposed to the soil and be held against the force of gravity by the molecular attraction between sand grains and the surface tension of the water, when expressed as a percent of the packed soil volume" and references Bierschienk, 1959 as the source of this definition.</p> <p>In Section 2.3.3.12 it is noted that "the 216-B-43 crib received 2,100,000 L (554,000 gal) of waste in November 1954. Maxfield (1979) reports that the crib was taken out of service when the specific retention capacity of the soil under the crib was reached." Assuming the crib has dimensions of 30 x 30 ft and the depth to ground water is about 200 ft, then 554,000 gal of waste discharged to this crib (and therefore the estimated specific retention capacity of the soil) equals 40 percent of total soil volume underlying the crib. This estimate of specific retention is equal to or greater than the total porosity of the Hanford sands, which is clearly not possible. The Hanford sands are not able to retain water in 100 percent of the pore spaces against gravity.</p>	<p>Accept. The time-varying retention capacity of the soil should be included as a source of contamination migration and incorporated in sections 2.3.3, 4.1.1.5 and 4.2.2.1.2. Transport through the vadose zone by drainage will be added as a data gap in section 8.2.3. The values listed in Table 4-14 will be verified</p>

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 7 of 33

92126631436

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
	<p>Bierschienk (1959) states that "after extended drainage, the specific retention capacity of columns of soils beneath the 200-West Area was estimated to be roughly 2 percent volume, whereas beneath 200-East Area it was estimated to be less than 1 percent." From this statement it is clear that the volume of waste discharged to the 216-B-43 crib far exceeded (by about 20-40x) the specific retention capacity of the soil. Bierschienk goes on to note that the specific retention capacity of the soils can be interpreted, with respect to waste management, as a property varying as a function of time. He notes that "gravity water" drains quickly, but "there is apparently no limit to the period during which slow drainage will continue." Using a centrifuge technique and 3 Hanford formation sands, Bierschienk estimated that for samples equivalent to a 10 meter soil column, the specific retention capacity of the soil (the amount of water retained in the soil) after 30 years ranged from 3.3 - 7.8 percent of the total soil volume and after approximately 6,000 years it ranged from 0.7 - 3.4 percent by volume. This indicates that after 30 years, between 10 and 15 percent of the water in a formerly, fully saturated soil column has yet to drain. For the 60 m soil column underlying the B Plant waste units, the quantity of undrained water may even be greater.</p>	

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 8 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
	<p>This data has significant implications that are totally overlooked by the 8 Plant AAMS report. If soils underlying the B Plant cribs and trenches still have significant drainable waste water in the soil column, they may serve as a lingering source of ground-water contamination for many years to come. In the 216-B-43 crib noted earlier, there may be as much as 40,000 - 50,000 gallons of drainable waste still in the soil column underlying the crib, and in the case of 216-B-22, a "typical" trench, there may be as much as 250,000 gallons of drainable waste still in the soil column. In summing all of the trenches and cribs in the B Plant Area, there is potentially as much as 10 million gallons of drainable waste still in the soil.</p> <p><u>Recommendation:</u> The discussion of the specific retention capacity of the soil underlying the B Plant waste management units should be reevaluated and/or redefined with respect to Bierschienk (1959) and the time varying aspects of specific retention should be noted. The potential existence and estimated quantity of drainable waste in soils underlying the B Plant should be noted in the conceptual model of the vadose zone, Sections 4.1.1.5 and 4.2.2.1.2, and the amount of current drainage of waste water from soils underlying B Plant waste management units should be noted as a data gap in Section 8.2.3.</p>	

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 9 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
9.	<p>Section 2.3.3, Page 2-33, lines 40 and 41 and page 2-34, lines 1 through 6. A qualitative definition is provided for radionuclide capacity. The text should explain quantitatively the specific radionuclide capacity for the cribs, drains, and trenches. Also, the WMUs that did not meet their radionuclide capacity should be identified.</p>	<p>Reject. It is not possible to quantify the radionuclide capacity. The radionuclide capacity was determined by monitoring groundwater for signs of contamination. The use of a specific retention waste management unit was stopped after a contaminant concentration level had increased to approximately 10% of the DCG. This method of operation meant that the radionuclide capacity of a waste management unit was determined by observation and varied with each unit. The waste volume disposed to waste management units such as these is already provided in the document.</p>
10.	<p>Section 2.3.3.1, Page 2-34, line 20 through 34. The text refers to settling tanks 201-B through 204-B and Tank 5-6 which held wastewater before it was discharged to cribs. The following information should be provided for the settling tanks: size, location, tank description, years in service, status, waste volume received, final disposal of settled sludge, operable unit to which it is attached, radionuclide and chemical waste inventory, nature and extent of contamination, and hazardous ranking score.</p> <p>The "other liquid wastes from Tank 5-6" (lines 26 and 27) and "some inorganic liquids" (line 34) should be specified.</p>	<p>Accept. Tanks 201-B through 204-B were incorrectly identified as settling tanks - they are single-shell tanks used as settling tanks. The information requested will be provided in Sec 2.3.2 and/or in accompanying tables.</p> <p>Tank 5-6 is a tank within the 221-B Building and will be discussed in Sec. 2.3.1.1.1 or deleted from the discussion if appropriate. The information will be provided in available.</p>

92126631438

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 10 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
11.	<p><b>Section 2.3.3.2, Page 2-35, lines 4 through 16, 22, and 23.</b> The text states that the 216-B-8TF Crib and Tile Field is connected to the 241-B-110, -111, and -112 single-shell tanks and receives waste types including second-cycle waste supernatant, cell drainage, and decontamination and cleanup waste. The single-shell tanks (241-B-110, -111, and -112) received bismuth phosphate first- and second-cycle waste, fission product waste, 221-B Building high-level waste, ion exchange waste, and other wastes. It is not clear whether the crib received the above wastes from the single-shell tanks. The text should be clarified.</p> <p>In lines 22 and 23, the text states that citric and hydrochloric acid are added to the crib to keep it in operation. But the chemical waste inventory summary (Table 2-4) does not contain the quantities of citric and hydrochloric acids added at the crib. Quantities of reported chemicals should be included wherever they are missing.</p>	<p>Accept. The text will be revised to clarify the wastes received by 216-B-8TF crib and tile field.</p> <p>Accept. The information will be provided if available.</p>
12.	<p><b>Section 2.3.3.12, Page 2-40, lines 35 and 36.</b> The 216-B-43 through B-50 cribs are described as having dimensions of 15 x 15 x 30 ft and Figure 2-23 is referenced. Figure 2-23 shows the cribs have dimensions of 30 x 30 x 15 ft. This discrepancy in dimensions should be resolved in that these dimensions are important for calculating the specific retention capacity of the soils underlying the crib.</p>	<p>Accept. The text will be revised to state that the cribs contain a 30 by 30 by 15 foot deep excavation.</p>
13.	<p><b>Section 2.3.3.25, Page 2-47, line 5.</b> The volume of waste received at the 216-B-62 Crib should be included or tables listing the volume should be referenced.</p>	<p>Accept. The waste volume received by the crib will be added to section 2.3.3.25.</p>

