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START



Department of Energy

Richland Field Office

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JUL 27 1992

92-RPB-175

Mr. Paul T. Day
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Mr. David B. Jansen, P.E.
Hanford Project Manager
State of Washington
Department of Ecology
Post Office Box 47600
Olympia, Washington 98504-7600

Dear Messrs. Day and Jansen:

THE 303-K RADIOACTIVE MIXED-WASTE STORAGE FACILITY CLOSURE PLAN, REVISION 1
NOTICE OF DEFICIENCY RESPONSE TABLE

The 303-K Radioactive Mixed-Waste Storage Facility Closure Plan, Revision 1, Notice of Deficiency (NOD) Response Table is submitted by the U.S. Department of Energy, Richland Field Office (RL) and the Westinghouse Hanford Company (WHC) for approval by the State of Washington Department of Ecology (Ecology). Submittal of this response table fulfills the July 27, 1992, commitment date.

The NOD response table is in reply to the NOD comments resulting from Ecology's review of Revision 1 of the closure plan (Ecology letter dated April 23, 1992). Previous responses pertaining to each comment number have been included for background information. However, only the last responses (Ecology's and RL/WHC's) under each comment number pertain to the Revision 1 review. Only the unresolved comments have been included in this NOD response table.

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Copies of the document will be distributed to representatives of your respective organizations as follows:

- D. L. Duncan, U.S. Environmental Protection Agency (2 copies)
- S. E. McKinney, Ecology (4 copies)
- D. C. Nylander, Ecology (1 copy)



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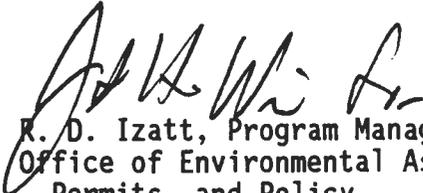
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Should you have any questions, please contact me or Mr. R. N. Krekel of my staff on (509) 376-4264.

Sincerely,


 R. D. Izatt, Program Manager
 Office of Environmental Assurance,
 Permits, and Policy

RPB:RNK


 R. E. Lerch, Manager
 Environmental Division
 Westinghouse Hanford Company

Enclosure

- cc w/encl:
 H. L. Debban, WHC
 R. E. Lerch, WHC
 D. L. Duncan, EPA
 S. E. McKinney, Ecology
 D. C. Nylander, Ecology

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Before any soil cleanup option could be chosen, integration with the Record of Decision (ROD) for the soil cleanup of the Operable Unit (300-FF-3) would have to be accomplished. One of the main purposes of the Tri-Party Agreement was to integrate RCRA and CERCLA activities. These activities include soil cleanup standards as well as the physical remediation of the site (if necessary). According to the Tri-Party Agreement ".... a procedure to coordinate the TSD unit closure or permitting activity is necessary to prevent overlap and duplication of work, thereby economically and efficiently addressing the contamination." It is the position of DOE-RL and WHC that the most logical, cost effective, efficient integration of RCRA and CERCLA in the 300 Area is to conduct all soil remediation, RCRA and CERCLA, at the same time and to the same cleanup standards.

If the closure plan is changed after approval, the requirements for amending the plan, listed in WAC 173-303-610, will be followed.

12. Page 6-1, line 24. The text states the closure performance standard will be a health based standard. This is not appropriate.

Ecology Requirement: The closure standard for this facility will be background. All other citations of health based standards must be changed to background.

DOE-RL/WHC Response No. 1: A clearer definition of baseline and action levels in relationship to clean closure will be provided. The following paragraphs will be included in Chapter 6.0 of the closure plan. In addition, a flow chart showing the general closure strategy will be added.

"Three important terms in the following information on the 303-K Facility closure strategy are 'baseline,' 'baseline threshold,' and 'action levels.' Baseline is the set of analytical results of the local background samples. Baseline, therefore, refers to the population of constituent concentrations in the soil or building materials in the vicinity of the 303-K Facility that are not attributable to the 303-K Facility operations. Baseline threshold refers to concentrations that define an upper limit of the baseline population and is not to be confused with the average baseline concentration. Baseline threshold concentrations will be determined by statistical methods such as those described in *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final*

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Guidance (EPA 1989), e.g., the tolerance interval approach to the analysis of variance. Action levels are the constituent concentration levels that will prompt an action of some type. These actions would include additional evaluation, cleanup, or deferral to the CERCLA process. Action level values include concentrations based on risk to human health and the environment, baseline threshold concentrations, or other appropriate cleanup criteria.

Clean closure will be accomplished by demonstrating that the constituents used in the 303-K Facility operations are not present above action levels. Reevaluation of the action levels will be considered if one or more of the action levels are exceeded by any of the compliance constituents listed in the table located in Section 7.3.2.2. This measure is proposed because contaminant concentrations for soil and concrete may exceed an action level; however, the concentrations may be significantly below any health or environmentally-based risk level. Any additional evaluation would be based on the following.

- The type and extent to which action levels are exceeded.
- The further assessment of health-based risk using toxicity criteria guidance such as the *EPA Integrated Risk Information System (IRIS) database* (EPA 1989b), the *Human Health Evaluation Manual* (EPA 1989a), the *Technical Information Memorandum (TIM) No. 86-1* (Ecology 1986), and other appropriate information.

If dangerous constituents are determined to exist in concentrations above action levels and reevaluation of action levels is not warranted, remediation of the soil will be evaluated under the CERCLA RI/FS process for the 300-FF-3 Operable Unit. Initial action levels for the constituents in the soil samples will be the baseline threshold values."

Baseline samples will be obtained within the 300-FF-3 Operable Unit.

An exposure scenario method, like the one provided for 2101-M Pond Closure Plan, will be used for the 303-K Facility Closure Plan. The actual analysis for the exposure scenario will be conducted when sample analyses are obtained. The scenario will provide the criteria for comparing element concentrations to the risk to human health and the environment. These factors will then be evaluated for clean closure.

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Ecology Response No. 1: The DOE-RL/WHC propose to include a number of paragraphs within the text in order to clarify the definitions of "baseline," "baseline threshold," and "action level." Any terms not defined should be defined in a section for acronyms, abbreviations, and definitions similar to that provided in Part B permit applications. How these concepts will be used in developing the cleanup strategy to be implemented after obtaining the results of the sampling and analysis at the unit should be provided in both the form of a narrative and flow chart in the appropriate sections of the closure plan. Ascertain whether or not these terms are appropriate within the requirements of Chapter 173-303 WAC, see the next paragraph for guidance.

