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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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January 21, 2000

Mr. Michael Goldstein
300-FF-2 Unit Manager
U.S. Environmental Protection Agency
712 Swift Blvd., Suite 5
Richland, WA 99352

Dear Mike:

52128

The Washington State Department of Ecology (Ecology) has reviewed the document 'Proposed Plan for the 300-FF-2 Operable Unit DOE/RL-99-53 Draft A' presented by the U. S. Department of Energy (USDOE) to meet Milestone M-15-23B. Ecology would like to provide to the U.S. Environmental Protection Agency (USEPA) the attached concerns and comments on this document. As mentioned previously, Ecology does not expect a written response to each comment. Most of the attached comments fall into the five categories presented to the USEPA Remedy Review Board in Ecology's letter dated January 6, 2000. The attached comments are meant to provide additional detail that would assist in resolving the five main issues.

In Ecology's opinion, extensive work is needed on this document before it can be submitted for public review. In addition, Ecology will be providing additional comments on the 300-FF-2 Focused Feasibility Study in the beginning of February. Ecology looks forward to working with the USEPA and USDOE to resolve the issues identified in Ecology's comments. If you have any questions, please call me at (509) 736-3018.

Sincerely,

Dr. Alex Stone, 300 Area Project Manager
Nuclear Waste Program

AS:lkd

cc w/o enclosure: Doug Sherwood, USEPA-HPO
cc w/enclosure: Administrative Record: 300 Area General File

Washington State Department of Ecology
Comments on *"Proposed Plan for the 300-FF-2 Operable Unit'*
DOE/RL-99-53 Draft A

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				In the DQO for the 300-FF-2, it was established that all cleanups outside the fence surrounding the main 300 Area complex would be done to industrial standards. This document has been approved by all parties involved. However this decision has not been represented in this or any of the other related documents reviewed so far by Ecology. Update this document to reflect that cleanup of burial sites outside the main industrial complex will be done to residential standards (this affects, for example, cleanups of 618-10, 618-11, the JA Jones site, etc.)
				This document does not clearly identify what ARARs are being used as bases for the subsequent decision. Include a section that clearly identifies all the applicable ARARs used in the decision process. Refer to this information where a particular ARAR is being used as a bounding requirement.
			Add'l Fig.	A figure similar to Figure 5 should be included in the Proposed Plan which shows the 618-11 Burial Ground and associated groundwater-monitoring wells. At a minimum, wells 699-12-4D, 699-13-3A, 699-13-1A, 699-13-1C, and 699-13-1B should be shown on the figure.
			Appendix Additions To Proposed Plan	Several of the appendices in the *Focused Feasibility Study for the 300-FF-2 Operable Unit* (DOE/RL-99-40, Draft A) need to be included, for completeness, in the *Proposed Plan for the 300-FF-2 Operable Unit*. In particular, the Proposed Plan repeatedly references ARARs but provides neither references nor ARAR applicability determinations as are found in Appendix D of the *Focused Feasibility Study for the 300-FF-2 Operable Unit*.
			Appendix Additions To Proposed Plan	The appendix containing references and ARAR applicability determinations should be reviewed for accuracy and completeness. For example, the following applicable references have been omitted: WAC 173-340-350 State Remedial Investigation and Feasibility Study, WAC 173-340-360 Selection of Cleanup Actions, WAC 173-340-400 Cleanup Actions, WAC 173-340-410 Compliance Monitoring Requirements, WAC 173-340-420 Periodic Site Reviews, WAC 173-340-440 Institutional Controls, WAC

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				173-340-700 through –760 Cleanup Standards, the Hanford Site RCRA Permit, WAC 173-303-646, etc.
01	1	2	1	The following comment appears concerning State support of the proposals: "This document is issued by the U.S. Environmental Protection Agency (EPA, the lead regulatory agency), the Washington State Department of Ecology (Ecology, the support regulatory agency), and the U.S. Department of Energy (DOE, the agency responsible for remedial action)."
23	2	2	3	On this page, a similar comment is made: "State support of the preferred alternatives has been achieved through the publication of this Proposed Plan." There are several statements made about the concurrence of the Washington Department of Ecology to the proposed actions. This language needs to be removed and an insertion point left for language that Ecology will provide at a later date.
01	1	3		The third paragraph states "*Final remedies for the 300-FF-2 OU waste sites will be selected only after review and consideration of all information submitted during the public comment period.*" As comments may be made regarding applicable rules or requirements which may not contain what is normally considered to be "*information*", it is recommended that the sentence read as follows: "*Final remedies for the 300-FF-2 OU waste sites will be selected only after review and consideration of all information and comments submitted during the public comment period.*"
01	1	3		The approach, as described, to consider the 618-10 Burial Ground as an analogous site with respect to the alternative selected for the 618-11 Burial Ground (as identified in the NEPA ROD (53 FR 12449)) is consistent with Ecology's values. As such, it is Ecology's understanding that the 618-10 and 618-11 Burial Grounds are not included in the discussion of remedial and preferred alternatives in the Proposed Plan. In the event the approach to consolidate the buried transuranic-contaminated waste to the 200 Area plateau is not identified in the 300-FF-2 OU ROD, Ecology expects the remedial alternatives to be made available to the public for consideration under the NEPA process.

