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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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April 26, 1991



Mr. Steven H. Wisness  
Hanford Project Manager  
U.S. Department of Energy  
P.O. Box 550  
Richland, Washington 99352

**RE: Notice of Deficiency for the Low-Level Burial Grounds  
Dangerous Waste Permit Application**

Dear Mr. Wisness:

We have reviewed your Low-Level Burial Grounds Notice of Deficiency Response Table dated August 23, 1990. Enclosure 1 of this letter identifies the comments with which Ecology concurs. Enclosure 2 contains additional discussion on some of our previous comments, new comments to the permit application, and comments on Supplement 1 to the application, Request for Exemption from Lined Trench requirements for Submarine Reactor Compartments. Additional comments on the design of the cathodic protection system for the submarine reactor compartments and the mixed waste trench definitive design (Supplement 2 of the application) will be provided in approximately two months after a more detailed review.

The enclosed comments should be addressed and a response forwarded to our office by July 26, 1991. Your response should consist of a revised NOD response table.

Technical inquiries regarding this NOD should be directed to Ecology's Low-Level Burial Grounds Unit Manager, Mr. Joe Witczak at (206) 438-7557.

Sincerely,

Timothy L. Nord  
Hanford Project Manager  
Nuclear and Mixed Waste Management

Enclosures

cc: Dave Nylander  
Dan Duncan  
Sue Price  
T. Veneziano



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ENCLOSURE 1

Low-Level Burial Ground NOD Comments with Ecology Concurrence

1,2,3,4,6,8,9,10,11,12,13,15,17,23,24,25,27,32-101,104,108,110,111,112,113

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ENCLOSURE 2

NOD Comments for the Low-Level Burial Grounds

No.    Comment

- 5    Comment:    Section 2.7, Spills and Discharges, Page 2-57

Edit Section 2.7.2.3 to read "actions taken to restore an off-site impacted area and to replenish off-site resources is not required".

- 7    Deficiency:    Section 3.1, Chem, Bio and Physical Analysis, Page 3-2

Although the correct reference has been provided in the response, the Extraction Procedure Toxicity test is no longer accepted.

Requirement:    All references to future toxicity testing must reference the Toxicity Characteristic Leaching Procedure (TCLP). WAC 173-303-090(8) (October 16, 1990)

- 14    Comment:    Section 4.1.2.1, Test for Free Liquids, Page 4-3

The alternate methods of testing for free liquids should be presented in the next NOD Response Table. This discussion must also justify the equivalency of any alternate method to the Paint Filter Method.

- 15    Comment:    Section 4.6.1, List of Wastes, Page 4-4

Concurrence with this response will be based upon the additional information to be submitted. This information should be provided as soon as possible to facilitate our evaluation. In addition, the trench locations where liquids have been disposed must also be identified.

- 16    Deficiency:    Section 4.6.2.1, Exemption Based on Existing, Pg 4-5

Although trenches which were operational and received mixed waste prior to November 23, 1987 are exempt from the double-liner requirements of HSWA, the portion of these trenches which did not receive wastes must still meet the single liner with leachate collection system required prior to HSWA.

Requirement:    The additional information to be provided should also specify what portions of each trench did not contain wastes on November 23, 1987. In addition, the term "notification of" on line 21 must be replaced with "approval from."

- 18    Comment:    Section 4.6.3.3.1, Liner System Description, Page 4-12

Until the definitive design is complete, Ecology will not issue a dangerous waste permit for the dragoff mixed waste trench. If this trench is not scheduled for design and construction in the near future

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(within the next 12 months), all references to this trench should be eliminated from the Part A and the Part B applications. A permit modification can be used if and when the dragoff trench becomes a reality.

- 19 Deficiency: Section 4.6.3.3.2, Stresses from Equipment, Page 4-13

The response is unclear. If burial ground 218-W-5 is a nondrag-off burial ground, why would it be the only burial ground addressed in a permit section discussing the effects of dragging boxes? Furthermore, the text appears to indicate that the sole purpose of the test pad is to evaluate operational stresses on the liner. The test pad must also be constructed to determine the acceptability of the soil liner construction and design specifications. Section 4.6.5.5.1 discusses some field tests for the liner, but does not indicate whether these tests are for both the dragoff and non-dragoff trenches, nor if these will be performed on a test pad or the installed liner.

Requirement: Please clarify the response and provide more detail for the dragoff test pad if the dragoff trench is to be included in the application (see comment 18).

- 20 Comment: Section 4.6.3.4, Liner System Coverage, Page 4-14

This comment will be addressed in a subsequent NOD to be issued for the definitive design document.

- 21 Deficiency: Section 4.6.3.5, Liner Exposure Prevention, Page 4-14

Comment 20 also applies here.

- 22 Deficiency: Section 4.6.4.3.4, Hydraulic Conductivity, Page 4-26

Line 4 and 5 indicate that some hydraulic conductivity test results from the unsaturated zone were not available at the time of preparing the permit application. These results should be available now.

Requirement: A summary of these test results should be provided in the application.

- 26 Deficiency: Section 4.6.5.3.4, Thermal Stresses, Page 4-37

Comment 20 also applies here.

- 28 Comment: Section 4.6.6.1.1, Primary System, Page 4-44

Comment 20 also applies here.

- 29 Comment: Section 4.6.6.1.2, Secondary System, Page 4-46

Comment 20 also applies here.

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30 Comment: Section 4.6.6.5, System Compatibility, Page 4-47

Comment 20 also applies here.

31 Comment: Sections 4.6.5.3.2 and 4.6.6.6.1, Weight of Overlying Material and Stability of Drainage Layers, Pages 4-36 and 4-47

Transmissivity tests should indicate adequate performance (i.e. transmissivity greater than  $5 \times 10^{-4}$  m<sup>2</sup>/sec) at 1.5 times the maximum expected load which the geonet will experience. Furthermore, the manufacturer's test data and results must be submitted to Ecology. Comment 20 also applies here.

94 Comment: Appendix 7A, Sample Procedure, Page 7A-1

In addition to the description of operations which will be provided, a statement must be made indicating the locations of the actual procedures.

102 Deficiency: Section 11.1.1.2, Removal or Decontamination, Page 11-22

After the waste is retrieved from a trench, any further use of that trench would be considered replacement and would therefore be subject to double liner requirements. Furthermore, it would not be prudent to leave uncontainerized, contaminated soil in place when it can easily be identified and removed. The identification of soil contamination, if any, would also provide valuable insight into the potential extent of contamination beneath other trenches as well as other disposal sites at the Hanford Reservation.