The proposed test and clean closure objectives are not acceptable. The original requirement in Ecology's NOD stated that the closure standard for this facility will be background. From DOE-RL/WHC's response, it appears that clarification of this comment is necessary. Under WAC 173-303-610(2)(b), closure performance standard, the levels of dangerous waste or dangerous waste constituents or residues remaining after closure of a unit may not exceed background environmental levels or designation limits for clean closure. If these performance standards cannot be met, then the unit is subject to subsections (7) through (11) of WAC 173-303-610. Refer to WAC 173-303-610 for guidance.

The approach for the soil cleanup is unacceptable. The soil must be cleaned to at least area background levels (area background is defined in WAC 173-340-200), not baseline. A postclosure plan that provides for management of the unit within the CERCLA cleanup must be prepared.

Ecology Requirement: Compliance with the above is required.

DOE-RL/WHC Response No. 2: The terms "baseline" and "baseline threshold" will be replaced with the terms "local background" and "local background threshold." These terms and the term "action levels" will be included in the List of Terms section of the closure plan and defined as follows:

- Local background--The data set of chemical concentrations from samples obtained in the local vicinity of a facility. Samples within the facility will be compared to the local background data set to determine the presence or absence of contamination from the

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facility. In this case, the samples to determine the local background concentrations would be obtained within the 300-FF-3 Operable Unit.

- Local background threshold--Refers to the concentrations that define an upper limit of the local background population. It is not an average local background concentration. It is determined statistically (e.g., the tolerance interval approach to the analysis of variance).
- Action levels--Chemical concentration levels that will prompt an action. Action level values will commonly be local background threshold concentrations and health and environmental based concentrations.

To facilitate closure, the 303-K Facility will be viewed as consisting of three components; the building, the floors and pads (concrete and asphalt), and the soil. These three components will be evaluated separately for closure of the facility. The building, concrete floor, and the concrete and asphalt pads will be decontaminated to TCLP regulatory levels or removed.

With the exception of an imminent danger, all necessary soil remediation will be accomplished under the CERCLA RI/FS process. If the soil within the 303-K Facility boundary is found to be contaminated (chemical concentrations above local background threshold and health based standards) from operations conducted (chemicals used or waste stored) in the 303-K Facility, the facility will not be considered closed until the remediation under CERCLA is complete. However, if chemical concentrations are below the local background threshold and health based standards, the 303-K Facility will be considered closed. As described in the Tri-Party Agreement, any source contamination in the soil from past operations (such as manufacturing fuel rods) in the 300 Area, will be evaluated and remediated under the CERCLA RI/FS process. Methods used to determine chemical concentrations for health based standards will be scientifically and technically defensible, e.g., the Model Toxic Control Act, WAC 173-340.

The paragraph starting with line 32 on page 6-1 will be changed as follows:

"If the concentration of any constituent identified in Chapter 7.0, Table 7-1, is above the initial action level (local background threshold), the action level will be reevaluated.

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This measure is proposed because contaminate concentrations for soil which may exceed an action level, may also be below any health or environmental-based risk level. Any additional evaluation would be based on 1) the type and extent to which the action levels are exceeded, and 2) assessment of health-based risk. Health-based risk standards will be scientifically and technically defensible and criteria guidance will be used such as the Model Toxic Control Act, WAC 173-340 (Ecology 1990), the EPA IRIS database (EPA 1989b), the Human Health Evaluation Manual (EPA 1989a), and other appropriate information. If dangerous constituents are determined to exist in the soil in concentrations above action levels, closure for the soil will be complete after the remediation of the 300-FF-3 Operable Unit under the CERCLA RI/FS process. With the exception of imminent hazard, all soil remediation will take place under the CERCLA RI/FS process for the 300-FF-3 Operable Unit."

The flow chart (Figure 6-1) shows the closure strategy for the 303-K Facility.

Section 8.2, Postclosure Care, in the 303-K Facility closure plan will contain the following text.

"Postclosure care is generally required when a waste management facility cannot attain clean closure. At the 303-K Facility, underlying soils and groundwater may have been contaminated by waste generated during operations in the 300 Area. Under the Tri-Party Agreement, source contamination and groundwater will be investigated and remediated through the operable units under the CERCLA RI/FS process.

With the exception of an imminent health threat, all soil remediation will take place under the CERCLA RI/FS process. If the soil within the 303-K Facility boundary is found to be contaminated (chemical concentrations above local background threshold and health based standards) from operations conducted (chemicals used or waste stored) in the 303-K Facility, the facility will not be considered closed until the remediation under CERCLA is complete. During the time between closure of the building, floor, and pads and any soil remediation under CERCLA, steps will be taken to isolate any contamination.

Any data obtained from sampling and analyses during RCRA closure activities will be part of the record and included in the closure plan. This data will be taken into account and used

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during the CERCLA evaluation of the 300-FF-3 Operable Unit, as well as data collected specifically for the CERCLA evaluation.

Temporary covers will be installed, if necessary, to prevent migration of any contamination. The temporary covers would be less permeable than the surrounding soil and may be composed of constituents such as asphalt, clay, or a fixative spray. The existing facility floor and pads may be used as covers if they were found to be uncontaminated or were decontaminated. The exact nature of any covers would be determined at the time the need was identified and this information would be added to the closure plan. In addition, access to the areas of contamination would be controlled if necessary to protect personnel or prevent the migration of contamination.

During the period between closure and soil remediation under CERCLA, the facility area would be inspected at a minimum of once a week. This inspection would be combined with facility inspections presently conducted. The inspections would determine the need for maintenance of any temporary covers or other physical barriers. Any required maintenance would be performed by trained personnel from the Hanford Site."

Ecology Response No. 2: Ecology is developing a policy for soil closure standards. It is anticipated that this policy will impact the proposals made by USDOE/WHC. In keeping with the Tri-Party Agreement, an integral part of this policy will be the goal of only one remediation at any unit; i.e., it will not be acceptable to postpone any part of the closure activities to the 300-FF-3 Operable Unit response. This will not preclude future remediation activities during the postclosure period. This closure policy will be made available to USDOE/WHC as soon as possible.