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02	1	1	1	The following statements are made concerning the separation of groundwater operable units from soil operable units: "Existing groundwater contamination beneath one of the source sites is also included in the 300-FF-2 OU scope." "The 300 FF-1 and the 300-FF-2 OUs address contamination at burial grounds and soil waste sites, while the 300-FF-5 OU addresses groundwater contamination beneath the waste sites associated with the other two 300 Area OUs." Ecology does not recognize the defensibility of separating ground water protection/risk from source concerns. Therefore, the ROD must consider impacts to ground water when determining appropriate cleanup decisions for soil (including selection of cleanup standards and the extent of any cleanup action). Under MTCA all pathways must be evaluated concurrently when determining risk.
3	1	5	last	
02	1	1	5 thru 7	The statement is made: 'Existing groundwater contamination beneath one of the source sites is also included in the 300-FF-2 OU scope.' Update this language to include other units within the scope of the 300-FF-2 for which groundwater is included. It is Ecology's understanding that groundwater concerns for many of the outlying burial grounds such as 618-10 and 618-11 are also part of the scope of this document. Include a comprehensive list of all the sites for which groundwater concerns are included in this document.
02	1	2		The last part of the last sentence of the paragraph states "at a reasonable cost." While cost is one of the nine CERCLA evaluation criteria, the statement could be interpreted to imply that this particular criterion was more important than other criteria. The following sentence is noted in the Executive Summary of the referenced EIS: "The objective of the Hanford Defense Waste Program is to dispose of the Hanford high-level, transuranic and tank wastes in a safe, environmentally acceptable and cost-effective manner."" Either use a direct quote from the EIS or NEPA ROD, re-write the description of the preferred alternative or delete the words "at a reasonable cost."
02	1	3	3	The following statement is made concerning burial grounds 618-11 and 618-10:

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				"Consequently, these two burial grounds are not included in discussion of remedial and preferred alternatives in this Proposed Plan." Does the NEPA ROD (53 FR 12449) ensure that remediation of the two burial grounds will follow the cleanup decisions made for the FF-2 OU?
02	1	3	9 thru 12	The comment is made concerning 618-10 and 618-11 that: 'Consequently, these two burial grounds are not included in the discussion of remedial and preferred alternatives in this proposed plan.' This statement is not supported by subsequent information in the proposed plan. Although a decision was reached concerning 618-11 in an earlier EIS, it is Ecology's understanding that both burial grounds will be included in this document. Change the language to reflect this decision.
02	1	4		It is explained that the remediation of the 618-10 and 618-11 Burial Ground is not anticipated to begin until sometime after 2010. It is also explained that "retrieval and treatment of this type of waste will be addressed as part of the Tri-Party Agreement M-91 milestone series." It is recommended that the Proposed Plan also indicate the 300-FF-2 ROD will identify that the M-91 milestone applicable to the 618-10 and 618-11 Burial Grounds will identify the Remove/Treat/Dispose (RTD) remediation and schedule. If the Proposed Plan will not indicate that the 300-FF-2 ROD will identify that the M-91 milestone applicable to the 618-10 and 618-11 Burial Grounds will identify the Remove/Treat/Dispose (RTD) remediation and schedule, it is requested that the Proposed Plan identify the 300-FF-2 ROD will be amended when the RTD schedule is established.
02	1	4	10	The paragraph contains a reference to 'caisson facilities' that is not made clear in earlier discussions. These caisson facilities are actually burial grounds that contain this unique type of disposal facilities. Ecology recommends the language be changed to 'burial grounds (containing caisson facilities)'.
02	1/2	4/1		It is explained that the remediation of the 618-10 and 618-11 Burial Ground is not anticipated to begin until sometime after 2010. As such, in the interim, for all intents and purposes, by default, "remediation" will consist of the implementation of institutional controls. Due to the