Requirement: After waste retrieval, soil sampling must be conducted. The results of this sampling will determine any further actions to be taken and future use of the trench. The permit application must contain a generalized sampling plan for this situation. A detailed sampling plan need not be developed until the soil beneath the retrievable waste is visually inspected.

103 Deficiency: Section 11.1.4.1, Retrievably Stored TRU Waste, Page 11-25

The response is erroneous. The Central Waste Complex has experienced the corrosion of drums stored on exposed pads for periods far less than 10 years. Furthermore, it is not acceptable to only state that the text will be revised.

Requirement: Either retract the first sentence of the response or expand the response to discuss the reality of storing containerized dangerous waste in a semiarid climate. In addition, provide the revised text as part of this response.

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105 Comment: Section 11.1.4.5, Decon and Disposal Procedures, Page 11-28

Ecology's concern in this comment is not so much whether soil sampling should occur as discussed in comment 102, but a reiteration of the concern raised in comment 103. In other words, what steps have and will be taken to prevent the soil contamination in the first place? The response to this comment need only note that this section will reflect any text changes resulting from the resolution of comments 102 and 103.

106 Deficiency: Section 11.1.5.2.1, General Description, Page 11-29

Although the calculations support the use of a 1.5% slope, a 3.0% slope would provide for unanticipated settlement/subsidence as well as meet the recommended guidance.

Requirement: All final cover slopes must be no shallower than 3.0%. This grade must not vary more than 1/10 of a foot in 16 feet.

107 Deficiency: Section 11.1.5.2.2.1, Native Soil Grade Layer, Page 11-48

It is typical construction practice to place soil in 6 - 8 inch lifts when compaction or permeability are critical factors. Evaluating lift depths of up to 2 feet would only encumber the test pad evaluation.

Requirement: All soil and soil mixtures must be placed per the accepted practice of 6 - 8 inch lifts.

109 Comment: Section 11.1.5.2.2.6, Drainage Layer, Page 11-52

Comment 106 also applies here.

114 Comment: Appendix 4A, List of Mixed Waste

The fact that "carcinogens" cannot be more specifically defined should be stated in the Chapter 4 text where this appendix is referenced.

115 Deficiency: Part A Permit Application, Page Part A-iii

It is inappropriate to dismiss a dangerous waste designation simply because certain tests have not been conducted. Unless toxicity testing proves otherwise, all elemental lead (whether used as shielding or not) must be designated as D008 as well as WT01. Designation of elemental lead as D008 is recognized in the liner exemption request (page 2-3).

Requirement: Any lead disposed of at the LLBG or elsewhere on the reservation must be designated as WT01 and D008. This correction needs to be made throughout the text. Furthermore, TCLP testing should be cited instead of EP Toxicity testing.

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116 Deficiency: Part A Permit Application

The drawings provided in the Part A application, duplicated from Figures 2-7 through 2-14 of the Part B application, are illegible and therefore unacceptable. Furthermore, these drawings do not identify which trenches contain mixed waste.

Requirement: Legible drawings must be provided and must identify which trenches contain mixed waste.

117 Deficiency: Section 2.1.1, Hanford Site, Page 2-3

It is not clear what is meant by "Heads of field documents" as used on lines 47 and 48.

Requirement: Please clarify the text.

118 Deficiency: Section 2.1.1, Hanford Site, Page 2-4

The definition of mixed wastes on lines 6-8 is inadequate because it does not include radioactive waste containing dangerous constituents not regulated by RCRA.

Requirement: Although DOE Order 5820.2A may not take into account state laws and regulations, the text must be edited to indicate that mixed waste at the Hanford Reservation includes waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Hazardous Waste Management Act. RCW 70.105.109

119 Comment: Section 2.1.1, Hanford Site, Page 2-4

The regulation of radionuclides will be addressed in the facility wide permit. Delete the sentence beginning on line 12.

120 Deficiency: Section 2.1.2.1, Past Practices, Page 2-6

It is not clear in the last paragraph of this page and the first paragraph of page 2-11 if liquid waste (whether mixed waste or not) with a dose rate greater than 200 millirem per hour is still being placed in the trenches. Liquid dangerous/mixed waste can no longer be land disposed per WAC 173-303-140.

Requirement: The discussion must indicate what type of liquid wastes, if any, have been or continue to be disposed of or stored in the trenches since November 23, 1987.

121 Deficiency: Section 2.1.2.1, Past Practices, Page 2-11

The fire retardant that was used on the plywood may contain dangerous constituents which could eventually leach out of the burial ground. The text does not indicate if this possibility has been considered.

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**Requirement:** The text should specify what type of fire retardant was and currently is used on the plywood within the burial grounds. A discussion should also be presented on the leaching potential of this material.

122 **Deficiency:** Section 2.1.2.1, Past Practices, Page 2-11

Although trenches which received mixed waste and discontinued operation prior to November 23, 1987 are not subject to permitting under WAC 173-303, they are subject to the Hazardous and Solid Waste Amendments (HSWA) to RCRA.

**Requirement:** The application must incorporate the above text. In addition, the term "were backfilled" on line 31 should be replaced with "discontinued operation."

123 **Deficiency:** Section 2.1.2.1, Past Practices, Page 2-11

Trenches which were constructed prior to November 23, 1987 but did not receive mixed waste until after November 23, 1987 are not considered existing units and therefore are not exempt from the liner requirements. Therefore, some "unfilled" trenches may be subject to the liner requirements.

**Requirement:** Edit the last sentence of this section to read "The existing units include trenches which received mixed waste and were constructed prior to November 23, 1987."

124 **Deficiency:** Section 2.1.2.3, Closure, Page 2-22

The distinctions drawn between the types of trenches are important to determine the applicable regulations. Although Appendix 4B aids in the identification of how each trench is classified, there is no visual aid to illustrate the locational relationship of each type of trench.

**Requirement:** New figures should be provided or Figures 2-7 through 2-14 should be elaborated to distinguish the types of trenches within each burial ground (see comment 116).

125 **Comment:** Figure 2-7, Burial Ground, Page 2-25/2-26

Typo. The proper identification number for this burial ground is "218-W-3A", not "218-2-3A". Please correct.

126 **Deficiency:** Section 2.5.1, Measures to Prevent Degradation, Page 2-53

It is not clear if the discussion in this section on liquids in the trenches refers only to mixed waste placed prior to November 23, 1987. See comment 120.