DOE-RL/WHC Response No. 3: Due to the delay in the release of the policy on soil closure standards being developed by Ecology, our position on these comments remain essentially the same.

With the exception of an imminent health threat, it is still the position of DOE-RL and WHC to defer all soil remediation (if needed) to the CERCLA RI/FS remediation process. Deferring soil remediation to the CERCLA process would make any remediation more efficient and would avoid the possibility of cleaning a small area twice. If a larger area was being remediated,

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which extended around a smaller area that was previously remediated, the remediation could be very inefficient. One of the main purposes of the Tri-Party Agreement was to integrate RCRA and CERCLA activities. According to the Tri-Party Agreement ".... a procedure to coordinate the TSD unit closure or permitting activity is necessary to prevent overlap and duplication of work, thereby economically and efficiently addressing the contamination."

Ecology Response No. 3 (Rev. 1): This section must be revised to reflect the standards in the SCR policy. In particular, the 303-K closure standards will be either background, landfill standards, or the modified landfill standards and constituent concentrations found in the table of the SCR.

DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.

14. Page 6-2, line 1. The concept of "baseline concentrations" is neither appropriate nor acceptable for a clean closure performance standard. This discussion should be directed towards a determination of background.

Baseline concentrations are appropriate to use for an interim cleanup level for soils prior to the 300-FF-3 Operable Unit investigation. Baseline may only be used for soils and the soils must be remediated to the baseline level via implementation of this closure plan.

Ecology Requirement: Rewrite this discussion to include background as the clean closure performance standard. The text should also be rewritten as appropriate to incorporate the concept of baseline as outlined previously. Refer to the 300 Area Solvent Evaporator (ASE) Closure Plan for further guidance.

DOE-RL/WHC Response No. 1: A definition of baseline will be added for clarification (see response number 12). However, the baseline (local background) will be used to determine if the soil, concrete floors and pad, and asphalt pads can be clean closed.

Concrete slabs could have wide variations in concentrations of inorganic elements, depending where the cement and aggregate were obtained. Because of the potential for wide variations, a concrete background sample must be taken from the same pour.

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A concrete background sample will be obtained by taking a core of the concrete slab in an area where contamination is least likely and away from cracks or other potential pathways. The concrete slabs are approximately 6 inches thick. The core will be cut into four equal sections perpendicular to the core and analyzed. The analytical results from each section will be compared to determine the baseline for the concrete slab.

The center and lower portion of a 6-inch concrete slab would not be contaminated from the operations conducted in the 303-K Facility even if the surface was contaminated by some method (i.e., spill), unless a pathway or crack existed. The contamination assessment conducted for the 300 ASE closure plan indicated that water with solvents would not penetrate the concrete more than 3/8 inch, and TCE and PCE no more than 2 millimeters under the scenario outlined. The scenario would be worse than a worse-case scenario in the 303-K Facility. This information will be included in the text.

Ecology Response No. 1: The DOE-RL/WHC proposes sole use of samples obtained within the 304 Concretion Unit for establishing background concrete contamination levels. This is not acceptable.

Ecology Requirement: Concrete samples from areas not subject to contamination must be used for establishing background concrete contamination values.

DOE-RL/WHC Response No. 2: Although the original proposal for obtaining background samples is valid, there may be problems in ensuring representative samples due to the aggregate in the concrete and in the number of samples necessary for statistical validity. An appropriate alternative method may be the Toxicity Characteristic Leaching Procedure (TCLP) to demonstrate the concentrations of constituents in the concrete are below regulatory concern, i.e., if they are below the TCLP regulatory limits, they are not deleterious to the environment or human health. The advantages to this approach would be the use of established procedures, fewer samples, less impact on the facility, and less uncertainty in the results.

Ecology Response No. 2: This approach is too narrow in scope; the designation procedure delineated under WAC 173-303-070 must be followed for clean closure.

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DOE-RL/WHC Response No. 3:	The position of DOE-RL and WHC remains essentially the same. This issue will require further discussion.
<u>Ecology Response No. 3 (Rev. 1):</u>	In order to expedite the determination of background values for concrete, Ecology is requiring that core samples of the roof in the south half of the building be taken. This location was chosen because it was not impacted by past practices, and it is reasonable to expect that it is composed of the same cement, sand, and aggregate mixture as the rest of the 303-K building. Pour core samples must be drilled, with the center inch of the core sliced out, the aggregate removed, and the resulting sand/cement mixture analyzed. This approach will ensure statistical validity of the data, and that variations due to the aggregate will be minimized or eliminated. The technical details of this procedure will be discussed at future unit manager meetings.
DOE-RL/WHC Response No. 4:	There is no guarantee that the concrete in the roof contains cement, sand, or aggregate from the same sources as the rest of the building and pads. The concrete for the roof could have been poured months after the floor was poured. In addition, this would not serve as background for the concrete pad which was poured ten years later. DOE-RL and WHC still maintain the best method for determining if the concrete is contaminated by constituents stored or used in the building is to use the TCLP extraction method for the reasons stated below.
	Concrete at the Hanford Site can have wide variations in concentrations of inorganic elements, depending where the cement, sand, and aggregate were obtained and the amount of each used. The concentrations of the inorganic elements could vary as much or more (depending on the source of the cement, sand, and aggregate) as the concentrations found in sitewide background study for soil. Because of the potential for these wide variations, any concrete background samples must be obtained from the same pour as the concrete to be sampled for contamination. If background samples cannot be obtained from the same pour, an analytical method must be used that will reduce the possibility of extracting constituents from the aggregate and sand (i.e., dissolving part of the aggregate and sand). In addition there can be problems in ensuring representative concrete background samples due to the size and amount of the aggregate present and obtaining enough samples necessary for statistical validity. For these reasons the TCLP extraction method is the preferable method to be used on concrete samples for inorganic constituents.