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				anticipated 10-year interim, prior to the implementation of remedial actions, it is appropriate to include detailed descriptions of the applicable institutional controls. If it is not desirable to insert the detailed descriptions of the institutional controls at this location of the document, it is recommended that a reference be inserted which identifies where in the document a description of the institutional controls may be found.
02	2	2		It is stated that "the Tri-Parties will review the 618-10 and 618-11 remediation plans using the information obtained through technology development and continued monitoring." It is also stated that "This activity will occur as part of the CERCLA 5-year review process required for the 300-FF-2 interim ROD." The second sentence of the paragraph may be interpreted to imply that the "continued monitoring" will not be reviewed except during "the CERCLA 5-year review." The compliance-monitoring program required by WAC 173-340-410 requires continued monitoring to ensure the selected remedy is protective of human health and the environment. Therefore, delete the second sentence of the paragraph.
02	2	3		The 3rd paragraph states "For the rest of the 300-FF-2 OU waste sites, remedial alternatives were evaluated based on criteria prescribed by CERCLA to develop the preferred alternatives." The sentence can be interpreted to imply that the 618-10 and 618-11 Burial Grounds were not subjected to the prescribed CERCLA evaluation process. Either re-write the sentence or delete it.
02	2	3	1	Ecology recommends changing the wording 'For the rest of the 300-FF-2 OU waste sites…' to 'For the remaining seven 300-FF-2 OU burial grounds'
02	2	4		The discussion of the "contingency remedy" approach for source sites within the 300 Area complex in the draft Proposed Plan is inappropriate and must be removed. Both the FFS and the Proposed Plan contain references to a "contingency remedy" approach for remediation of source sites within the 300 Area complex. This approach, as it is currently described, is inconsistent with EPA policy on the use of contingency remedies. In order for this to be a contingency remedy, an alternative cleanup approach (e.g., limited action), the specific criteria for invoking this approach (e.g., reasonably anticipated future use as a parking

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				lot), and the specific process that will be employed for the alternative approach (e.g., an ESD) must be identified in the Proposed Plan for the public to comment on. In other words, DOE would be soliciting comments on two specific cleanup approaches and obtaining feedback on BOTH at the same time. In addition, both cleanup approaches must be acceptable under the CERCLA nine-criteria analysis. As it is currently written, DOE is explaining the current process that already exists for modifications to a signed ROD. As such, it adds nothing, but potential confusion, to the document and thus should be removed completely. It is Ecology's understanding that EPA will note the implementation issues associated with remediating an active industrial complex in the "Description of the Selected Remedy" portion of the 300-FF-2 ROD that will be developed after the public comment period is over.
02	2	5	1	Ecology recommends rewriting the sentence 'Candidate sites require additional…' as follows: 'The twenty candidate sites require additional…'
02	3	4	1	Ecology recommends rewriting the sentence 'Source sites have been subdivided…' as follows: 'The forty-seven source sites have been subdivided…'
03	1	1		The Proposed Plan states "The preferred alternative for 300-FF-2 OU groundwater contamination beneath one of the outlying source sites is Institutional Controls and Continued Monitoring." The statement implies that the only groundwater consideration applicable to this Proposed Plan is contaminated groundwater associated with one of the source sites. Neither RCRA nor MTCA separate groundwater considerations from source site remedial actions. Furthermore, groundwater considerations appear to be limited to a risk assessment, institutional controls associated with 618-10 and 618-11 Burial Grounds, and institutional controls and continued monitoring associated with one groundwater contamination plume. This approach does not satisfy applicable RCRA or MTCA requirements. Therefore, the Proposed Plan should clearly identify that neither RCRA nor MTCA separates the source site from the groundwater for remedial/corrective action purposes and that this approach does not satisfy applicable requirements (i.e., applicable ARARs).