**Requirement:** The text should be clarified to indicate what, if any, liquid waste has been disposed in the trenches after November 23, 1987.

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127 Comment: Section 3.1, Chem, Biol and Phys Analysis, Page 3-2

Waste analysis procedures for the Hanford Site are under development through the facility wide permit negotiations. The specific requirements for waste verification prior to disposal at the LLBG will be addressed upon resolution of this issue.

128 Deficiency: Section 3.1.2, Containerized Waste, Page 3-4

The text states that the mixed waste disposed at the LLBG is packaged "to ensure isolation from the environment for 20 years". It is unacceptable to only design for 20 year isolation.

Requirement: It is Ecology's understanding that USDOE policy requires mixed waste disposal practices to isolate mixed waste for much greater periods of time, in some cases up to 10,000 years. Provide additional discussion in the application defending the 20 year time period in relation to both USDOE policy and dangerous waste closure performance standards.

129 Deficiency: Section 3.1.5, Landfilled Wastes, Page 3-5

The definition of free liquid given on lines 1 and 2 is not consistent with the dangerous waste regulations.

Requirement: The definition of free liquids should reference the Paint Filter Liquids Test as described in SW-846. WAC 173-303-140(4)(b)

130 Comment: Section 3.2, Waste Analysis Plan, Page 3-6

Comment 127 also applies here.

131 Comment: Section 3.2.3, Waste Shipment, Inspection, Page 3-7

Comment 127 also applies here.

132 Comment: Section 3.2.4, Generator Oversight, Page 3-8

How long has the generator assessment program been used? How many noncompliant waste packages have been identified through this program? The application should describe who the "waste certification review committee" is, how often they meet, what criteria they use, etc.

133 Comment: Section 3.2.4, Generator Oversight, Page 3-8

The overall planning efforts of the assessment team should not be directed toward "minimizing impacts to generator operations", but to ensuring environmentally safe packaging and adequate waste analysis.

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134 Deficiency: Figure 3-1, Sample Assessment Checklist, Page 3-9

It is unclear what is meant in item 4 of this checklist which asks "Are radioactive waste analyzed for dangerous constituents and their constituents?"

Requirement: Correct or clarify item 4 on this checklist.

135 Comment: Table 3-1, Mandatory Waste Characterization, Page 3-14

Item 7 must be corrected to indicate the TCLP test.

136 Deficiency: Section 3.2.7, Sampling Methods, Page 3-16

Composite sampling should only be conducted when it is reasonable to assume the constituent concentrations are evenly distributed. Otherwise, samples should always be taken from the location where the highest chemical concentrations are expected. Furthermore, if a phase separation exists, each portion must be sampled and analyzed.

Requirement: The text in the last paragraph of this section must be modified per the above discussion.

137 Comment: Table 3-2, Analytical Methodology, Page 3-17

The reference to EP Toxicity testing should be changed to TCLP testing. In addition, the procedure for determining the pH of a solid outlined in Ecology's Chemical Testing Methods, WDOE 83-13, should be referenced for corrosivity testing. WAC 173-303-090(8) (October 16, 1990)

138 Comment: Section 3.2.9, Additional Requirements, Page 3-20

Are offsite generators subject to the generator assessment program discussed in Section 3.2.4? If not, how is offsite waste verified? Offsite waste should be more vigorously assessed than onsite waste. Common practice dictates 10% of offsite generated waste should be verified prior to acceptance.

139 Deficiency: Section 4.1.1, Containers with Free Liquids, Page 4-1

The text on line 28 indicates that the containers with free liquids are lab packs. Lab packs are specifically defined in WAC 173-303-161. Section 4.1.1.1 describes containers containing liquids which may not meet the regulatory definition of lab packs.

Requirement: WAC 173-303-161 and the federal regulations referenced therein should be reviewed to determine if all containers with liquids are indeed labpacks. If some containers are not lab packs, the text should be edited to identify the other type of free liquid containers which are located in the trenches.

- 140 Deficiency: Section 4.1.1.2, Container Management Practices, Page 4-2

It is not appropriate to treat buried containers of waste as storage units because none of the container storage regulations can be applied.

Requirement: The retrievable storage units must be considered landfills.

- 141 Deficiency: Section 4.1.2.4, Container Storage Area Drainage, Page 4-3

Precipitation that comes into contact with exposed waste containers could leach chemical and/or radiological contamination. There is no description of how the drainage liquid (run-off) is chemically or radiologically assessed and managed.

Requirement: The application should discuss the potential for precipitation to leach contaminants from exposed waste containers and how the run-off is assessed to verify the absence of such contamination.

- 142 Comment: Section 4.6.2.2, Exemption Based on Design, Page 4-5

Comment 115 also applies here.

- 143 Deficiency: Section 4.6.2.2, Exemption Based on Design, Page 4-5

Based upon discussions with U.S. Navy personnel, it is our understanding that the reactor compartments will be encased in steel hulls with a minimum thickness of 3/4 inch, not 3/8 inch. Furthermore, it is now expected that as much as 230 gallons of liquid may remain in the compartments. Therefore, all free liquids have not been drained.

Requirement: Please verify the text. Also, provide a reference for stating "the compartments should probably last longer than 500 years".

- 144 Deficiency: Section 4.6.3, Liner System, General Items, Page 4-6

The duration of postclosure has not been defined. Therefore, the term "30-year postclosure period" may not be accurate.

Requirement: Delete the term "30-year".

- 145 Deficiency: Figure 4-1, RCRA Compliant Liner System, Page 4-7/8

This figure and several other references indicate a layer of "asphalt". Taken literally, this means that a layer of viscous petroleum residues will be applied over the sand layer. It is unclear if this or asphaltic concrete will be used.

Requirement: Please verify the composition of this layer. Edit the text to specify the composition and purpose of this layer.

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- 146 Deficiency: Section 4.6.3.1.2, Primary Liner System, Page 4-11

All landfill slopes must be no steeper than 4 horizontal: 1 vertical. This applies to both the lined trench slope and the final cover slope.

Requirement: Edit line 47 to read "4H:1V".

- 147 Comment: Section 4.6.4.4.4, Stability of Slopes, Page 4-30

It is not just conjectural that sand will not stay on this slope, it is a certainty. There have been a number of reported slope failures at grades of 3H:1V. As far as mitigating this problem, option 1 is undesirable since it maximizes exposure of the geosynthetics, the solution in option 2 is obscure and needs expansion, and option 3 may not work due to crushing under the load of the backfill. Comments 20 and 146 also apply here.