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	<p>The TCLP analytical method is designed for measuring the concentrations of constituents introduced or mobilized into the environment and is not as likely to extract elements from the aggregate and sand as will the aggressive 3050 (SW-846) extraction method.</p> <p>The TCLP extraction method has the advantages of an established procedure, less likely to leach elements from the sand and aggregate, less uncertainty in the results, fewer samples, less impact on the facility, and the potential for generating less waste. The TCLP extraction method will also help eliminate the problem of erroneous designation resulting from the 3050 extraction method (e.g. essentially all soils will designate in accordance with the present designation criteria due to trace amounts of naturally occurring elements such as arsenic and lead).</p>
16.	<p><u>Pages 6-3/6-4, Figure 6-1.</u> Although the logic behind this flow chart is appropriate, the performance standard associated with the decision points is not appropriate (refer to comment numbers 1 and 12).</p> <p><u>Ecology Requirement:</u> Redo the flow chart to show the appropriate closure standards.</p> <p>DOE-RL/WHC Response No. 1: Another flow chart will be included to show general closure strategy. See response numbers 1, 12, and 14.</p> <p>DOE-RL/WHC Response No. 2: The flow chart in Figure 6-1 has been revised.</p> <p><u>Ecology Response No. 1:</u> The flowchart is acceptable but will probably require some revision to accommodate the closure policy currently under development. It must be properly identifies in a legend. See number 12.</p> <p>DOE-RL/WHC Response No. 3: Due to the delay in the release of the policy on soil closure standards being developed by Ecology, our position on these comments remain essentially the same.</p> <p><u>Ecology Response No. 2 (Rev. 1):</u> This flow chart must be modified to reflect the closure path chosen for the 303-K unit, in accordance with the SCR. For example, the soil background levels box is not consistent with the SCR, since the SCR does not utilize local background</p>

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	<p>levels. If two or more of the options under the SCR are chosen, each must either adhere to the flow chart, as modified, or each option must have its own flow chart.</p> <p>DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.</p> <p>It is still the position of DOE-RL and WHC that a TSD unit is only responsible for the constituents managed at that particular unit. This is substantiated by WAC 173-303-610(2)(b)(i) and (ii). Due to the potential for wide spread contamination in the 300 Area from past practice operations, such as fuel fabrication, it would be inappropriate to use site-wide background (which excluded the 300 Area) for comparison to samples from the 300 Area. Any general contamination would be from past practice operations and remediated with the 300-FF-3 operable unit. For these reasons local background is appropriate for TSD facilities in the 300 Area.</p>	
17.	<p><u>Page 6-5, line 15.</u> The statement that soil remediation will occur under the CERCLA process is premature. This decision will be made after evaluation of the sampling and analysis effort from the facility.</p> <p><u>Ecology Requirement:</u> Change the text accordingly.</p> <p>DOE-RL/WHC Response No. 1: The text will be revised to read "The decision on remediation of soil (clean to baseline or defer to CERCLA) will be made after sample analyses are obtained and evaluated."</p> <p><u>Ecology Response No. 1:</u> The DOE-RL/WHC propose to revise the text to, "The decision on remediation of soil (clean to baseline or defer to CERCLA)..."</p> <p><u>Ecology Requirement:</u> The soils must be remediated to at least area background contamination levels. See comment number 12.</p> <p>DOE-RL/WHC Response No. 2: With the exception of an imminent danger, all necessary soil remediation will be accomplished under the CERCLA RI/FS process. See response number 12.</p>	

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Ecology Response No. 2: Compliance with the N&MWMP closure policy will be required. See number 12.

DOE-RL/WHC Response No. 3: Due to the delay in the release of the policy on soil closure standards being developed by Ecology, our position on these comments remain essentially the same.

Ecology Response No. 3 (Rev. 1): The language in this section must be changed in accordance with the closure option pursued at the 303-K unit. Much of the language in this section of the closure plan must be modified to adhere to the SCR.

DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.

23. Page 7-3, line 7. The text states that test methods used in the sampling and analysis plan will be "equivalent" to SW-846. This statement is not appropriate. The sampling and analysis plan must use the exact methods identified in SW-846. Only specific test variations which are approved by Ecology are acceptable.

Ecology Requirement: Specify the tests to be used will be those in SW-846. Further, identify the exact test methods to be used. Should DOE wish to use alternate test methods, follow the procedures outlined in WAC 173-303-910.

DOE-RL/WHC Response No. 1: A table will be prepared indicating the methods to be used. Deviations from these methods will be fully described in the closure plan for review by Ecology.

Ecology Response No. 1: The DOE-RL/WHC will describe any deviations from required test methods.

Ecology Requirement: Procedures for any test method which deviates from required test methods must be submitted to Ecology with a request for approval of the substitute method.

DOE-RL/WHC Response No. 2: Table 7-1 was revised to include analytical test methods.

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Ecology Response No. 2: The revised table has some mistakes. For example, the analytical method referenced for measurement of chloride in soils is SW-846, 7000, yet this test does not measure chloride. Correct the errors in this table and resubmit it for Ecology approval.

DOE-RL/WHC Response No. 3: Table 7-1 has been revised. The revised table is in revision 1 of the closure plan.

Ecology Response No. 3 (Rev. 1): The methods listed in Table 7-1 have some problems associated with them. Namely, there is a SW-846 method for chloride analysis, but the listed method is an EPA Method 300.00. Why was this method chosen over the SW-846 method? Why was SW-846 method 7061 chosen over 7060, knowing that chromium, nickel, mercury, and silver may be present? For mercury, SW-846 method 7471 may be more appropriate than 7470 for soil samples. Also, there is a typo on line 14, EPA is misspelled as EAP. Please review this table and provide the justifications for using the methods above, and correct the typographical errors. Ecology must approve any alternative method that is not listed in WAC 173-303-110.

DOE-RL/WHC Response No. 4: At this time there is no SW-846 method for nitrite. The EPA method 300.0 was chosen because that method can determine all three of the anions planned for analysis (chloride, nitrate, and nitrite). If Ecology prefers SW-846 method 9250 could be used for chloride, SW-846 method 9200 for nitrate, and EPA method 300.0 for nitrite. However, this may not be the best alternative.

The SW-846 method 7061 for arsenic will be changed to SW-846 method 7060. The SW-846 method 7470 for mercury will be changed to SW-846 method 7471.

The typographical error has been corrected.

24. Page 7-3, line 11. The text states that soil sampling will occur to a depth no deeper than 1 foot. There is no valid justification for this procedure (refer to comment number 32). Further, the constituents found at the 303-K Facility (particularly organic contaminants) have the ability to migrate to depths beyond 1 foot.