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03	1	1		The Proposed Plan indicates that only contaminated groundwater beneath 300-FF-2 will be addressed. As indicated above, it is Ecology's position that this approach does not satisfy applicable requirements of WAC 173-340-410. In addition, it is also Ecology's position that all groundwater contamination beneath 300-FF-2 is being addressed due to the lack of monitoring and thus knowledge of the existence of groundwater contamination. For example, Ecology previously requested that the perchloroethylene occurring in groundwater be identified and addressed. The following comment was previously submitted regarding this issue: "The paragraphs refer to groundwater contaminants but do not identify perchloroethylene as a contaminant of concern. Identify if the perchloroethylene occurring in groundwater is considered a contaminant of concern. If it is not considered a contaminant of concern, include an explanation that identifies criteria by which contaminants of concern are derived. In addition, identify how compounds that are not contaminants of concern but do appear in monitoring wells (as was the case with perchloroethylene) will be handled in this document." The following response was provided: "No change. The text defines known plume issues. PCE is a recently identified COC that should be dealt with as a 300-FF-5 issue during the 5-year review, which will occur in the near future. The same would be true for any other compounds." It is Ecology's position that the response is unacceptable. It is noted that the perchloroethylene was first detected in groundwater no less than 9 months ago and thus, neither consists of a recently identified COC. It is also noted that during the last 9 months, the "plume issue" should have been defined. Therefore, the response is unacceptable and the original requests are repeated. Include PCE as a COC and source of contamination within the 300-FF-2 Operable Unit.
03 3	1 2	1 3	1 2	The following comments are made concerning the use of institutional controls as preferred alternatives and relying on 300-FF-1 and FF-5 RODs for remediation strategy and decisions: ""The preferred alternative for 300-FF-2 OU groundwater contamination beneath one of the outlying source sites is Institutional Controls and Continued Monitoring."

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14	2	Last	3	"As documented in the 300-FF-1 and 300-FF-5 ROD, the selected interim remedy for the groundwater OU was restricted use and continued monitoring. It was considered an interim action ROD because there are contaminant plumes (e.g. tritium and nitrate) that are migrating into 300-FF-5 OU from other areas of the Hanford site, including the 200 Areas."
27	1	2nd bullet		"Remediation of the 300-FF-1 and 300-FF-5 OUs is underway in accordance with an associated ROD. The remedial actions presented in this Proposed Plan address contaminated soil and groundwater associated with the 300-FF-2 OU and are consistent with the ongoing cleanup actions in the 300 Area."
28	2	4	1	"Reduction of Toxicity, Mobility, or Volume through Treatment. Treatment (for the ground water) is not a component of Institutional Controls and Continued Monitoring."
32	1	3	1	"The preferred alternatives and associated cost estimates for the 300-FF-2 OU waste sites and contaminated groundwater are summarized in Table 4. These preferred alternatives are consistent with the selected remedies for the 300-FF-1 and 300-Ff-5 OUs and are believed to provide the best balance of tradeoffs among the alternatives with respect to the CERCLA evaluation criteria." "The preferred alternative for 300-FF-2 OU groundwater contamination beneath the 316-4 Crib is Institutional Controls and Continued Monitoring. Other potential remedial technologies were screened out as documented in the 300-FF-2 OU FFS." There are two major points of concern with the selection of the preferred alternatives that result from basing the remedy on assumptions and remedial technologies identified and evaluated in the 300-FF-2 FFS, 300-FF-1 and 300-FF-5 RODs. 1. Newly identified deficiencies associated with the 300-FF-1 and 300-FF-5 RODs confirm that the major assumptions in the 300-FF-5 and 300-FF-1 RODs concerning industrial soil and ground water cleanup exposure pathways and selection of cleanup standards protective of those pathways are not

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				correct (see earlier comment). 2. Basing a preferred alternative consistent with 300-FF-1 OU, 300-FF-5 OU and 300-FF-2 FFS institutional control remediation strategy will not ensure protection of human health and the environment. Ecology does not believe that the Columbia River should be used as dilution source for contamination released from the Hanford Site. Institutional controls with dilution or "natural flushing" as the preferred remediation approach was documented in 300-FF-5 RI/FS Report: "The groundwater flow system has a significant impact on the contaminant distribution observed in the aquifer. Higher groundwater pore velocities, associated with the saturated Hanford formation found along the river, can be expected to quickly flush contamination introduced into the aquifer and facilitate its remediation. Contaminants, whose movements are only slightly chemically retarded, can be expected to decrease with time once potential sources are removed or contained. The interchange of groundwater with river water can also be expected to facilitate remediation." (Pg. 2-9) Sources of contamination from the Hanford Site must be identified and removed/remediated before releases are allowed to impact ground water, and remediated in ground water before contaminants reach the Columbia River. The use of the river as a dilution source as the primary component of the IC remedy is not allowed under state and federal regulations and goes against EPA's policies: EPA Region 10 "Final Policy on the Use of Institutional Controls at Federal Facilities" sets forth a preference for active and permanent remedies consistent with CERCLA and RCRA action selection criteria. As stated in the document, "The Region continues to regard Institutional Controls primarily as a component of, or an enhancement to, a remedy which employs treatment that reduces toxicity, mobility, or volume as a principal element, or otherwise creates a permanent remedy." In an effort to ensure that past remedies are protective, Region 10 Policy has determined: "The policy applies not only to ICs proposed as part of a new remedy, but proposed as part of a new remedy, but also applies to ICs selected as