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 11 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
14.	<p><b>Section 2.3.3.26, Page 2-47, line 14.</b> The description for the location of the chemical tile field presented in this section is inconsistent with the text in Section 4.1.2.3.27. This discrepancy should be addressed and the text should be changed where appropriate.</p>	<p>Accept. The location description will be corrected for the chemical tile field in sections 2.3.3.26 and 4.1.2.3.27.</p>
15.	<p><b>Section 2.3.3.27, Page 2-47, line 26.</b> The text states that "the french drain contains less than 0.004 g/m<sup>3</sup> potential plutonium." It is not clear whether the reported value represents the concentration of plutonium per cubic meter in the french drain. The text should be clarified.</p> <p>The reported volume (28 m<sup>3</sup>) of waste discharged at the french drain is not consistent with the values (21 m<sup>3</sup>) presented in Tables 2-1 and 2-3. This discrepancy should be corrected where appropriate.</p>	<p>Accept. The text will be clarified.</p> <p>Accept. The waste volume received for the 216-B-13 french drain will be consistently used in section 2.3.3.27 and Tables 2-1 and 2-3.</p>
16.	<p><b>Section 2.3.5, Page 2-50, line 11.</b> It is noted that "Table 4.4 compares the volume of waste discharged to a unit with its specific retention capacity." Table 4-4 actually "is a summary of gamma-ray logs and does not include information on specific retention. We found no other table that included specific retention data. Table 4-14 does include pore volume data upon which specific retention can be estimated, but not the specific retention values themselves.</p>	<p>Accept. The text will be revised to reference Table 4-14 instead of Table 4-4. The words "specific retention capacity" will be changed to "soil column pore volume" as that is the parameter which is actually calculated.</p>
17.	<p><b>Section 2.3.5.1, Page 2-51, lines 5 &amp; 6, and line 27.</b> The text states that "...the 216-B-3-3 Ditch which drains into the 216-B-3-3 Ditch..." does not make sense. Does this ditch drain into itself? The text states that several hazardous, nonradioactive discharges have reached the 216-B-3 Pond. However, waste inventory summary data are not provided in Table 2-4, but should be.</p>	<p>Accept. The reference to the 216-B-3-3 ditch will be corrected. The available chemical inventory data for the 216-B-3 pond will be added to Table 2-4.</p>

92126631440

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 12 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
18.	Section 2.3.5.6, Page 2-54, line 2. A definition for "p/m" is not provided, but should be.	Accept. The mention of "p/m" will be changed to "ppm."
19.	Section 2.3.5.7, Page 2-54, lines 18 and 19. The text in this section states that the 216-N-8 Pond "contains relatively high amounts of radionuclides having the highest gross alpha concentrations of all the 200 Area ponds." Conversely, the text in Section 4.1.2.5.7 states that "the actual concentrations of radionuclides did not reveal any unusual levels of activity." This inconsistency should be addressed and the text should be changed where appropriate.	Accept. The text in section 4.1.2.5.7 will be clarified to eliminate the inconsistency.
20.	Section 2.3.5.10, Page 2-55, lines 35 and 36. The unit for the concentration of radionuclides should be consistent throughout the report. The unit " $\mu\text{Ci/ml}$ " (microcurie per milliliter) is used here. In other sections, "pCi/L" (picocurie per liter) is used (Sections 4.1.2.5.5 and 4.1.2.5.6). It is difficult to compare the magnitude of concentrations levels provided in $\mu\text{Ci/mL}$ with any standards, administrative control values, or derived concentration guide (DCG) values. For example, the maximum concentration of $^{90}\text{Sr}$ in water samples from the 216-3-3 Pond is reported as $1.7 \times 10^{-3} \mu\text{Ci/mL}$ during the UPR-200-E-138 release. If this value is converted to pCi/L, the maximum concentration of $^{90}\text{Sr}$ is $1.7 \times 10^6$ pCi/L, approximately 4.5 orders of magnitude higher than the administrative control value and 3 orders of magnitude higher than the DCG value. This comment is also applicable wherever appropriate (for example, Sections 4.1.2.5.7 and 4.1.2.5.13).	Accept. The units will be changed to pCi/liter in appropriate sections for consistency.