Ecology Requirement: Change this statement to include a more adequate soil sampling program. A 1-Foot sampling depth will not be accepted.

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DOE-RL/WHC Response No. 1: Information to date suggests any potential organic or inorganic contamination from the 303-K Facility would be located in the uppermost part of the soil column. However, the soil sampling depth will be reevaluated using contamination scenarios and assessments similar to those presented in the 2101-M Pond Closure Plan. The objective of these assessments will be to determine the most likely location of any potential contamination from this facility in the soil column. The information will be presented and discussed with Ecology in a future unit managers meeting.

Ecology Response No. 1: Development of a soil sampling plan based on the 300 ASE is inappropriate; the 300 ASE is located on top of a burial ground.

Ecology Requirement: The soil sampling plan must address vadose zone contamination at this unit. Refer to the 2101-M Pond Closure Plan in development for guidance.

DOE-RL/WHC Response No. 2: The previous response referencing the 300 ASE closure plan was in error. The reference should have been to the 2101-M Pond Closure Plan.

It can be shown that concentrations of inorganic constituents added to the soil by sorption from an effluent containing even drinking water levels of these constituents are greatest in the upper few millimeters, and decreases with increased thickness of the soil column. Due to the well known process of sorption (Conway 1982, Freeze and Cherry 1979, CRC 1984), any contamination remaining in the soil would be the result of equilibrium reactions and/or irreversible sorption. In either case, residual contamination would be most concentrated in the uppermost part of the soil column, with rapidly decreasing concentrations downward. Therefore, the uppermost part of the soil column is most likely to contain contamination if it is present.

It is also indicated that any contamination of the soil by organic solvents associated with the facility is likely to be small and, if present, dominate in the uppermost part of the soil column. The only pathway for the organic contaminants to the soil would have involved the transport of a very small fraction of any spill (no spills were reported) to the soil through cracks in the concrete floor. Due to the relatively small amount of potential contamination, the general lack of evaporation under the concrete floor, and the tendency for

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such small amounts to be retained in the soil, any potential organic contamination from this source is most likely to be present in the upper part of the soil column.

Because the potential contamination from the 303-K Facility would remain in the upper part of the soil column, a maximum sampling depth of two feet would be adequate. During soil sampling, a sample will be obtained at the surface, at one foot, and two feet.

Ecology Response No. 2: While it is correct that sorbed contaminants would be expected to be in the uppermost layer, assuming that all contaminants will sorb is not correct. See, for example, Freeze and Cherry 1979 or W. B. Mills et al., Journal of Association of Ground Water Scientists and Engineers, March-April 1991.

Samples must be taken at the soil-concrete and soil-asphalt interfaces, one foot, two feet, and three feet depths. The closure plan must describe the sampling methods, sample sized, and analytical methods to be taken in the event contamination is detected. The closure plan must have detailed the event contamination is detected. The closure plan must have detailed provisions for further actions if contamination is detected at three feet (the lowest horizon). This contingency must be provided for in the scheduling of the closure activities. In other words, the closure plan must have contingency plans (including scheduling) for sampling to and removal/remediation of contamination at depths greater than the initial soil sampling. In addition, all phases of the closure activities must occur in a timely fashion (including any resampling and removal/remediation necessary).

DOE-RL/WHC Response No. 3: The soil sampling for the 304 Concretion Facility Closure Plan now states samples will be taken at the surface, one ft, 2 ft, and 3 ft. However, it is still the position of DOE-RL and WHC to only sample to a maximum of three feet. Any deeper sampling and analyses will be conducted during the CERCLA RI\FS process. See comment number 12, DOE-RL/WHC Response No. 3.

Ecology Response No. 3 (Rev. 1): The proposed soil sampling is appropriate for determining the extent of contamination, however, soil remediation will comply with the SCR. Any appropriate changes to this section pursuant to the SCR must be made prior to approval of this plan.

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DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.

25. Page 7-3, line 19. The text states that the sampling and analysis program has been designed to determine if contaminants are present "that are regulated by Ecology." The *Federal Facility Agreement and Consent Order*, Section 6.3, states that treatment, storage, and/or disposal units will "normally close with consideration of all hazardous substances, which include radioactive constituents." The 303-K Facility closure plan must address all constituents present at the unit.

Ecology Requirement: Clarify the text to state that all hazardous constituents found at the 303-K Facility will be addressed in the closure plan.

DOE-RL/WHC Response No. 1: Analyses will be conducted for all of the dangerous waste constituents stored at the facility. These constituents are determined from operation records from the 303-K Facility. The text will be modified to reference WAC 173-303.

Ecology Response No. 1: The DOE-RL/WHC state that all of the dangerous waste constituents stored at the 303-K Facility are listed in Table 7-1.

Ecology Requirement: This table must be revised to list all constituents of concern. This includes any radioactive constituents. Refer to Section 6.3 of the *Hanford Federal Facility Agreement and Consent Order*. This requirement also applies to comment numbers 26 and 27.

DOE-RL/WHC Response No. 2: The waste stored and the chemicals used over the life of the 303-K Facility are known. The newly added table (see response number 7) will be reevaluated to determine if any potentially hazardous substance was omitted from the compliance list (Table 7-1) of the closure plan. According to WAC 173-303-610, the facility is only responsible for potentially hazardous substances managed at the facility. Any contamination in the soil from operations in the 300 Area will be evaluated and remediated under the CERCLA RI/FS process for the 300-FF-3 Operable Unit. See response number 12.

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Ecology Response No. 2: Although Table 7-1 does need to be reevaluated for omissions, the sole use of this table during the closure activities of this unit will be subject to the N&MWMP soil closure policy which is now in development. See number 12 for reference.

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DOE-RL/WHC Response No. 3: Due to the delay in the release of the policy on soil closure standards being developed by Ecology, our position on these comments remain essentially the same.

Ecology Response No. 3 (Rev. 1): This table must be revised to comply with the SCR. All contaminants will be remediated to the standards specified in the SCR.

DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.

28. Page 7-3, line 27. The text discusses the use of baseline threshold levels and "other criteria." As discussed in comment number 14, baseline criteria (for soils only) and background (concrete, asphalt, and other building components) will be used for closure criteria.

Ecology Requirement: Clarify the text accordingly.