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				part of the remedy in past RODs to ensure protectiveness." An IC monitoring report is required annually to the EPA and the state from the facility to ensure the effectiveness and maintenance of ICs. There is a statement that allows the EPA and the state to require additional elements where there has been a "significant lapse or failure of an IC." The EPA Policy also sets forth a requirement that "A special situation is presented by facilities or operable units (OUs) where the ROD has been previously signed and IC requirements were not explicitly stated. For those sites, EPA will require that an Explanation of Significant Differences (ESD) be prepared adding the IC requirements described (in EPA's policy) to ensure that ICs remain protective. The federal facility will also be required to document in a periodic monitoring report to the EPA and state, how the IC requirements are being met. Future Five Year Reviews would address the adequacy and effectiveness of these IC requirements." And "Region 10 expects that when ICs are proposed as component of a remedial alternative, the FS will evaluate a proposed IC with as much care as other remedy elements." Note: The above institutional control strategy also emphasizes the urgency to determine the impact on surface water by sampling an "undiluted" point of compliance in order to have the data reflect the true potential to impact human health and the river from an industrial ground water release, a release that may be fully protective or in compliance with human health and water quality standards
03	1	4		The last sentence of the paragraph states: "The primary contaminant in the 300 Area is uranium from the fuel fabrication processes." As there are other contaminants of concern (i.e., cis-1,2-dichloroethene, trichloroethene, etc), insert the words "One of" at the beginning of the sentence and change "contaminant" to "contaminants".
03	1	4	Last line	The following statements are related to the identification that uranium is not the only contaminant of concern: "The primary contaminant in the 300 area is uranium from the fuel fabrication processes."
3	2	3	1	"The 300-FF-5 OU consists of contaminated groundwater in

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				the 300 Area beneath the 300-FF-1 and 300-FF-2 OUs. The primary groundwater contaminant is also uranium." Uranium is not the only contaminant of concern in the 300 Area soil and groundwater. The identification of numerous additional constituents that are known or suspected to be released into the environment are presented in the proposal, FF-2, FF-1 and FF-5 documents. It is not clear why in a proposed cleanup plan that all operable unit's contaminants and their corresponding cleanup standards are not identified. What is the logic or regulatory protocol in selecting a "primary" contaminant and how does this relate to risk and cleanup decisions? For this proposal, DOE needs to identify all contaminants of concern for the operable unit and the proposed cleanup levels including contaminants common to the FF-1 and FF-5 OU identified in Tables A-1, A-2, and A-3.
03	1	5	9	Ecology recommends that the end of the paragraph have the following additional information added: '... the other two 300 Area OUs (except for those sites identified earlier not covered by the 300-FF-5 Record of Decision and are therefore a part of this decision process.)'
03	2	1		The last sentence of the paragraph states: "Cleanup objectives for the 300-FF-1 OU were developed based on an industrial land-use scenario with uranium as the primary contaminant." As MTCA and RCRA also require cleanup objectives to be based upon protection of groundwater, insert either an identification or explanation that the cleanup objectives developed for the 300-FF-1 OU were not based upon the protection of groundwater or an identification or explanation that the cleanup objectives developed do not satisfy applicable RCRA and MTCA ARARs.
03 21	2 1	1 1	2 1	The following statements are made concerning basing RAO on ARARs for industrial land use: "Cleanup objectives for the 300-FF-1 OU were developed based on an industrial land-use scenario with uranium as the primary contaminant." "Remedial action objectives (RAOs) were developed based on potential future land uses, applicable or relevant and