9 2 1 2 6 6 3 1 4 4 1

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 13 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
21.	<b>Section 2.3.5.11, Page 2-56, line 6.</b> The text states that the 216-B-2-3 Ditch no longer carried any wastewater after 1973. But the operational history for the ditch in Figure 2-17 indicates that the ditch operated until 1987. This discrepancy should be addressed.	Reject. The text states that the referenced ditch no longer carried cooling water from the 241-BY Tank Farm ITS-1 and ITS-2 units after 1973 (see Section 2.4.6). It did, however, continue to carry cooling water from other sources as shown in Figure 2-18 and discussed in various places in the document.
22.	<b>Section 2.3.5.12, Page 2-56, lines 27 through 29.</b> Unplanned release UPR-200-E-34 is estimated at 10,000 Ci (also reported in Section 4.1.2.5.16). But a release of 2,500 Ci is reported in Section 4.1.2.5.15. This inconsistency should be addressed and the text should be changed where appropriate.	Accept. The text will be revised to indicate that an estimated 2500 Ci and were released to 216-B-3-1 ditch and 216-B-3 pond and an estimated 7500 Ci to Gable Mountain pond. As mentioned in section 4.1.2.5.16, the release of radiation went to both Gable Mountain Pond and the 216-B-3 pond via 216-B-3-1 ditch.
23.	<b>Section 2.3.5.14, Page 2-57, line 19.</b> The types of wastes carried in the past and wastes currently carried by the 216-B-3-3 Ditch should be provided or a table listing these wastes types should be cited.	Accept. Figure 2-18 shows the types of waste carried by the 216-B-3-3 ditch. Fig. 2-18 will be referenced in the text.
24.	<b>Section 2.3.6.12, Page 2-72, line 7.</b> The text contains the units, cubic meters for volume while other volumes are in gallons or liters. The text needs to be consistent.	Accept. The text will be revised to consistently use gallons and liters rather than cubic meters.
25.	<b>Sections 2.3.6.12 and 2.3.6.13, Page 2-72.</b> The text states that the septic tank and tile field contain no radionuclides or hazardous chemicals. This can only be assumed and should be stated here.	Accept. The text will be revised to state that the referenced units "are not known to contain radionuclides or hazardous waste."
26.	<b>Section 2.4, Page 2-86.</b> The text contains two abbreviations, WESF and NCAW, that should be included in the list of acronyms and abbreviations. This comment also pertains to MIBK located in Section 2.4.10, page 2-97, NPH in Section 2.5, page 2-98.	Accept. The acronyms WESF, NCAW, MIBK, and NPH will be added to the list of acronyms or spelled out.

92126631442

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 14 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
27.	<p><b>Section 2.6, Page 2-99, lines 28 through 37.</b> The text states that the Closure/Post Closure Plan <u>was</u> to have been submitted to Ecology and EPA... Also, the 200-E-8 Borrow Pit Demolition Site Closure Plan <u>was</u> scheduled for submittal... The text should state what the current status of these plans are at the present time. (i.e., did the plans ever get submitted? And if not, why!)</p>	<p>Accept. The current status of the referenced plans will be added to the text.</p>
28.	<p><b>Figure 2-14, Pages 2F-14a and 14b.</b> This figure is an excellent figure and should be contained in all other AAMS Reports if applicable. This comment also pertains to figure 2-15, 2-16, and 2-17.</p>	<p>Reject. Fig. 2-14 summarizes process history; Fig. 2-15 summarizes fuel separations processes; Fig. 2-16 summarizes the uranium recovery process; and; Fig 2-17 summarizes the waste management unit operational history. Figures 2-14, 2-15, and 2-16 are informative, but not imperative to the scope of this AAMSR. In general, wastes from the various processes affecting an Aggregate Area are discussed throughout the AAMSR, specifically in the individual discussion of each waste management unit, as well as being provided in Tables. Figure 2-17 is directly applicable to waste management units and is provided in all AAMSRs.</p>
29.	<p><b>Figure 2-17, Page 2F-17d.</b> Crib 216-B-14, Cribs 216-B-16 through 216-B-19, and Cribs 216-B-43 through 216-B-48 do not show how long they receive waste or if they are still active. This information should be included. This comment also pertains to all other applicable cribs in this figure.</p>	<p>Reject. The referenced waste management units received waste for a period of approximately one to three months as discussed in sections 2.3.3 and 2.4.8. Figure 2-17 cannot accurately show time periods of less than 3 months due to the wide time range (47 years) which it covers.</p>
30.	<p><b>Section 3.3.1, Page 3-4:</b> It is noted that surface drainage from the Horse Heaven Basin enters the Pasco Basin. As shown in Figure 3-7, the Horse Heaven Basin does not drain into the Pasco Basin.</p>	<p>Accept. Text will be modified, Horse Heaven Basin will be deleted from basins that drain into the Pasco Basin.</p>

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 15 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
31.	<p><b>Section 3.3-3, Page 3-5, first paragraph.</b> The surface hydrology should specifically mention that the 216-N-8 natural pond is fed by the 216-A-25 Gable Mountain Pond.</p> <p>Also, the text should mention how the Gable Mountain Pond (216-A-25) was filled, the quality of water, and its source.</p> <p>A map showing the locations of 216-A-25 and 216-N-8 ponds should accompany the text for clarification.</p>	<p>Reject. There is no surface water connection between the 216-N-8 pond and the 216-A-25 Gable Mountain Pond. The groundwater system in the B Plant Aggregate Area is discussed in detail in the 200 E groundwater AAMSR as mentioned in Sec. 3.5.3.3.</p> <p>Reject. Sec. 2.3.4.6 discusses the Gable Mountain Pond pipeline, source, and water quality.</p> <p>Accept. The locations of both ponds are shown on Fig. 2-7. A reference to Fig. 2-7 will be included in the text.</p>
32.	<p><b>Section 3.3.3, Page 3-5, lines 35-38.</b> Figures 2-1 and 2-5 do not show the locations of various ponds such as 216-8-3, 216-B-3A, 216-6-3C, etc., as mentioned in the text. These ponds are located in Figure 2-6. The text needs to be corrected.</p>	<p>Accept. Text will be modified to say Figures 2-5, 2-6, and 2-10. Note: Grain size information will be deleted from Figures 3-15, -16, and -18.</p>
33.	<p><b>Section 3.4.3, Page 3-16, second paragraph.</b> The text states that a legend is located on page 3-15. The legend does not contain enough information. The legend should include everything that is contained in the accompanying figures (i.e., c/z, c/b along with any other pertinent information). Also, all figures need a legend or details on where it can be found, such as "Legend found on page 3F-15".</p>	<p>Accept. Newer version of legend used.</p>