- 148 Comment: Section 4.6.5.1.1, Geotextiles, Page 4-32

Typo. Line 52 should reference Section 4.6.5.2., not Section 4.6.5.1.1. This correction also needs to be made on line 45 of page 4-33 and line 10 of page 4-34.

- 149 Deficiency: Section 4.6.5.1.2, Geonet, Page 4-33

The "important consideration" when selecting a geonet is transmissivity, not permeability.

Requirement: The term "permeability" on line 32 should be replaced with "transmissivity". In addition, the appropriate ASTM test to determine transmissivity should be specified in the text.

- 150 Deficiency: Section 4.6.5.3.3, Operational stresses, Page 4-37

It is not clear how the waste will be backfilled.

Requirement: Provide a discussion n backfilling waste, i.e. immediately after placement, after the trench is filled, in lifts, etc.

- 151 Comment: Section 4.6.5.5, Soil Liners, Page 4-39

Installation of soil/bentonite liners is underway at the LERF site. A number of refinements are being made to the process. Activities involving the development and installation of the admixed liner should be coordinated with the LERF project to ensure consistency in technical and regulatory matters (See Ecology letter to Wisness from Nord dated January 30, 1991 titled: Standardized Soil-Bentonite Project).

- 152 Comment: Section 4.6.5.5.1, Material Testing Data, Page 4-40

Fines content testing (ASTM D 1140) should also be specified.

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- 153 Deficiency: Section 4.6.5.5.1, Material Testing Data, Page 4-41

It is not sufficient to only use a nuclear densometer when measuring density. A minimum number of sand cone tests, ASTM D1556-82, should be performed to provide calibration and backup for the nuclear densometer.

Requirement: The frequency of performing sand cone tests must be specified.

- 154 Deficiency: Section 4.6.5.5.2, Soil Liner Compatibility, Page 4-41

A permeability of  $1 \times 10^{-7}$  centimeters per second is a maximum value, not a minimum value as indicated on line 42.

Requirement: Edit the word "minimum" to read "maximum".

- 155 Comment: Section 4.6.5.5.5, Engineering Report, Page 4-43

If this report is complete, it must be more specifically referenced and provided to Ecology. If it is not, provide an estimate for when it will be completed and modify the text to note that a copy will be provided to Ecology for review and approval.

- 156 Deficiency: Section 4.6.6.1.1, Primary System, Page 4-44

The text here states that the primary drainage layer will be composed of gravel. This contradicts Figure 4-1 which specifies sand.

Requirement: Clarify this contradiction and edit the application as necessary.

- 157 Deficiency: Section 4.6.6.1.1, Primary System, Page 4-44

EPA guidance has changed since the publishing of the document referenced on line 8. The EPA currently recommends a granular drainage layer hydraulic conductivity of 1 cm/sec and a synthetic drainage layer transmissivity of  $5 \times 10^{-4}$  m<sup>2</sup>/sec.

Requirement: The above specifications must be used for the LLBG's.

- 158 Deficiency: Section 4.6.6.1.1, Primary System, Page 4-45

The text describes the possibility of an asphaltic operations layer. However, no evaluation is provided describing the potential impacts of this layer on the bottom liners and associated components.

Requirement: An evaluation should be provided which addresses the possibility of both waste leachate and precipitation leaching materials from the asphaltic layer into the LDCRS. Effects such as accelerated degradation and clogging should be considered.

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159 Deficiency: Section 4.6.6.1.1, Primary System, Page 4-45

It is insufficient to say the primary sumps will be monitored "regularly".

Requirement: The monitoring frequency should be specified as weekly.

160 Deficiency: Section 4.6.6.1.2, Secondary System, Page 4-46

There is no reference to a Response Action Plan (RAP) which is required by EPA's minimum technology requirements for landfills. The RAP addresses the handling of liquids which enter the leachate detection, collection and removal system (LCDRS) and the actions to be taken in response to liquids in the LCDRS.

Requirement: A RAP must be written and included in this application. Refer to the Grout Processing Facility RAP for guidance.

161 Deficiency: Section 4.6.6.5, System Compatibility, Page 4-47

There is no mention here or throughout the text on fingerprinting FML's.

Requirement: Fingerprinting must be conducted for all synthetic liners. A discussion of the fingerprinting program must be presented in the text. Furthermore, the reference to "Farnsworth et al. 1988" should be corrected to read "Farnsworth et al. 1989".

162 Deficiency: Section 4.6.7.3, Construction Quality Control, Page 4-49

Although Appendix 4F provides some construction quality control information for the liner system, the EPA requires a comprehensive construction quality assurance (CQA) plan for the entire facility in the Hazardous and Solid Waste Amendments to RCRA.

Requirement: A CQA plan must be provided as part of the application for the LLBG which addresses the EPA's, as well as Ecology's, concerns.

163 Comment: Section 4.6.8.1.1, Design and Performance, Page 4-50

What factor of safety does a 0.3 foot freeboard provide?

164 Deficiency: Section 4.6.8.5, Maintenance, Page 4-52

Given the sandy and windy conditions of the Hanford site, as well as the problems associated with tumbleweeds, it would seem maintenance may be a greater problem than projected.

Requirement: Discuss the effect of wind, sand and tumbleweeds on drainage ditch maintenance.

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165 Comment: Chapter 5, Groundwater

Although Ecology concurs with the previous NOD responses made on this chapter, a number of new comments on this chapter are presented and may address similar concerns. It is our understanding that this chapter has been extensively revised since this application's submittal. Therefore, although the specific Chapter 5 comments which follow may no longer be applicable, the following general requirements should be addressed in the revised text. Chapter 5 should address the following: 1) all stages of monitoring well installation and well sampling should be coordinated with Ecology; 2) all lab result reports must be provided to Ecology; 3) all well completion reports must be provided to Ecology; 4) the revised chapter should utilize post 1987 data as well as prior data; and 5) provide supporting descriptions for the well location model.

166 Deficiency: Section 5.2.1, Interim Status Groundwater, Page 5-2

According to the text, the monitoring system should accomplish the following: 1) define the specific waste management areas for the LLBG, 2) establish an initial ground water monitoring well network, and 3) characterize the hydrogeologic properties of the upper most aquifer beneath the LLBG. Item 3 was not fully accomplished nor completely presented in the application.

Requirement: Based upon the most current data, item 3 must be completed according to the premise in the application.