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				appropriate requirements (ARARs), and worker safety. Current land-use documents identify that the 300 area will remain an industrial area for at least the next 50 years." Under state law, sites that are being used for industrial or planned industrial do not necessarily qualify for cleanup standards and remediation based on industrial exposure for all pathways. If remediation activities (including selection of cleanup levels) only considers an industrial land-use exposure scenario for waste and soil, and excludes protection of ground water as a potable water source then all pathways are not sufficiently protected. Designation of land in the 300 Area as industrial or planned industrial does not automatically qualify the 300 Area for industrial cleanup standards (MTCA Method C, Industrial Method A) for soil and ground water. There is a process inherent in MTCA that identifies limitations for the application of industrial cleanup standards. A site must meet the Industrial definition and criteria in MTCA (WAC 173-340-745 (1)(b)) and all pathways must be evaluated concurrently to ensure an industrial cleanup level is protective of other media/pathways. One of the most important criteria is the absence of impacts to groundwater, surface waters and drinking water. In none of the 300-FF-2 Operable Unit documents that Ecology has currently reviewed has it been indicated that the OU was subjected to an evaluation to determine if the 300 Area qualifies for MTCA industrial cleanup standards for all pathways. MTCA cleanup standards within the 300-FF-1 and as of yet for the 300-FF-2 are not based on the more protective soil standard. This represents one of the most outstanding concerns for Ecology in the 300 Area. For example, uranium, which is acknowledged to have impacted groundwater in the 300 area, the soil cleanup levels must represent values that are protective of groundwater. However, the value that is non-protective of ground water is currently being used. Given the possible contamination of local drinking waters and the importance the Columbia River plays for both human and animal life, the 300 Area cleanup may not be protective ground water.

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03	2	2	3 thru 5	This section refers to the ROD for the 300-FF-5. Either remove this discussion from the document or expand to explain in detail the information pertinent to the discussion.
03	2	3		The 300-FF-5 OU consists of contaminated groundwater beneath the 300-FF-1 and 300-FF-2 OUs. From review of the 300-FF-2 Proposed Plan and Focused Feasibility Study, it cannot be determined if the contaminated groundwater beneath the 618-10 and 618-11 Burial Grounds has been addressed. By the absence of discussion, contaminated groundwater downgradient from the 618-10 and 618-11 Burial Grounds appears to have been omitted. Therefore, for clarity, identify that the 300-FF-5 OU does not include groundwater contamination resulting from contaminants released from the 618-10 and 618-11 Burial Grounds.
03	2	3		The 300-FF-5 OU consists of contaminated groundwater beneath the 300-FF-1 and 300-FF-2 OUs. From review of the 300-FF-2 Proposed Plan and Focused Feasibility Study, it cannot be determined if the contaminated groundwater beneath the 618-10 and 618-11 Burial Grounds has been addressed. By the absence of discussion, contaminated groundwater downgradient from the 618-10 and 618-11 Burial Grounds appears to have been omitted. Therefore, identify that groundwater downgradient from the 618-10 and 618-11 Burial Grounds is contaminated and include consideration of this contaminated groundwater in the 300-FF-2 OU Proposed Plan and Focused Feasibility Study.
03	2	3		The second sentence states: "The primary groundwater contaminant is also uranium." As there are other contaminants of concern (i.e., cis-1,2-dichloroethene, trichloroethene, etc.), modify the sentence to either reflect the existence of other COCs or to indicate that uranium is one groundwater contaminant. Other groundwater contaminants have been detected and groundwater quality has been repeatedly negatively impacted as may be concluded by a review of HEIS groundwater monitoring data.
03	2	3		The fourth sentence states: "It was considered an interim action ROD because there are contaminant plumes (e.g., tritium and nitrate) that are migrating into the 300-FF-5 OU from other areas of the Hanford Site, including the 200 Areas." It is appropriate to identify that tritium and nitrate

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				groundwater contamination has been detected downgradient from 618-10 and 618-11 Burial Grounds. An incomplete and cursory review of the Hanford Environmental Information System (HEIS) data indicates the following tritium concentrations measured from well 699-13-1A located downgradient to the 618-11 Burial Ground: 88,000 pCi/L in June '73, 150,000 pCi/L in November '73, 270,000 pCi/L in January '74, 790,000 pCi/L in January '74, 1,400,000 pCi/L in March '79, and 1,860,000 pCi/L in January '99, etc. Clearly, tritium plumes may be migrating into the 300-FF-5 OU from outlying 300-FF-2 OU source sites. Include this information in the Proposed Plan.
03	2	3		The last sentence states: "Based on results from groundwater monitoring, no 300-FF-2 OU sources appeared to be impacting 300-FF-5 OU groundwater at that time." Groundwater contamination and groundwater quality degradation associated with the 300-FF-5 OU has occurred as may be concluded by a review of 300 Area HEIS groundwater-monitoring data. From descriptions of the characterization information collected to support the 300-FF-2 OU RI/FS and Feasibility Study documents (as described in *Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit*, DOE/RL-94-85), it appears that primarily non-unit/source-specific groundwater monitoring well data and river samples were collected to support a risk assessment. Therefore, either include a detailed description of the review (i.e., limited source-specific groundwater information and river information collected to support a risk assessment) somewhere in the document or delete the sentence.
03 13 14	2 2 2	3 1	Next to last line 1st bullet 3rd bullet	The following statements are made concerning the lack of water impacts from the 300-FF-2 OU: "In addition, potential sources of contamination in the 300-FF-2 OU had not been addressed when the 300-FF-5 was issued. Based on results from groundwater monitoring, no 300-FF-2 OU sources appeared to be impacting 300-FF-5 OU groundwater at that time." "None of the 300-FF-2 OU burial grounds appear to be currently impacting groundwater."