92126631444

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 16 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
34.	<p><b>Section 3.5.3.1.1, Page 3-30, line 34.</b> It is noted that vadose-zone samples were taken from wells near the 216-U-12 crib in the U Plant Aggregate Area and "Because of the nearly identical stratigraphy, it is probable the B Plant Aggregate Area vadose zone is similar and it can be assumed that the collected data are correct for this study area." We disagree with this statement. U Plant and the 216-U-12 crib are in the 2-West Area. As shown in the U Plant AAMS report, in addition to the Hanford formation, the vadose zone in the vicinity of the U Plant is comprised of the "Palouse" Soil, Plio-Pleistocene Unit, and the Middle Ringold Formation, none of which are found in the vadose zone below the B Plant. We therefore question the statements that the stratigraphy is the same in both the U Plant and B Plant Aggregate Areas and that the vadose-zone properties measured at U Plant are representative of the B Plant Area.</p>	<p>Accept. Text will be modified to read "because of the similar stratigraphy". Units that are found in both areas do have similar vadose properties.</p>
35.	<p><b>Section 3.5.3.1.2, Page 3-31, lines 11-18 (second paragraph).</b> Information stated in the second paragraph contradicts statements made in the first paragraph of Section 3.5.3.1.2. The first paragraph states that the likelihood of perched water in the 200 East Area is low; however, the text in the second paragraph describes the presence of perched water which was identified in several boreholes. Clarify Section 3.5.3.1.2 with respect to perched water zones.</p>	<p>Reject. The last sentence in the first paragraph explains that while the likelihood is low, some areas of perched water have been found in the 200 East area which are explained in the second paragraph.</p>
36.	<p><b>Figure 3-8, Page 3F-8.</b> The figure does not show the "Structural Provinces of the Columbia Plateau" as the title indicates, but rather shows the "Columbia Plateau and Surrounding Structural Provinces." Consider changing the title.</p>	<p>Accept. Title will be changed.</p>

92126631445

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 17 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
37.	<p><b>Figure 3-14, Page 3F-14.</b> Two different wells in the center of the B Plant Area are identified as E27-5. It appears that for the B to B' cross section, wells E24-6 and 42-45 shown on Figure 3-14 are respectively identified as E24-5 and E43-45 on Figure 3-17, and well E26-13 shown on Figure 3-17 is not shown at all on Figure 3-14. Well 42-45 shown on Figure 3-14 also appears to be identified as well 43-45 in Figure 3-18.</p>	<p>Accept. Well numbers on cross sections are incorrect and will be changed.</p>
38.	<p><b>Figures 3-14, 3-25, and 3-31.</b> The stippled area, which probably represents the exposure of basalt bedrock above the water table, is not identified or explained in these figures.</p>	<p>Accept. Explanation of the stippled areas (basalt) will be added to the legend of each figure.</p>
39.	<p><b>Figure 3-15, Page 3F-15.</b> The legend for the cross sections does not identify all of the strata shown in Figures 3-16 to 3-18. The legend is missing explanations for the Hug, Hun, Hlg, Em, RRL, and R units. The legend is also not clear with respect to the grain size section in that the SP, C/Z, and C/B abbreviations shown in Figures 3-16 to 3-18 are not explained.</p>	<p>Accept. New legend will be incorporated.</p>
40.	<p><b>Figure 3-19, Page 3F-19.</b> The reference point used as 0 for the contour lines should be given on the figure. This comment is applicable for all other Isopach maps.</p>	<p>Reject. No reference point needed for Isopachmaps.</p>
41.	<p><b>Figure 3-20, Page 3F-20.</b> An explanation is needed to indicate what the list of numbers are representing. Example; for A1-128.32, an explanation of what each number represents is needed. This comment is applicable for all other figures showing similar information.</p>	<p>Accept. Explanation will be added to legend of each appropriate figure.</p>

92126631446

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 18 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
42.	<b>Figure 3-31, Page 3F-31.</b> This figure shows 100 ft thickness of the Hanford formation in the northeast corner of the B Plant Aggregate Area, but the isopach maps of the Hanford sequences shown in Figures 3-26, 3-28, and 3-30 indicate that the Hanford formation is absent in this area. Which is correct?	Accept. The figures are correct. The area of concern is undifferentiated gravel. Well logging data cannot differentiate between gravel and sandy sequences in the northeast area. The figures will be revised to identify the areas as undifferentiated gravel.
43.	<b>Section 4.1.2.3.1, Page 4-15, lines 13 through 25.</b> Radiation monitoring data from vadose wells 299-E33, -58, -59, and -73 should be included and discussed to show the extent of radiological contamination beneath the crib soil column. Also, the March 1989 radiological survey data and the groundwater test results for well 299-E33-18 should be included to facilitate an evaluation of the extent of contamination at the cribs.	Accept. No change required. Appendix A contains radiation monitoring data for the referenced wells. Table A1-6 summarizes the logs which were used from the monitoring wells.
44.	<b>Section 4.1.1.1, Page 4-4, lines 1 through 4.</b> The text states that Table 4-11 summarizes data over the last 5 years but Table 4-11 does not show data that corresponds to any years. If the data is available, the Table should show data for each of the last five years. If the data is not available, the text should be changed to reflect the Table.	Accept. The data in Table 4-11 is a summary of the data in Appendix A in Table A-2.4. This table lists the data by year for 1985 through 1989. A note will be added to Tables 4-8 through 4-11 which references the appropriate Appendix A tables as the source of the summarized data.
45.	<b>Section 4.1.1.2.3, Page 4-7, second paragraph.</b> The text should state where the locations of these samples are, such as a figure or plate.	Accept. The text will be revised to state that sampling locations are shown on Plate 3.

92126631447

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 19 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
46.	<p><b>Section 4.1.1.5, Page 4-9 and Table 4-14, Page 4T-14a.</b> The potential for liquid wastes to migrate through the vadose zone to ground water is noted as being "conservatively estimated" by comparing the volume of waste discharged to the estimated pore volume of the soil column underlying the waste management unit. As described in our comments on Section 2.3.3, we do not believe that equating the estimated pore volume of the soil column to its water retention capacity is either accurate or conservative. Over a long period of time, most soils should be able to hold only a very small percent of their total pore volume against gravity drainage. We therefore believe that the potential migration of liquid waste to the unconfined aquifer is underestimated for several of the units listed in Table 4-14, specifically the 216-B-16, -17, -43 cribs and the 216-B-25, -27, -35, -38, -39, -41, -42, -54 trenches.</p> <p>The assumption (number 2, lines 27 and 28) that there is not significant change in liquid volume being introduced due to precipitation is also nonconservative. In units with coarse cover soils and no vegetative cover (such as cribs and trenches), annual infiltration of 10+ cm of precipitation is possible and this additional water would have the effect of driving wastewater in the soil column to ground water.</p>	<p>Accept. The discussion in section 4.1.1.5 will be revised to more clearly and accurately discuss the evaluation which was performed. This evaluation is indicative only of the past potential of a waste management unit to have received waste which may have migrated to the groundwater. References to the potential contribution of the wastes suspended in the soil column to groundwater contamination will be added as described in the response to comment 8. The calculations summarized in Table 4-14 will be verified for the waste management units mentioned in the comment.</p>