DOE-RL/WHC Response No. 1: The text will be revised in accordance with the information provided in response numbers 1, 12, and 14.

DOE-RL/WHC Response No. 2: The paragraph starting on page 3, line 27 will be deleted. The paragraph starting on page 3, line 24 will be changed as follows.

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"A list of potential contaminants at the 303-K Facility and action levels are provided in Table 7-1. The analytical results of Table 7-1 will be compared to local background threshold concentrations and health-based concentration limits as action levels."

Ecology Response No. 2: the proposed text must be revised to be in accordance with the closure policy discussed in number 12.

DOE-RL/WHC Response No. 3: See comment number 12, response number 3.

Ecology Response No. 3 (Rev. 1): This text must be revised to comply with the closure approach chosen for the 303-K unit.

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DOE-RL/WHC Response No. 3: See DOE-RL/WHC Response No. 2, for comment number 1.

32. Page 7-9, Section 7.3.2.4.4. The text states that the soil sampling will occur to a depth of only 1 foot. Several references are given in support of this strategy. This sampling scheme is deficient (refer to comment number 24).

Ecology Requirement: Soil sampling will be required for depths greater than 1 foot. It is not appropriate to compare the soil characteristics around the single-shell tanks with that of the 300 Area to justify not sampling for metals and radionuclides. Further, List et al. (1976) and Jones (1978) do not investigate the evaporation of chlorinated organics in soils.

Finally, the statement that no driving head exists for contaminants under the building may be accurate, however, organic solvents can migrate to significant depths from an initial spill or from a small continuous source (such as a process sewer system). Similarly, any constituent mobilized by these solvents (i.e., metals and radionuclides) may be carried to greater depths than if they were not in the presence of solvents (refer to the 304-M closure plan for further discussion).

Therefore, in order to demonstrate clean closure or demonstration of baseline thresholds, soil sampling will be required to a depth greater than 1 foot. The DOE/WHC should propose the appropriate depths of sampling for review and approval by Ecology. This increased sampling depth should include soil sampling at regular intervals, with continuous logging for radiation.

DOE-RL/WHC Response No. 1: Sampling depths will be reevaluated (see response number 24).

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Ecology Response No. 1 (Rev. 1): See comment number 24.

DOE-RL/WHC Response No. 2: See DOE-RL/WHC Response No. 2, for comment number 1.

33. Page 7-9, Section 7.3.2.4.4. Although this section gives a description of the soil sampling activity, it is not clear if the entire 1-foot sample is to be composited or if discrete samples will be collected.

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Ecology Requirement: In addition to the soil sampling changes identified in comment number 24, compositing over a 1-foot interval is not acceptable. Discrete interval sampling must be accomplished at smaller intervals. Refer to the 2101-M closure plan for additional guidance.

DOE-RL/WHC Response No. 1: The actual number and length of the individual samples at one soil sample location will be determined after the sampling depth is reevaluated (see response number 24). This information will be made clear in the text.

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Ecology Response No. 1 (Rev. 1): The information describing whether these samples will be discrete over given areas or whether the intent is to composite, has not been completely resolved in this section. It should be noted that Ecology discourages composite sampling except in limited applications where there is evidence that contamination will be uniform. Add detailed information on how the discrete samples will be taken (e.g., the top inch, a one inch layer between 11 and 12 inches below grade, etc.).

DOE-RL/WHC Response No. 1: At one soil sampling point four discrete samples will be obtained, at the surface, at one foot, at two feet, and at 3 feet. The samples will not be composited. The depth of each sample will be approximately two inches (surface to 2 inches, eleven inches to one foot one inch, one foot eleven inches to two feet one inch, etc.). Enough soil volume will be obtained at each sample location to adequately analyze for the constituents of concern. This information will be added to the closure plan for clarity.

36. Page 7-14, line 1. The text describes baseline soil sampling that will occur within the 300-FF-3 Operable Unit and near the 303-K Facility, however, no detail has been given.

Ecology Requirement: Exact soil sampling locations are required for the baseline sampling program. Provide a map with the appropriate level of detail necessary to accurately show the proposed baseline sampling locations.

DOE-RL/WHC Response No. 1: A set of criteria for baseline values is currently under development in the 300 Area. This set of criteria is designed to ensure that the locations for baseline sampling will provide an accurate representation of local conditions. After the criteria have been developed, sampling locations will be selected and presented to Ecology.

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An appendix will be added to the closure plan with the baseline location criteria and the results of the baseline sampling.

Ecology Response No. 1: The DOE-RL/WHC are developing a set of criteria for baseline values in the 300 Area.

Ecology Requirement: The appropriate criteria is area background (see comment number 12). A plan for determining these values must be submitted to Ecology; it should include at least the sampling plan, a quality assurance/quality control plan, and a timetable for this effort. This plan may be submitted under separate cover and used for treatment, storage, and/or disposal units throughout the 300-FF-3 Operable Unit.

DOE-RL/WHC Response No. 2: Local background threshold values will be based on soil samples obtained at ten locations within the 300-FF-3 Operable Unit. Samples will be taken at the surface, at one foot, and at two feet at each location. When the sample locations have been determined, they will be included in the closure plan. Local background samples will not be taken in places of obvious contamination from past operations conducted in the 300 Area, however, any general contamination (if present) from past operations would be included. If general or source contamination exists, it would be from past practice operations and not from operations conducted in the 304 Facility. The Tri-Party Agreement states source contamination will be evaluated and remediated under the CERCLA/RI/FS process.

The local background sample analyses results will be analyzed statistically, using the tolerance interval test, to determine if the chemical concentrations from each sample are from a "hot spot." The purpose of the tolerance interval approach is to define a concentration range from local background data, within which a large proportion of the monitoring observations should fall with high probability. Any "hot spots" would fall outside of this range and not be included in the determination of the local background threshold (the initial action level).

Ecology Response No. 2: It is not clear if this proposed background determinations is to be used as part of the Hanford Site-Wide background study. If it is not, this should be clearly stated. If it is, this evaluation of the vadose zone background contaminant levels is too limited in scope. Because comparisons of contaminated vadose zone data to the 300 Area

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background data must be between the same soil horizons for this unit and others, the plan must be expanded to include deeper soil horizons. Refer to the Hanford Site-Wide soil background study for reference.