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				"The 316-4 Crib is the only 300-FF-2 OU waste site that has been shown to impact groundwater. Groundwater monitoring results suggest that the remaining uranium contamination is localized and still bound within the soil underlying the crib." The identification of considerable heterogenetic sources for contaminants of concern was presented throughout the proposal and are common to both 300-FF-2 and 300-FF-5 Operable Units: 1. "Many leaks and unplanned releases associated with the sewer systems have been documented. The volume of liquids that leaked from the systems and potential future impacts to the Columbia River are unknown."(Pg. 14, paragraph 3) 2. "The JA Jones 1 candidate site was used for disposal of 7 to 10 pickup truck loads of overstocked paint and solvents (Pg. 14, 5th bullet)." 3. "They (burial grounds) received a broad spectrum of hazardous, radiological, and mixed wastes. The 300 Area burial grounds are difficult to characterize due to their heterogeneous nature, and quantitative characterization data are generally not available."(Pg. 13, paragraph 1) Tables A1, A2, and A3 list the 300-FF-2 Operable Unit's burial grounds, source sites, and candidate sites and their known or suspect released contaminants. Contaminants are stated as constituents of "unplanned releases", washed into sewers, cribs, and basins, or disposed of in burial grounds and trenches. Table constituents include: degreasing liquid solvents, potential major DNAPL sources(perchloroethylene, 1,1,1-trichloroethane, trichloroethene(TCE), and tetrachloroethene); PCB soils; heavy metals; carbon tetrachloride; radiological constituents (uranium, plutonium, thorium, strontium, cesium) and other hazardous substances. Specifically, Table A-2 lists constituents from past activities disposed to the process sewer system. Uranium, heavy metals, degreasing solvents (e.g. perchloroethylene (tetrachloroethene, PCE), 1,1,1-trichloroethane,

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				trichloroethylene (TCE)) etc. are documented as part of the sewer disposal and unplanned sewer releases. Example: One trench is documented as contaminated with an unplanned release of tetrachloroethene (perchloroethylene, PCE) and other hazardous substances. In comparison, the ground water contains contaminants common to the waste sites. The "major conclusions" of the Phase I RI for the groundwater operable unit, 300-FF-5, determined that "300-FF-5 Operable Unit-derived compounds that exceed MCLs include dichloroethene (DCE), trichloroethene (TCE), nickel, uranium, and coliform bacteria (pg. ES-2)." Also, uranium, TCE, and DCE are reported as contaminants in the 300 Area unconfined aquifer (pg. 4-13). Currently, uranium is a "primary contaminant of concern in the ground water and site knowledge confirms uranium contaminated soil from 300 area activities and waste disposal. Additionally, the 300-FF-1 Phase III Feasibility Report confirmed that "the 300-FF-process waste site, which includes the South Process Pond, North Process Pond, Process Trenches, and the Process Sewer, all received spent halogenated and non-halogenated solvents (carbon tetrachloride, chlorobenzene, methyl ethyl ketone, tetrachloroethene (PCE), toluene, and trichloroethene (TCE)) used to remove lubricants from reactor fuel elements (Pg.4-11)." It is evident that 300-FF-2 OU sources are impacting ground water and soil. Operational history establishes a threat of release to ground water and contaminants found in soil confirms a potential source or old release. The above first-two statements are misleading and need to be removed from the document. This would include the statement in the Summary of the Site Risk section: "Based on historical information, it is anticipated that the sites with unknown or reduced levels of contamination have relatively low risk with respect to the overall 300-FF-2 OU." (Pg. 17, 4th paragraph). Again, this statement is not supported technically or with current site information.
03	2	3	13 thru 16	The paragraph includes the statement: 'Based on results from groundwater monitoring, no 300-FF-2 OU sources appear to be impacting 300-FF-5 OU groundwater at that time.' This