167 Deficiency: Section 5.2.3.2.1, Groundwater Elevations, Page 5-18

Although the text states "Hydrographs for the interim status wells are given in Last et al. (1989)", no comments related to the hydrographs or any interpretations of the conclusion are given.

Requirement: The information from the cited reference should be provided along with the conclusions drawn from this information.

168 Deficiency: Figure 5-6, Water Table Beneath LLWMA 1 and 2, Page 5-19

A single contour line does not illustrate the flow direction of ground water.

Requirement: The report cited on page 5-18, Last et al (1989), indicates that the details of ground water movement in the vicinity of Waste Management Area 1 and 2 are difficult to discern. An explanation of why only one contour line is shown should be provided on the figure or in the text. If other data is available to better characterize the flow, it should be provided and the figure updated. In addition, the interpretation of reasons for ground water movement in the waste management area should be given.

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- 169 Deficiency: Section 5.2.3.2.3, Results of Water Quality, Page 5-26

The text states "The concentration of dissolved chromium exceeded drinking water standards...." However, the origin of the contamination and possible remedial actions are not discussed.

Requirement: The text must discuss the origin of this contamination as well as remedial actions which could be immediately undertaken to address this contamination. This comment also applies to any other constituents which were above drinking water standards.

- 170 Comment: Section 5.3.3.2.1, Seismicity, Page 5-37

The Department of Natural Resources may have some pertinent information to these discussions from their state geological mapping efforts. Ecology recommends that the DNR be contacted for more information.

- 171 Deficiency: Section 5.3.4, Regional Hydrogeology, Page 5-38

The text notes that "The base of the aquifer is the basalt surface, but semiconfining silts and clays are present above the basalt in some areas." However, the locations of these semiconfining layers is not presented.

Requirement: The locations of the semiconfining layers should be specified as well as a description of how these layers influence ground water flow and the entrapment of pollutants.

- 172 Comment: Section 5.3.4, Regional Hydrogeology, Page 5-39

The "actual amount of recharge" needs to be revised based upon the new data that is now available.

- 173 Comment: Section 5.3.4, Regional Hydrogeology, Page 5-39

The paragraph beginning on line 23 is unclear. Please clarify how the difference between high and low transmissivities effect the monitoring network.

- 174 Comment: Section 5.3.4, Regional Hydrogeology, Page 5-39

The quoted ranges of hydraulic conductivity and the information provided in Tables 5-3 and 5-4 are not relevant because they are provided as estimated ranges. Additional discussion should be presented to indicate the impact of this variability on the design of the monitoring system.

- 175 Comment: Section 5.3.5, Uppermost Aquifer, Page 5-42

The thickness of the sediments must be specified. This information can be found in Last (1989).

176 Deficiency: Section 5.3.5.1.4, Vadose Zone, Page 5-46

There is no data provided from recent drilling.

Requirement: The information from the most recent drilling program must be provided.

177 Deficiency: Section 5.3.5.1.5, Aquifer Properties, Page 5-48

The porosity was not tested, but estimated. This is not acceptable because these values should have been obtained after analyzing samples from recent drilling.

Requirement: The analysis of soil samples should include determining porosity from undisturbed samples obtained during recent drilling.

178 Comment: Section 5.3.5.1.5, Aquifer Properties, Page 5-49

The text states that "The impact of the mound reduction on the local hydraulic gradient and velocity may be significant." Please elaborate on this comment.

179 Comment: Section 5.3.5.2.4, Vadose Zone, Page 5-57

The text indicates the presence of an 8-15 foot thick section of unconsolidated loess. Was this section analyzed for its effect on pollutant migration? The applicable data supporting this effect, or the absence of an effect, must be provided.

180 Deficiency: Section 5.3.5.2.4, Vadose Zone, Page 5-58

The text indicates that the sediment thickness varies from 80-150 feet and the moisture content varies from 2-18.7%. This is not an adequate description of the unsaturated zone.

Requirement: The results of soil sampling and analysis from new wells should be used for the description of the unsaturated zone. The changes of moisture content should be then mapped more precisely.

181 Comment: Section 5.3.6, Underlying Aquifer, Page 5-60

The aquifer description should include how the new wells respond to monitoring. In addition, new data obtained during drilling and monitoring should be included.

182 Deficiency: Section 5.4, Contaminant Plume Description, Page 5-62

The text states "Presently, water quality information is available for only the first quarter sampling event (October 1988)." New data is now available.

Requirement: The new data should be presented.

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183 Deficiency: Section 5.4.1.3, Vadose Zone, Page 5-63

The vadose zone description does not include any site specific information, nor soil testing results from the 36 new LLBG boreholes.

Requirement: The new information should be provided.

184 Deficiency: Section 5.4.1.3.2, Measured Contaminant Plumes, Page 5-65

There is no supporting evidence for the example given in the text. Therefore, the conclusions are premature.

Requirement: The data which supports this example must be provided.

185 Deficiency: Section 5.4.2, Travel Time, Page 5-70

The estimated travel times given here are not substantiated because aquifer parameters and flow paths are not presently known.

Requirement: New travel times should be specified based on more accurate calculations.

186 Comment: Section 5.4.4, Summary of travel, Page 5-70

See above comment.

187 Deficiency: Figures 5-28, 5-29 and 5-30, Pages 5-71 through 5-76

These figures provide no interpretation of plume behavior in different lithological formations.

Requirement: The modeling should include the behavior of the plume in different lithologies using field obtained parameters.

188 Comment: Section 5.4.6, Conclusions, Page 5-77

The conclusions are unclear and need to be substantiated with new data.

189 Comment: Section 5.5.1, Indicator Parameters, Page 5-80

Were any volatile organic compounds or supplemental parameters present in the soil or water during the more recent drilling? Provide the justification for choosing these "indicator" parameters.

190 Deficiency: Section 5.5.2, Groundwater Monitoring Program, Page 5-82

This section does not address the interim status monitoring program.

Requirement: The groundwater monitoring program should be based on the results of interim monitoring and incorporate all improvements necessary for the final detection system.

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- 191 Deficiency: Section 5.5.2.1.1, Background, Page 5-84

There is a need for monitoring the middle portion of the aquifer. The lithology between some "deep" and "shallow" portions might be such that it will retain pollutants.

Requirement: A portion of the monitoring wells must be screened to monitor the middle section of the aquifer if the aquifer thickness exceeds 40 feet.