92126631448

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 20 of 33

92126631449

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
47.	<p><b>Section 4.1.2.3.1, Page 4-15.</b> Water sample test results indicate that <sup>137</sup>Cs was detected in ground water from well 299-E33-18 and that the suspected source was the 216-B-7A and 7B cribs. Table 2-4 indicates that large volumes of acid were not discharged to these cribs and Table 4-25 indicates that for nonacidic waste, the recommended distribution coefficient for Cesium is 200 - 1,000, Under the conditions described for the 216-B-7A and 7B cribs, Cesium should be sorbed in the vadose zone. What is the explanation for its occurrence in ground water in this area?</p>	<p>Accept. This will be evaluated further and corrected if appropriate.</p>

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 21 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
48.	<p><b>Section 4.1.2.3.2, Page 4-15, lines 31 through 35.</b> The information on the inventory of radionuclides presented in this section is not consistent with the text in Section 2.3.3.2. For example, 30 g of plutonium, 45 kg of uranium, and 116 Ci of radionuclides were reportedly present in the waste stream at the time of discharge. The period of discharge is not stated. In Section 2.3.3.2, the text states that approximately 95 g of plutonium and 2,050 Ci of fission product were discharged to the crib between August 1948 and January 1950. This discrepancy should be addressed and the text should be changed accordingly.</p>	<p>Accept. The text will be revised to eliminate the discrepancy.</p>
49.	<p><b>Section 4.1.2.3.2, Page 4-15, lines 37 through 40.</b> Radiation monitoring data from vadose wells 299-E33-16, -66 through -72, and -89 should be included and discussed to show the extent of radiological contamination beneath the crib soil column. This comment is also applicable wherever appropriate (for example, Sections 4.1.2.3.3, 4.1.2.3.6, and 4.1.2.3.7). This paragraph should also include the evaluation of potential groundwater contamination based on estimated pore volume under the crib and the volume of effluent disposed from Table 4-14. This comment is also applicable wherever appropriate (for example, Section 4.1.2.3.3, 4.1.2.3.4, 4.1-2.3.5, and 4.1.2.3.7).</p>	<p>Accept. Appendix A will be referenced, which contains radiation monitoring data for the referenced wells. Table A1-6 summarizes the logs which were used from the monitoring wells.</p> <p>Accept. Groundwater contamination potential will be added to the text for the appropriate sections.</p>
50.	<p><b>Section 4.1.2.3.26, Page 4-23, line 12.</b> The text reports current activity in monitoring wells averaging about 15 pCi/L. It is not clear whether the reported current activities are for water samples from the vadose wells. The text should be clarified.</p>	<p>Accept. The text will be revised to clarify the sampling results mentioned.</p>

92126631450

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 22 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
51.	<p>Section 4.1-2.3.27, Page 4-23, lines 20 through 24. The text in this section states that the tile field is an inactive waste site and received mixed waste while in operation. Conversely, Section 2.3.3.26 states that the tile field is an active management unit and may have received mixed waste from an unknown source while in operation. This inconsistency should be addressed and the text should be changed where appropriate.</p>	<p>Accept. The text will be revised to eliminate the discrepancy.</p>
52.	<p>Section 4.1.2.4.2, Page 4-24, line 34; page 4-25, lines 4 through 9. In line 34, the extent of groundwater contamination is reported as less than <math>20 \times 10^{-7}</math> <math>\mu\text{Ci/L}</math> (microcurie per liter), that is 2 pCi/L, extending approximately 2,000 feet from the reverse well. Conversely, it is reported as less than <math>20 \times 10^{-7}</math> pCi/L (page 4-25, line 9). The references cited for these values are different. This inconsistency should be addressed and the text should be changed where appropriate.</p> <p>Also, the text does not clearly state whether the reported concentration is for alpha or beta activity or for a specific radionuclide detected in the groundwater samples. This deficiency should be addressed.</p> <p>Lines 4 and 5 (page 4-25) state that groundwater contamination near the reverse well shows that radiation levels are orders of magnitude less than drinking water standards. Data supporting this statement should be included.</p>	<p>Accept. The text will be revised to eliminate the discrepancy and to address the referenced missing information.</p> <p>Accept. The text will be clarified.</p> <p>Accept. The information will be provided if available</p>
53.	<p>Section 4.1.2.4.4, Page 4-26, first paragraph. The text states that contaminants were detected 22.9 (7 ft) below ... etc. 22.9 does not equal 7 ft. The text should be changed appropriately.</p>	<p>Accept. The text will be revised to correct the erroneous unit conversion.</p>

92126631451

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 23 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
54.	Section 4.1.2.5.1, Page 4-26, lines 36 through 41; page 4-27, lines 1 through 12. The text discusses the samples and analyses for water and sediments from the 216-B-3 Pond but does not address the results of analyses for the nature and extent of contamination at the pond. Analytical results for pond water, pond sediments, and groundwater should be included and evaluated for the nature and extent of contamination. This comment is also applicable wherever appropriate (for example, Sections 4.1.2.5.3, 4.1.2.5.7 and 4.1.2.5.18).	Accept. Table 4-21 summarizes the results of sediment sampling of the 216-B-3 pond system. Additional data will be added for the results of the weekly surface water analyses. Groundwater results are outside the scope of this AAMSR and are more appropriately included and discussed in the 200 East Groundwater AAMSR.
55.	Section 4.1.2.5.2, Page 4-27, lines 16 through 17. The text in this section and in Section 2.3.5.1 states that the UN-200-E-14 Unplanned Release area was removed from radiation zone status in December 1970. However, Table 2-6 indicates that this release area is listed in the Tri-Party Agreement. The text should refer to the inclusion of this release in the Tri-Party Agreement.	Accept. The text will be revised.
56.	Section 4.1.2.5.6, Page 4-28, lines 36 through 40 This paragraph discusses the concentration levels of 90Sr. The text does not explain whether the concentration levels are provided for water samples from the pond or for groundwater samples at this pond. The period of observation for the reported values is also not stated. The sampling medium and period of observation should be provided.	Accept. The text will be revised to clarify the discussion of the 90Sr concentrations.