In the quoted statement, the first sentence is unsubstantiated and the second sentence is not in agreement with the general tenor of the Tri-Party Agreement and will not be in accordance with the closure policy under development by the N&MWMP. The quoted statement should be deleted.

DOE-RL/WHC Response No. 3: Soil samples from the 304 Concretion Facility will be compared to local background determined from samples obtained within the 300 Area and is not part of the Hanford Site-Wide background study. Due to the potential for general contamination throughout the 300 Area from past practice operations, it would be inappropriate to use Site-wide background for comparison to the 304 Concretion Facility samples. The locations for the 300 Area local background determinations have not been determined. When these locations are determined, the information will be added to the closure plan. Information on the 300 Area local background sampling can be found in Section 7.3.2.5.1 of the closure plan.

While it may not be substantiated, it is logical to assume any general contamination in the 300 Area would not be the result of the minor activities associated with the 304 Concretion Facility. Any general contamination would likely be from past practice operations such as fuel fabrication activities.

The second sentence is not in the closure plan.

Ecology Response No. 3 (Rev. 1): Soil cleanup standards are contained in the SCR policy. This section must be revised to comply with the SCR, and the closure option selected for the 303-K unit must be included. It may be appropriate to defer the selection of the closure option until after the sampling and analysis has been done, and the contamination levels at the unit are better understood.

DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 2, for comment number 1.

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37.	<p>Page 7-14, line 16. The text discusses the location for the soil sampling. The proposed area is to be within the boundary of the 303-K Facility. This is unacceptable. Baseline cannot be established from the treatment, storage, and/or disposal unit itself. Alternate locations must be provided.</p> <p><u>Ecology Requirement:</u> Locate and propose specific concrete and asphalt sampling locations which are not located within the boundaries of the 303-K Facility and not impacted by past practices.</p> <p>DOE-RL/WHC Response No. 1: See the discussion of concrete and asphalt baseline sampling in response number 14.</p> <p><u>Ecology Response No. 1:</u> Concrete and asphalt samples obtained within a treatment, storage, and/or disposal unit will not be accepted for determination of background contamination values.</p> <p><u>Ecology Requirement:</u> Refer to comment number 14.</p> <p>DOE-RL/WHC Response No. 2: Asphalt and concrete samples will be handled in the same manner. See response number 14.</p> <p><u>Ecology Response No. 2:</u> This approach is too narrow in scope; the designation procedure delineated under WAC 173-303-070 must be followed. See number 14.</p> <p>DOE-RL/WHC Response No. 3: The position of DOE-RL and WHC remains essentially the same. This issue will require further discussion.</p> <p><u>Ecology Response No. 3 (Rev. 1):</u> See comment number 14 regarding concrete sampling. Ecology proposes the use of this same process for determining asphalt background.</p> <p>DOE-RL/WHC Response No. 4: See DOE-RL/WHC Response No. 4 for comment number 14. Under Ecology's criteria, no adequate location would be available for background samples.</p>

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49. Page 7-27, line 39. The text states that a health and safety plan "will" be developed for the 303-K Facility sampling. This plan must be developed prior to approval of this plan.

Ecology Requirement: Include the site safety plan in this document.

DOE-RL/WHC Response No. 1: The 303-K Facility Health and Safety Plan will be included in the closure plan. This plan is titled *Hazardous Waste Operation Permit* and will be prepared in accordance with EII 2.2, *Preparation of Hazardous Waste Operations Permit*.

DOE-RL/WHC Response No. 2: A Site-Wide Health and Safety Plan is being prepared and will be referenced in the closure plan. In addition, the 303-K Facility specific health and safety plan will be prepared prior to sampling and added to the closure plan at that time. This plan is titled *Hazardous Waste Operation Permit* and will be prepared in accordance with EII 2.2, *Preparation of Hazardous Waste Operation Permit*.

Ecology Response No. 2: This is not acceptable. This plan must be submitted prior to approval of the closure plan; sufficient time for Ecology review is required. The health and safety plan must be included with the next submittal.

DOE-RL/WHC Response No. 3: The position of DOE-RL and WHC is still that stated in DOE-RL/WHC Response No. 2, comment 49.

Ecology Response No. 3 (Rev. 1): As discussed at the December 19, 1991 Unit Managers meeting, it may be acceptable to defer submittal of the Health and Safety Plan until just prior to sampling at the Site. This is contingent upon the submittal of an example Hazardous Waste Operation Permit to Ecology. The exact details of the timing of HASP submittal and the sampling plan/closure plan approval will be discussed at future Unit Manager meetings. There must also be a reference in this section to the interim status contingency plan and training plan for this unit, as well as to the facility-wide contingency and training plans.

DOE-RL/WHC Response No. 4: An example of a Hazardous Waste Operations Permit will be sent to Ecology. There does not appear to be any reason to reference the training plan and contingency plan for the operation of the 303-K TSD Unit in the closure plan. The information on training for closure of the TSD unit is already included in the closure plan

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in Section 7.3.12.3 and Appendix E. For the facility-wide contingency and training plans please see *Hanford Site Comments On The Draft Permit For The Treatment, Storage, And Disposal Of Dangerous Waste For The Hanford Facility*, Volume 1, Page 71, Condition II.A and Page 80, Condition II.C.

50. Page 7-28, line 12. The text references methods in this plan for containerizing rinse water and excess samples, etc., but does not give a citation.

Ecology Requirement: Give the appropriate reference citation for the proposed methodology.

DOE-RL/WHC Response No. 1: Disposal procedures of unknown or suspect waste materials are controlled by EII 4.2, *Interim Control of Unknown, Suspected Hazardous and Mixed Waste*. A summary of this information will be included in the text.

DOE-RL/WHC Response No. 2: Disposal procedures of unknown or suspect waste materials are controlled by EII 4.2, *Interim Control of Unknown, Suspected Hazardous and Mixed Waste*.

Waste materials are designated as unknown waste when:

- Criteria for suspected hazardous waste is not met, or
- field readings are suspect.

Waste material will be designated as suspected hazardous waste based upon process knowledge of material that is known to have been discharged to the area under investigation, provided:

- Direct instrumentation reading of organic vapor is in excess of 10 ppm above background levels, or
- pH is less than 3 or greater than 12.