- 192 Comment: Section 5.5.2.1.1, Background, Page 5-84

The ranges of hydraulic conductivity should be based on the soils sampling from new wells. The aquifer properties should be described in greater detail after obtaining the new samples and lab analysis results. This will allow the calculation of transmissivity for each change of lithology within the Hanford or Ringold formation.

- 193 Deficiency: Section 5.5.2.1.2, Monitoring Design Approach, Page 5-84

The assumptions about hydraulic conductivities can be misleading. As a consequence, some constituents can be missed in the monitoring wells.

Requirement: The text here must provide support for the assumptions.

- 194 Comment: Section 5.5.2.1.3, Monitoring Efficiency, Page 5-87

The monitoring efficiency model is being reevaluated since a presentation to Ecology by the model's author.

- 195 Comment: Section 5.5.2.1.9, Monitoring Design, Page 5-112

It is not appropriate to assume the shallow wells will be the most indicative of contamination. Deep wells need to be used in the monitoring system as extensively as shallow monitoring wells. This will depend upon what constituents will be detected in the first deep well that is drilled.

- 196 Comment: Section 5.5.2.1.9.1, Deep Well Locations, Page 5-113

Lines 40-48 are unclear and not defensible. Please clarify.

- 197 Deficiency: Section 5.5.2.1.9.2, Deep Well Locations, Page 5-114

Two deep wells were constructed for the interim monitoring network, but no results from these wells are presented to support these conclusions. Deep wells might be extremely important in total network efficiency. If there are differences in the predicted distribution of aquifers, the results from sampling deep wells will also confirm or negate changes in transmissivities.

Requirement: The results from the deep wells must be presented.

198 Comment: Section 5.5.2.1.11 Well Installation Staging, Page 5-125

The text indicates that the monitoring system will consist of 69 shallow wells and 6 deep wells. Of these, 42 new shallow wells and 2 new deep wells will be installed. This means that 27 shallow wells and 4 deep wells were installed for the interim monitoring system. However, page 5-1 indicates that thirty-five wells were in the interim monitoring system. Please correct this discrepancy.

199 Comment: Table 5-12, Well Installation Priority, Page 5-127

The preliminary results from drilling the priority 1 wells should serve as a base for drilling wells in the priority 2 list. Staging of wells should depend upon the results obtained during previous drilling.

200 Comment: Section 5.5.2.3, Representative Samples, Page 5-129

Sampling may be subject to revision depending upon results from the past two years of monitoring, 1991 monitoring, and one additional year for monitoring all the wells in the network.

201 Comment: Section 6.2.2.6.2, Leak Detection System, Page 6-4

The text here indicates that the leak detection system design was scheduled for completion in February 1990. If complete, it must be included in the revised text. If not complete, provide the new date for completion. This also applies to the LCRS referred to in Section 6.2.2.6.4.

202 Comment: Section 6.3.1.3, Emergency Equipment, Page 6-5

List any emergency equipment located at each trench or burial ground, i.e. spill control material, fire suppressants, first aid. If there is none, this should be justified.

203 Comment: Section 7.2, Emergency Coordinators, Page 7-2

The identification of emergency coordinators is under development through the facility wide permit negotiations. The need to identify these individuals along with their addresses and phone numbers will be addressed upon resolution of this issue. WAC 173-303-350(3)(d)

204 Deficiency: Section 7.4.1.3, Notification of Authorities, Page 7-19

The discussion in the first paragraph on this page does not address Ecology's Nuclear and Mixed Waste Program Policy for spill reporting. Also, WAC 173-303-082 is an incorrect citation for spill reporting.

Requirement: The above referenced policy, to be outlined in a forthcoming letter from Ecology, must be incorporated into the text. The correct regulatory citation is WAC 173-303-145.

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- 205 Comment: Section 7.4.1.3, Notification of Authorities, Page 7-19

Spill reports should be submitted to Ecology's Kennewick office:

Washington State Department of Ecology  
7601 West Clearwater  
Suite 102  
Kennewick, WA 99336  
Phone: (509) 546-2990

Please note that the proper zip code for Ecology's Olympia Office is 98504-8711, not 98501-8711.

- 206 Comment: Section 7.4.6, Treatment, Storage, or Disposal, Page 7-32

The text should indicate that releases of dangerous wastes or materials which, upon release, would be considered a dangerous waste, must be handled in accordance with WAC 173-303.

- 207 Deficiency: Section 9.2.1.2.2, Migration Through the Vadose, Page 9-8

Based upon discussions in Section 2.1.2.1 regarding past practices, the statement that "no liquid waste is disposed of in the LLBG" is incorrect.

Requirement: Delete or edit the sentence containing this phrase on line 34 and 35.

- 208 Deficiency: Section 11.1.4.3, Gas Sampling, Page 11-27

Hydrogen gas generation recently created concerns in the tank farms and grout vaults. Therefore, it may not have been prudent to discontinue gas sampling.

Requirement: In light of the recent hydrogen gas concerns, justification should be provided for not taking gas samples until immediately before retrieval.

- 209 Comment: Section 11.1.5.2, Cover Design, Page 11-29

There is a reference on line 33 and throughout this application citing a 1982 EPA guidance document on landfill design. The EPA has published numerous technical guidance documents on this subject since that document was issued. In addition, a substantial amount of regulatory changes concerning dangerous waste landfills have occurred since that time. The LLBG permit application will be evaluated against the more recent documents. It is therefore recommended that past and future work be assessed against the most current guidance.

- 210 Comment: Section 11.1.5.2.1, General Description, Page 11-30

Comment 146 also applies here.

211 Comment: Figures 11-15 and 11-16, Pages 11-43/44 and 11-45/46

Typos. The burial ground in Figure 11-15 should be "218-W-5", not "218-E-5". The burial ground in Figure 11-16 should be "218-W-6", not "218-E-6".

212 Comment: Section 11.1.5.2.2.1, Native Soil Grade Layer, Page 11-48

A statement should be made that Ecology will be notified and provided a copy of the construction test pad plan for review and approval prior to initiating construction of this pad.

213 Deficiency: Section 11.1.5.2.2.3, Soil/Bentonite Layer, Page 11-49

The disking method described for the soil/bentonite layer has been used with mixed results. The method of spreading bentonite on the ground and tilling it into the soil is fraught with inexactness. Soil/bentonite mixing can only be provided for with any certainty by processing in a pugmill. This method is being used for the LERF project and will also be used at the grout facility.

Requirement: The soil/bentonite material must be mixed in a pugmill in accordance with current practice.