92126631452

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 24 of 33

92126631453

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
	<p>Also, the concentration levels of 90Sr are compared with the administrative control value of 74 pCi/L and DCG value of 1,000 pCi/L. It is unclear, whether the administrative control and DCG values are provided for pond water or for groundwater. For example, in Section 4.1.2.5.5, the total alpha concentration in the groundwater is compared with the DCG limit. The text should be clarified, and a reference source should be provided for the administrative control and DCG values.</p>	<p>Accept. The text will be clarified and the reference source (WHC-CM-7-5) provided.</p>
57.	<p>Section 4.1.2.5.7, Page 4-29, third paragraph. The text contains the units of pci/ml. The text should read as pCi/L to be consistent with the remainder of the text.</p>	<p>Accept. The units will be corrected.</p>
58.	<p>Section 4.1.2.5.10, Page 4-30, lines 20 through 22. The 216-B-2-1 Ditch is surveyed semiannually, but only the results of the April 1991 survey are reported. The trend of radiological contamination at the ditch should be explained using past and present survey data. The text refers to Table 2-4 for current inventory data for the ditch, but the ditch inventory is not listed in the table. This deficiency should be addressed.</p>	<p>Accept. The April 1991 survey was the most recent survey data available at the time of publication of this document. More recent data will be added if available. The reference to Table 2-4 will be removed as chemical inventory data for the 216-B-2-1 ditch is not available. Past survey data will be included to indicate the change at the site.</p>
59.	<p>Sections 4.1.2.5.36, 45, 46, 47, and 48, beginning on Page 4-37, third paragraph. In both sections, the text reads "Vadose Boreholes ... beneath the trenches." It is unclear whether these boreholes listed, only monitor the trench discussed in the section or monitor other trenches as well. This needs to be clarified.</p>	<p>Accept. The trenches monitored by the boreholes will be referenced. However, Appendix A contains radiation monitoring data for the referenced vadose zone boreholes. Table A1-5A summarizes the logs which were used from these boreholes. Sections A-1.4.3 and A-1.4.4 present an analysis of the monitoring results and figures A1-7, A1-8, A1-9 and A1-10 show the locations of the monitoring points and the waste management units which they are used to monitor.</p>

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 25 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
60.	Section 4.1.2.5.49, Page 4-41, lines I through 8. This section addresses the 216-B-59 Trench. The trench location, description, and years in service are provided neither in this section nor in Section 2.3.5, but should be.	Accept. Section 4.1.2.5.49 appropriately states that the 216-B-59 trench was converted into the 216-B-59B retention basin. The 216-B-59B retention basin is described in sections 2.3.8.2 and 4.1.2.8.1. It is also included in the appropriate tables and figures throughout the document. A discussion will be added in Sec. 2.3.8.2 on the hypalon and concrete construction upgrade.
61.	Section 4.2.2.1.4, Page 4-60, line 36. The text discusses the remobilization of uranium beneath the 216-U-1 and 216-U-2 cribs in the U Plant Aggregate Area. A reference is not, but should be provided for this discussion.	Reject. A reference to (Baker et. al., 1988) is mentioned earlier in the discussion of the referenced effect in the last sentence in section 4.2.2.1.2.
62.	Section 4.2.4, Page 4-65, lines 13 and 16. The text refers to Table 4-20 as listing radioactive and nonradioactive chemical substances. However, Table 4-20 summarizes sanitary wastewater and sewage volumes. The correct table is 4-22.  The text refers to Table 4-21 as summarizing known or suspected contamination at individual waste management units. However, Table 4-21 summarizes sediment sampling for the 216-B-3 pond system. The correct table is 4-23. In addition, the text describes individual waste management units, but should be modified to include unplanned releases.	Accept. The text will be revised to reference the correct tables. The reference to waste management units will be changed to also reference unplanned releases.  Accept. The text will be revised to reference the correct table and add unplanned releases.
63.	Section 4.2.4, Page 4-65, lines 38 through 40. In line 38, the text states that Table 4-22 lists the contaminants of concern. However, Table 4-22 lists the <u>candidate</u> contaminants of potential concern and Table 4-24 lists the contaminants of concern. In line 39, the reference to Table 4-20 is incorrect. The sentence should reference Table 4-22. The text should be corrected to reflect the appropriate tables.	Accept. The text will be revised to reference the correct tables.

92126631454

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 26 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
64.	Section 4.2.4.2, Page 4-67, lines 40 and 41. Table 2-4 indicates that 10's of thousands of kg's of FeCN were released in the B Plant Aggregate Area. FeCN should be noted here.	Accept. FeCN will be added to the list in section 4.2.4.2.
65.	Section 4.2.4.3.1, Page 4-68, line 24. The text states that Table 4-23 represents a summary of soil-water distribution coefficients. However, the correct table is 4-25. The text should be corrected here and also on page 4-69, line 4.	Accept. The text will be revised to reference the correct tables.
66.	Section 4.2.4.3.1, Page 4-69, line 10. The text incorrectly refers to Table 4-24 when discussing mobility class ranking. The correct Table is 4-26. This discrepancy should be addressed.	Accept. The text will be revised to reference the correct tables.
67.	Section 4.2.4.4, Page 4-70, lines 24 and 26. The text incorrectly refers to Table 4-26 during the discussion on persistence. The correct table is 4-28. This discrepancy should be addressed.	Accept. The text will be revised to reference the correct tables.
68.	Section 4.2.4.5.1, Page 4-71, line 41. The text incorrectly refers to Table 4-27 when discussing excess cancer risks for radionuclide exposure. The correct table is 4-29. This discrepancy should be addressed.	Accept. The text will be revised to reference the correct tables.
69.	Section 4.2.4.5.1, Page 4-72, line 3. The text refers to "EPA 1991b" when discussing excess cancer risks posed by radionuclide exposure. In the Section 10 references, "EPA 1991b" is the Integrated Risk Information System. However, the information presented in the text is found in the 1991 Health Effects Summary Assessment Tables (HEAST). The text reference should be corrected and the HEAST reference should be listed in Section 10.	Accept. The reference will be revised.