Unknown waste drums will be moved to a collection area until laboratory analysis and final designation. Excess sample material and decontamination fluids (rinse water) will be

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containerized in 55-gallon drums. Materials (rags, personal protective equipment, etc.) will be designated with the waste it contacts.

Ecology Response No. 2: Because uranium contamination is a concern (due to the chemical toxicity of uranium) at this unit, radiation monitoring should be included in the field testing. Specify where this collection area will be and the time frames for designation.

DOE-RL/WHC Response No. 3: The procedures in EII 4.2 addresses the potential for radiological contamination. The title of EII 4.2 (shown in response number 2 of this comment) indicates it covers mixed waste as well as dangerous waste. The initial collection area will be at the 303-K Facility. Designation will be completed and the drum will be removed within 90 days after it is full.

Ecology Response No. 3 (Rev. 1): There are portions of E.I.I. 4.2 that are not acceptable practices. For example, it is not acceptable at this facility to delay the marking of the accumulation date for suspected hazardous waste until after the waste has been verified as dangerous waste or it meets the requirements of section 6.4 of E.I.I. 4.2. In general, this document is open-ended and vague, and does not consistently comply with WAC 173-303. It is more efficient to write specific requirements for decontamination and interim storage of suspected dangerous waste into this closure plan than to try to change the E.I.I.'s.

DOE-RL/WHC Response No. 4: RCRA sampling and remediation will follow the site wide procedure concerning investigative derived waste. EII 4.2 is presently being revised.

51. Page 7-28, line 16. The text discusses the disposal of material within a 90-day period. The "90-day clock" starts upon generation of the waste. Excessive time for sampling and analysis time will not be allowed as an excess for storing waste onsite for greater than 90 days.

Ecology Requirement: Change the text accordingly.

DOE-RL/WHC Response No. 1: Text will be modified to read "If the contaminants are found to be hazardous, arrangements will be made for proper offsite disposal of stored material within a 90-day period. The 90-day period will begin when the material is designated."

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Ecology Response No. 1: The DOE-RL/WHC propose revising the text to state, "The 90-day period will begin when the material is designated." As previously stated, the 90-day clock begins at the time of generation; counting the 90-day period from the time of designation is likely to result in noncompliance.

Ecology Requirement: Revise the text to state, "The 90-day period will begin when the material is generated."

DOE-RL/WHC Response No. 2: Text will be modified to read "These 55-gallon steel containers will be stored in a designated area at the dangerous waste site until each container is full. When the container is full, the contents will be tested for dangerous waste. If the contents are found to be dangerous, arrangements will be made for proper disposal of the materials. The disposal will take place within a 90-day period after a container is full."

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According to WAC 173-303-200(2)(a)(b)(c) and EII 4.2, the 90-day accumulation start date begins the day a waste is first generated or the day a quantity of suspected hazardous waste is being accumulated in containers in a storage location equals 55 gallons.

Ecology Response No. 2: Clarify whether the, "designated area at the dangerous waste site," means at the 303-K Facility or the Hanford Site. Specify the time frames for sampling and analysis of these wastes. Specify where these wastes will be disposed of if they are mixed waste.

DOE-RL/WHC Response No. 3: The initial collection area will be at the 303-K Facility. Designation will be completed and the drum will be removed within 90 days after it is full. If the contents of a drum are determined to be mixed waste, it will be moved to the Central Waste Complex within 90 days.

Ecology Response No. 3 (Rev. 1): Ecology's position is still that the waste must be removed within 90 days of generation, not designation. When the quantity of waste in a satellite accumulation area exceeds 55 gallons, the 90 day storage limit starts. At the 303-K unit, there must be a designated storage area for wastes generated during cleanup activities.

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DOE-RL/WHC Response No. 4: Agree. The initial collection area will be at the 303-K Unit and any waste will be removed within 90 days after the quantity exceeds 55-gallons. If the contents of a drum are determined to be mixed waste, it will be moved to the Central Waste Complex within 90 days.

54. Page 7-29, Section 7.5. This section discusses the decontamination and disposal of the building and concrete pads. The text states that a "decommissioning work plan" will be written for this activity. This is a closure activity and must be addressed in the closure plan.

Ecology Requirement: Include all decontamination and decommissioning work plans within the closure plan.

DOE-RL/WHC Response No. 1: A 'decommissioning work plan' is a generic term for the implementation procedure used to provide specific field direction to workers actually performing the decontamination and demolition. This information is included in Sections 7.4, 7.5, and 7.6 of the closure plan. The actual decommissioning work plan will specify sufficient detail for field implementation of the items addressed in these sections. The decommissioning work plan will be included as an appendix in the closure plan. This will take place just before the work begins.

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Ecology Response No. 1 (Rev. 1): The schedule for the submittal of the decommissioning work plan may be aligned with the HASP. However, if there is insufficient detail in the closure plan regarding the decommissioning activities, it will be required to be submitted prior to approval of the closure plan. It is important that Ecology be provided drafts of these documents prior to the start of work, since problems in the plans could delay the approval of the closure plan.

DOE-RL/WHC Response No. 2: The decommissioning work plan and the health and safety plan will be provided to Ecology for information only. These documents are not subject to approval by Ecology. The level of detail in the closure plan should be adequate. However, as stated above the documents may be added as appendices to the closure plan.

CORRESPONDENCE DISTRIBUTION COVERSHEET

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Subject: THE 303-K RADIOACTIVE MIXED-WASTE STORAGE FACILITY CLOSURE PLAN,
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Subject: THE 303-K RADIOACTIVE MIXED-WASTE STORAGE FACILITY CLOSURE PLAN,
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		B. G. Erlandson	B2-19	
		D. G. Farwick	H4-16	
		C. J. Geier	B2-19	
		E. M. Greager	L6-60	
		M. J. La Barge	B2-19	
		R. J. Landon	B2-19	
		R. E. Lerch, Assignee	B2-35	
		R. D. Lichfield	L6-57	
		P. J. Mackey	B3-15	
		H. E. McGuire, Level 1	B3-63	
		S. M. Price	H4-57	
		J. A. Remaize	L6-18	
		F. A. Ruck III	H4-57	
		J. P. Schmidt	X0-41	
		W. A. Skelly	H4-55	
		D. R. Speer	R2-77	
		D. J. Watson	X0-41	
		E. A. Weakley	L6-28	

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