214 Deficiency: Section 11.1.5.2.2.4, FML, Page 11-51

The EPA currently recommends a 45-mil flexible membrane liner in situations where the liner will be exposed to weathering. Furthermore, standard practice dictates that a 60-mil liner be used even if not exposed (see Grout and LERF designs).

Requirement: This geomembrane must be 60-mil thick.

215 Comment: Section 11.1.5.2.2.6, Drainage Layer, Page 11-52

Comment 157 also applies here.

216 Comment: Section 11.1.5.2.2.9, Vegetative Cover, Page 11-54

The justification for vegetative specie selection should be provided or a document referenced which, at a minimum, discusses other vegetative varieties which were considered and the reasons for there dismissal.

217 Comment: Section 11.1.5.2.2.10, Riprap Bedding Layer, Page 11-55

The bedding layers should also be designed as a filter. Otherwise the stormwater runoff and wind will remove fines from beneath the riprap and eventually cause undermining of the riprap and failure.

218 Comment: Section 11.1.5.3, Minimization of Liquid, Page 11-56

The term "leakance factor" should be edited to read "leakage fraction".

9112100132

- 219 Comment Section 11.1.5.3, Minimization of Liquid, Page 11-57

Although the regulations require the use of 24-hour, 25-year design storms, the text here specifies a 30-year storm event to match the design life of the covers. Although this makes sense, how does the 30-year design life compare to DOE's requirements for constructing mixed waste disposal facilities? (see comment 128). In addition, would it not be more conservative to design for a shorter duration storm (e.g. 6-hour duration as specified in DOE Order 6430.1A) as it is probably more indicative of the most intense storms received by the Reservation?

- 220 Comment: Section 11.1.5.4.3, Deep-Rooted Plants, Page 11-58

Roots will not penetrate a coarse, clean, dry, uniformly graded gravel layer. Such a layer, one foot thick and placed above the drainage layer, should be considered. This layer could be keyed into the riprap bedding layer to provide a biotic barrier across the entire cover.

- 221 Requirement: Section 11.1.5.4.4, Burrowing Animals, Page 11-59

The biotic barrier discussed in comment 220 would also address the burrowing animal concern. In addition, the HPDE liner should be designed with the following criteria to reduce the potential for attack by burrowing animals: 1) underground installation of free edges should be avoided, 2) angles of 90 degrees and less should be avoided, and 3) any radius of curvature should be greater than 60mm.

- 222 Deficiency: Section 11.1.5.5.1, Cover Drainage, Page 11-60

The text does not identify where the cover drainage goes. In addition, a means must be provided to monitor the amount of liquid collected from the cover.

Requirement: Define where the cover drainage will go and how the amount of cover drainage will be measured.

- 223 Comment: Section 11.1.5.4.3, Page 11-61

In regards to the choice of storm duration, comment 219 also applies here.

- 224 Comment: Section 11.1.5.6, Settlement and Subsidence, Page 11-67

Comment 107 also applies here.

- 225 Deficiency: Section 11.1.6, Schedule for Closure, Page 11-68

It is unacceptable to defer closure of trenches containing mixed waste for extended periods of time in order to fill low-level waste trenches near the mixed waste trench. Overall, the current closure schedule does not provide for the timely isolation of the mixed waste trenches.

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Requirement: The configuration of proposed trenches must be reevaluated to reduce the amount of time the trenches will remain open. In addition, acceleration of the retrieval schedule must be assessed to shorten the time mixed waste trenches are uncovered.

226 Deficiency: Section 11.2.1.2, Erosion Damage, Page 11-77

There is insufficient detail provided on the surveying to be conducted.

Requirement: A drawing of the final cover should be provided indicating where each monument will be located. A drawing or additional text should also be added detailing the design and installation of the monuments. In addition, surveying should be conducted quarterly for at least the first two years and then reduced to annually if no significant changes are noted.

227 Comment: Section 11.2.1.4, Vegetative Cover Condition, Page 11-77

The means to determine adequate vegetative cover must be discussed. Two possible methods are identified in the 183-H Basins Closure Plan.

228 Deficiency: Section 11.2.1.9, Benchmark Integrity, Page 11-78

It is insufficient to rely solely on visual inspections when determining benchmark integrity.

Requirement: Each benchmark should be surveyed to ascertain its integrity.

229 Comment: Section 11.3, Notice in Deed, Page 11-83

This section should be rewritten in accordance with the language found in the 183-H Basins Closure Plan (Rev. 3).

230 Deficiency: Section 11.5, Closure Cost Estimates, Page 11-84

Closure cost estimates must be provided as agreed to for the facility wide permit.

Requirement: A statement to this effect must be provided in the text.

231 Comment: Section 11.7, Post-Closure Cost Estimate, Page 11-84

Comment 230 also applies to post-closure cost estimates.

232 Comment: Section 12.3, Transporter Requirements, Page 12-6

Although transporter requirements are not required per WAC 173-303-260 and -270 at the Hanford Reservation, these requirements must still be fulfilled as requirements under WAC 173-303-395. This statement must be incorporated into the text.

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233 Comment: Section 12.4.1.5.1, Immediate Notification, Page 12-11

Comment 204 is also applicable to this section and section 12.4.1.6.1.

234 Comment: Section 12.4.2.3.3, Closure and Post-Closure, Page 12-18

Comment 230 also applies.

235 Comment: Appendix 4A, List of Mixed Waste, Page 4A-11

It is unclear what the term "UNSEG" means. Does this term identify trenches which could have any type of waste including TRU, mixed, etc.? Please clarify.

236 Comment: Appendix 4A, List of Mixed Waste, Pages 4A-13, 38, 44

Trenches CUI and TV7 are not identifiable on Figure 2-9. These trenches should be identified on the figure or the proper identification numbers provided in this appendix. In addition, trenches T05 and T10 are listed in this appendix but only trenches T05E and T10E exist on Figure 2-8. The text or the figure should be clarified.

237 Comment: Appendix 4B, Trench Classifications, Page 4B-3

Trenches 1D and 16 in burial ground 218-E-12B should be classified as LL-MW (low-level mixed waste) based upon information provided on page 4A-1. In addition, if trench 28 is closed, why is part of its classification "\*" (trench will be dug)? Please clarify or correct.

238 Comment: Appendix 4B, Trench Classifications, Page 4B-9

Based upon information provided in Appendix 4A, trenches 3, 4, 8, 9, 10, 12, and 13 should also be classified as LL-MW (low-level mixed waste). Please correct or clarify.