92126631455

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 27 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
70.	<p>Section 4.2.4.5.1, Page 4-72, lines 5-18, and 25. This paragraph discusses slope factors used in the determination of excess cancer risks. The discussion on the method to be used for radionuclides without slope factors (lines 9-12) should be deleted because the 1992 HEAST contains slope factors for radionuclides.</p> <p>The reference to Table 4-27 is incorrect. The correct table is 4-29.</p>	<p>Reject. The approach used in the AAMSRs to date was based on the 1991 HEAST and is not an incorrect approach. The better approach, utilizing the 1992 HEAST will be addressed in future work plans.</p> <p>Accept. The reference to the table will be corrected.</p>
71.	<p>Section 4.2.4.5.2, Page 4-72, line 39. The text incorrectly refers to Table 4-28 when discussing adverse health effects. The correct table is 4-30. The text should indicate that these health effects may be associated with either human or animal data.</p>	<p>Accept. The reference to the table will be corrected. The text will be revised.</p>
72.	<p>Table 4-6, Page 4T-6. The table contains a column labeled "Total". What is this the total of, or should it be labeled differently (i.e., average)?</p>	<p>Accept. The word "total" will be changed to "average."</p>
73.	<p>Table 4-8, Page 4T-8a. Ce-141 is listed at the top and bottom of the table with different values reported.</p>	<p>Accept. The discrepancy in the table will be corrected.</p>
74.	<p>Table 4-12, 4T-12a. The results of surface-water sampling indicate that many of the radionuclides were below the detection limit, yet the detection limits are not noted in the table.</p>	<p>Accept. The detection limits will be added.</p>
75.	<p>Table 4-21, Page 4T-21b. Footnote 1 indicates that the "Threshold values are the calculated upper tolerance limits", but the tolerance limit values are not stated.</p>	<p>Accept. The tolerance limit values will be added.</p>
76.	<p>Section 5.0, Page 5-1, line 19. The text incorrectly refers to Table 4-22 when discussing potential contaminants of concern. The correct table is 4-24. This discrepancy should be addressed.</p>	<p>Accept. The text will be revised to reference the correct table.</p>

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 28 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
77.	Section 5.3, Page 5-6, lines 29-33. The text refers to criteria used in the HRS scoring. Certain criteria have changed since the finalization of the HRS on December 14, 1990. Explain if the scoring was conducted by using the old or new system.	Accept. The text will be revised to clarify this point.
78.	Section 5.3, Page 5-7, lines 5-8. The text should indicate which HRS scores did not take into account mHRS criteria. The text should clarify that the previous HRS did not consider these factors.	Reject. HRS scores do not take into account the mHRS criteria as stated on lines 8 and 9.
79.	Section 5.3, Page 5-7, lines 12-22. The fourth paragraph of section 5.3 does not specify who assigned the scores in Table 5-1. Table 5-1 does not indicate which of the rankings were derived from an authoritative reference, and which were assigned based on similarity.  Specify which of the rankings were derived from an authoritative reference, and which were assigned based on similarity. Specify who assigned the scores in Table 5-1. Specify which ranked unit was used as the analog for which analogously ranked unit. Put the analogously ranked units in a separate column (with the qualitatively ranked units), perhaps with explanatory footnotes.	Accept. Footnotes will be added to Table 5-1 to indicate these points.
80.	Section 5.3, Page 5-7, lines 24-33. The fifth paragraph of section 5.3 does not quantitatively specify the discharge volume used for assigning a qualitative indicator of migration potential. Specify this volume. An additional criteria of radioactive inventory should be added to determine priority of sites. Put the qualitatively ranked units in a separate column (with the analogously ranked units), perhaps with explanatory footnotes.	Reject. The units were evaluated based on the data presented in sections 2, 3, and 4. It is not possible to specify a single quantitative discharge volume which would cause a unit to be given a qualitative migration potential. Radioactive inventory cannot appropriately be used as a standalone ranking factor because of the inconsistency of the inventory data with respect to the number and nature of radionuclides, the number of contaminants known, and the relative distribution of the many radionuclides.

92126631457

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 29 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
81.	Section 7.5, Page 7-13, line 40. The text indicates Alternative 3 (excavation and soil treatment) may not be applicable to treat volatile organic compounds. However, it is reported in Section 7.4.4, Alternative 3--Excavation, Soil Treatment, and Disposal, that thermal desorption with off-gas treatment could be used if organic compounds are present. The text should be changed to include volatile organic compounds in Alternative 3.	Accept. VOCs will be added for alternative 3.
82.	Section 8.1.3, Page 8-10, lines 26-28. The following text needs to be revised: "The best indication of the validity of the data is the reproducibility of the results, and this indicates that validity (completeness) is one of the less significant problems with the data." Reproducibility of results does not "validate" the data, this only indicates that the methodology can be reproduced, whether it is reproduced correctly or not. To truly "validate" data, instrument calibrations and blanks, standards, matrix spikes, and other QA/QC protocols should be followed.	Accept. The discussion refers to reproducibility of the data by other laboratories using the calibrations, blanks, standards, matrix spikes, etc. that are mentioned. Reproducibility in this way is a good indication of the validity of the data. A sentence will be added stating, "The data are generally adequate for characterization purposes, but may not be suitable for use in a formal risk assessment." "... reproducibility of the results (using QA protocol) ...
83.	Section 8.1.3, Page 8-11, line 2. This should read "...possible, where contamination may or may not be present."  Section 8.3.1 Page 8-22, line 28. The sentence should read "Although existing data are <u>unvalidatable</u> , the data ..."	Reject. The text refers to using the existing data to determine where contamination is or is not present. Existing data can appropriately be used for this purpose which is more far-reaching than using existing data to determine where contamination MAY be present. Some of the data is of acceptable quality and is being used for this purpose. As noted, data is being developed as a part of the ongoing work at the 200-BP-1 operable unit.  The sentence in section 8.3.1 should not be changed since not all of the existing data are unvalidatable.

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**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 30 of 33

92126631459

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
84.	Section 8.2.2-5, Page 8-20, line 10. This section states that "precision and accuracy objectives are governed by the capabilities of the available methodologies." It should be noted that the precision and accuracy should be selected to meet the remedial actions goals. The analytical methodologies should be chosen to meet the selected precision and accuracy and are governed by the data quality objectives.	Accept. The text will be revised to reference the detection levels shown in Table 8-4 and discuss the usual derivation of these. In addition, text will be added to discuss detection levels such as EPA Method 200.62-C-CLP which cannot analyze to the sensitivity needed to achieve the cleanup level established by the Model Toxics Control Act Method C.
85.	Section 8.3.3.4, Page 8-27. This section points out the need for soil investigations to determine physical and chemical properties of the soil. It is not indicated exactly what properties are suggested or whether these properties are to be measured on a site specific or aggregate area basis. If an aggregate area approach is recommended, it should be stated here, because future work plans are likely to be site specific in nature and an aggregate area approach may be considered outside the scope of individual LFI's.	Accept. The text will be revised to state that contaminant transport through the vadose zone is more appropriately done as a part of studies conducted under the direction of the Groundwater AAMSRs.
86.	Section 8.3.3.7, Page 8-28. The information presented in Chapter 3 indicates that perched water zones, caliche layers, and the Plio-Pleistocene unit are all largely absent from the 2-East Area. Why are they identified as an information need here? It is likely that the greatest need for geophysics in the B Plant Aggregate Area will be to identify the bedrock surface by seismic or other techniques.	Reject. Perched water zones are found in the 200 east area. See the response to comment 35.
87.	Section 9.1, Page 9-3, lines 32-36. A rationale should be provided for using surface contamination greater than 2 mR/hr for exposure rate, 100 count/min beta/gamma above background, alpha greater than 20 ct/min, or Environmental Protection Program ranking of greater than 7 to designate a site as an interim remedial measure (IRM) candidate.	Accept. The text will be revised to reference the Westinghouse Hanford Radiation Protection Manual posting requirements which these IRM criterion are based on.

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 31 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
88.	Section 9.2.1, Page 9-9. There is little or no justification for the selection of the 216-B-5 reverse well as the sole candidate for an ERA. We do not argue with the need to remediate 216-B-5, but we would like to be informed of the Department of Energy's reasoning in selecting this for the sole ERA and why other reverse wells in the B Plant Aggregate Area were not selected as well.	Accept. No text change required. The ERA selection process is described in Table 9-2. Generally, the B-4 and B-6 reverse wells were not believed to have received a sufficient inventory of material to meet the concentration criterion for an ERA. The B-11A and B-11B reverse wells are relatively shallow are closer in similarity to french drains than reverse wells. It was believed that operational programs could effectively deal with these units.
92126531460 89.	Section 9.2.1.1, Page 9-11, lines 14 and 15. Cribs and trenches with collapse potential are evaluated as candidate expedited response action (ERA) units and are recommended for disposition under the Radiation Area Remedial Action (RARA) program. But the text in lines 14 and 15 states that an engineering Study is planned under the RARA program for 1993 to evaluate the potential for crib collapse. There is no reason that an immediate remedial action cannot be undertaken under the RARA program when there is a threat from a sudden collapse. Such a collapse could bring contaminated dust from the cribs, trenches, and burial grounds to the surface. When a WMU meets all the (criteria for an ERA (Section 9.2.1), an interim action should be considered under an ERA path to reduce the potential for release of hazardous substances and radioactive or mixed waste contaminants. This deficiency should be addressed.	Reject. The AAMS evaluation process is intended to be a first step in screening for possible candidates for ERA. These recommendations are then reviewed in accordance with the process outlined in WHC-MR-0244, "Prioritizing Sites For Expedited Response Actions At The Hanford Site."

**ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)**

Reviewer EPA, Paul Beaver

Page 32 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
90.	<p>Section 9.2.1.1, Page 9-11, lines 17 and 18. Pressure grouting void areas within the cribs is considered as one of the response actions to prevent collapse under the RARA program. But additional investigation may be necessary at these cribs because surface contamination cleanup under the RARA program may not address subsurface contamination. Soils treated with pressure grouting may interfere with drilling activities during subsurface investigation and cause difficulty during sample collection, so pressure grouting may not be a potential response action at WMUs that undergo additional subsurface investigation. Alternative action, such as the addition of clean fill material over the cribs or trenches, may be more appropriate for these WMUs.</p>	<p>Accept. No text change required. As mentioned on line 19, "Evaluation will be performed under the RARA Program." The mentioned concerns will be addressed in the RARA evaluation process.</p>
91.	<p>Section 9.2.1.2, Page 9-11, lines 22 through 32. This section reports that deactivation of 11 active liquid effluent units is planned by June 1995. In the interim, hazardous wastes will not be discharged to these units. Although hazardous wastes will not be discharged to these units, the liquid effluent discharged through these units is a potential transport pathway for migration of radioactive and nonradioactive contaminants from nearby or adjacent inactive WMUs to groundwater. For example, the 216-B-3-3 Ditch is parallel and close to the 216-B-3-2 Ditch (Figure 2-6). The 216-B-3-2 Ditch received an estimated 10,000 Ci of short- and long-lived fission products from an unplanned release (UPR-200-E-34) (Section 4.1.2.5.16). Instead of deliberately discharging the effluent through contaminated facilities, an alternate disposal option should be implemented as early as possible to prevent further degradation of groundwater beneath the site.</p>	<p>Reject. EPA, Ecology, and DOE have addressed continued use of liquid waste disposal facilities in the Tri Party Agreement, Milestone M-17 Change Package which was recently signed by all three parties. Programs are underway to design and construct the necessary treatment and disposal facilities to create an alternate disposal or treatment systems in accordance with M-17 requirements.</p>

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ENVIRONMENTAL ENGINEERING AND GEOTECHNOLOGY  
COMMENT RECORD FORM (cont.)

Reviewer EPA, Paul Beaver

Page 33 of 33

14. Item	15. Comment(s) (Provide technical justification for the comment and proposed action to correct or resolve the comment.)	16. Disposition (Provide brief justification if NOT accepted.)
92.	Section 9.2.3.6, Page 9-16, line 20. Fourteen unplanned releases are stated; however, fifteen releases are cited in lines 24-38.	Accept. The number of unplanned releases will be corrected.

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## CORRESPONDENCE DISTRIBUTION COVERSHEET

<b>Author</b> S. H. Wisness, RL (D. B. Erb, WHC)	<b>Addressee</b> P. T. Day, EPA D. B. Jansen, Ecology	<b>Correspondence No.</b> Incoming 9206528 Xref 9256605D
<b>Subject:</b> RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA) REVIEW OF THE B PLANT SOURCE AGGREGATE AREA MANAGEMENT STUDY REPORT (AAMSR) DRAFT A		

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The enclosures are the same as outgoing letter 9256605D, tmp 6-5211.



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