239 Comment: Appendix 4F, Liner Material Specifications, Page 4F-1

The specific gravity of the liner must be no less than 0.94 and the maximum melt flow index must be no more than 0.3 grams per 10 minutes.

240 Comment: Appendix 4F, Liner Material Specifications, Page 4F-2

The geosynthetic quality assurance consultant must not only verify the specifications identified, or to be identified, in Table 4F-1, but also every fingerprinting parameter (see comment 161).

241 Comment: Appendix 4F, Liner Material Specifications, Table 4F-1

Why are four identical values given for some parameters? The fingerprinting parameters must also be listed, with limits, on this table.

911210135

242 Comment: Appendix 4F, Liner Material Specifications, Page 4F-8

One factor of the geomembrane layout which could be "detrimental to the project" is excessive seam footage. To reduce this problem, a minimum liner roll width should be specified. A list of other possible detrimental aspects should be listed.

243 Comment: Appendix 4F, Liner Material Specifications, Page 4F-9

The preferred method of seaming is double hot wedge welding. Any other method of welding will have to be justified over this method.

244 Comment: Appendix 4F, Liner Material Specifications, Page 4F-10

The specifications must include extreme temperatures (absolute maximum and minimum ambient temperatures) beyond which no seaming will occur. In addition, the methods must be specified which will be used during temperatures between the optimal range and the extreme range.

245 Comment: Appendix 4F, Liner Material Specifications, Page 4F-20

Comment 213 also applies here. In addition, moisture adjustments cannot be made at the borrow site, but must be made at the pugmill.

246 Comment: Appendix 4F, Liner Material Specifications, Page 4F-21

In-situ permeability testing must be done with a sealed double ring infiltrometer.

247 Comment: Appendix 4F, Liner Material Specifications, Page 4F-22

Comment 157 also applies here and to Table 4F-7.

248 Comment: Appendix 4F, Liner Material Specification, Page 4F-23

Transmissivity should be measured with the geonet sandwiched between the actual boundary materials, not steel plates. Explain why the condition in footnote "a" must be met. Comments 239 and 240 also apply here.

249 Comments: Appendix 4F, Liner Material Specifications, Page 4F-25

The drainage net must be stored above ground in a dust-proof wrapper.

250 Comment: Appendix 4F, Liner Material Specifications, Page 4F-27

Frozen material will be removed from the fill and reprocessed through the pugmill or discarded.

251 Comment: Appendix 4F, Liner Material Specifications, Page 4F-29

The list of actual specifications to avoid desiccation cracking should be provided.

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252 Comment: Appendix 4F, Liner Material Specifications, Page 4F-44

Ecology shall be notified of the date, time, and place of resolution meetings. If Ecology plans to attend, the meeting must be delayed a reasonable length of time to allow their attendance. This is also applicable to the preconstruction meeting and problem/work deficiency meetings. This requirement must be reflected in the application.

253 Comment: Appendix 4F, Liner Material Specifications, Page 4F-49

The facility design and specifications will be part of the dangerous waste permit. Therefore, any changes to or deviations from the design or specifications must be approved by Ecology. Ecology will treat these changes as Class I permit modifications requiring pre-approval. Ecology assumes that these changes and deviations will be handled through the Engineer Change Notice (ECN) process and Nonconformance Report (NCR) process such as used for the Grout project. If this is true, Ecology must be provided a copy of the draft ECN/NCR to allow response, if necessary, prior to implementing the change or dispositioning the nonconformant condition. This requirement may be fulfilled by either 1) hand delivering the draft ECN/NCR to Ecology's on-site construction inspector, if one is present, or 2) sending a facsimile copy (fax) to Ecology's LLBG unit manager. Ecology will notify DOE-RL if the modification should be upgraded to a Class II or III modification. This method of handling modifications is limited to design and specification changes which occur during construction. All other changes must be handled in accordance with WAC 173-303-830. A statement reflecting this discussion must be made in the application.

254 Comment: Appendix 4F, Liner Material Specifications, Page 4F-51

Comment 246 also applies here.

255 Comment: Appendix 4G, Construction Procedures, Page 4G-1

These procedures must be approved by Ecology before construction begins.

\*\*\*\*\*  
The following comments refer to Supplement 1 of the LLBG permit application, Request for Exemption from Lined Trench Requirements.

256 Deficiency: Section 2.3.2, Long-Term Migration, Page 2-8

This section discusses the reasons for requiring liner systems at dangerous waste land-based units. In addition to the reasons provided, the bottom liner system provides the function of detecting leachate. This liner system is, in fact called the leachate detection, collection and removal system (LDCRS). Although Ecology agrees that the SRC's are designed such that we can be reasonably sure liquids will not leach from/through the SRC's, the most prudent practice in this case is to provide a means to verify that the SRC system performs as asserted in this document.

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Requirement: A means to monitor the amount of liquids, if any, that could pass from/through an SRC needs to be included in the disposal design. Ecology recommends that a catch basin similar to those beneath the grout vaults be installed beneath one of the SRC's as a demonstration project. The basin would need to be capable of collecting liquids as well as provide a means to measure the quantity and assess the composition of any liquids which could reach the basin.

257 Comment: Section 3.1, General Description, Page 3-1

Typo. "U.S. Ecology" should be edited to read "US Ecology".

258 Comment: Section 4.1, Waste Characteristics, Page 4-1

Are the bulkheads which are added at Bremerton Navy Yard welded with the same specifications and performance standards utilized in welding the original hull? Describe any differences between the specifications and standards used for the original hull and those used on the bulkheads welded for disposal purposes.

259 Comment: Section 5.1.1, Integrity of the SRC, Page 5-2

This section should include a discussion regarding: 1) the effects of radiation on corrosion rates; and, 2) the corrosion potential of original hull and new bulkhead welds.

260 Comment: Section 5.1.2.1, Lead, Page 5-5

Typo. The word "At" in line 6 should be edited to read "As".

261 Comment: App 5A, Conceptual Design of Cathodic Protection, Page 5A-1

The specifications for the epoxy-polyamide paint should be provided to include a discussion of the durability of this paint under the handling, transportation and disposal scenarios expected.

262 Comment: App 5A, Conceptual Design of Cathodic Protection

The report states that if the passive cathodic protection fails, an impressed current can be substituted. If the conductors fail, how will an impressed current work? If the sacrificial anodes fail, why not replace them?

# CORRESPONDENCE DISTRIBUTION COVERSHEET

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9101765

Subject: Notice of Deficiency for the Low-Level Burial Grounds Dangerous Waste Permit Application

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