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				statement is contradicted by earlier information in this document and is not substantiated by detailed information. Either delete this statement or include more detail supporting the conclusion.
03	2	4		The fourth paragraph states: "It addresses radioactively and/or chemically contaminated soil, buried waste, and below-ground structures (e.g., pipelines and concrete) at sites in the 300 Area and in the general vicinity of the 300 Area." It is very clearly indicated that the Proposed Plan does not address groundwater associated with the 300-FF-2 OU source sites, with one single exception. An example of an applicable ARAR is that CERCLA requires compliance monitoring to ensure the selected remedy is protective of groundwater. An example of an appropriate ARAR is that RCRA (associated with land-based units such as the 618-10 and 618-11 Burial Grounds and the General Content Burial Grounds) requires detection monitoring for which there has not previously been indication of groundwater contamination. Therefore, the Proposed Plan should clearly identify that neither RCRA nor MTCA separates the source site from the groundwater for remedial/corrective action purposes and that this approach does not satisfy applicable and/or appropriate requirements.
03	2	5		Include an identification that approximately 383 waste sites have been evaluated and were determined to be outside the scope of CERCLA or determined to require no further action. Previously, Ecology commented that for purposes of RCRA corrective action, solid waste management units (SWMUs) may require further action in the future (i.e., as required by the final ROD). In response, DOE indicated that no further action would be taken under any authority. Ecology has not extensively reviewed the 383 SWMUs, which were "determined to require no further action". Note: the 383 SWMUs may not represent an environmental priority at this time, but in the future, as more information or confirmatory sampling data is available, RCRA corrective action may be required. As such, the document should identify that RCRA corrective action may not be satisfied at this time until the need for final corrective/remedial actions are evaluated. Note: Washington State Department of Ecology at the Hanford Site is currently seeking transfer of corrective action authority from the Environmental Protection Agency through the Hanford Site RCRA Dangerous Waste Permit.

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03	2	5	4 thru 5	Ecology recommend the following change to the language in this sentence: '... for remedial actions at the 9 burial grounds (the 618-10, 618-11 and 7 general content burial grounds) and 47 ....'
13	1	1	Hglt. B	The last sentence of the first paragraph of *Highlight B* states: "A majority of the sites that were evaluated during the process will not be considered further for remedial action...". Approximately 383 waste sites were concluded to be either outside the scope of CERCLA or determined to require no further action. Previously, Ecology commented that for purposes of RCRA corrective action, solid waste management units (SWMUs) may require further action in the future (i.e., as required by the final ROD or a RCRA corrective action permit/order). In response, DOE indicated that no further action would be taken "under any authority". Ecology has not extensively reviewed the 383 SWMUs, which were "determined to require no further action". Note: the 383 SWMUs may not represent an environmental priority at this time, but in the future, as more information or confirmatory sampling data is available, RCRA corrective action may be required. As such, the document could identify that RCRA corrective action may not be satisfied at this time until the need for final corrective/remedial actions are evaluated. Note: Washington State Department of Ecology at the Hanford Site is now seeking transfer of corrective action authority from the Environmental Protection Agency through the Hanford Site RCRA Dangerous Waste Permit.
13	1	2	Hglt. B	The final sentence of the insert states: "A detailed description of the categorization process, a complete list of the sites reviewed, and the associated results are provided in the 300-FF-2 OU FFS." Ecology has recently recommended the addition of two SWMUs (fuel bunkers and waste transfer pipe between 324 and 325 Buildings) which were omitted from the categorization process and the list.
13	1	2	Insert	The first bullet states: 'Selected sites that were previously characterized and subsequently determined not to present unacceptable environmental threats (e.g., 300-1, 300-253, and 600-22). This section needs to be expanded to provide information supporting this statement. How was this determination done and what information was used to support the conclusion? Please update this section.

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13	2			General comment. Appendix A describes several "dumping areas" which appear to be "burial grounds". For example, the JA Jones 1 site is described as a pit used for the disposal of various wastes. The site is also described as having been backfilled with soil of which now appears as a grass and sage-covered field. Similarly, sites 600-23 and 600-47 have been "Dumping Areas" but they are described as burial grounds. Similarly, site 300-18 has been characterized as a "Dumping Area" but is described as a burial ground, complete with an interim surface stabilization (cover of soil). These sites must be included in the discussion of burial grounds occurring on page 13. Therefore, these four burial grounds should be evaluated with all of the other burial grounds and in the same manner.
13	2			General comment. Appendix A describes two burial grounds, 300-7 and 300-9, which do not appear to be included with the discussion of burial grounds on page 13. In addition, these 2 burial grounds do not appear to have been evaluated in the same manner as the other 9 burial grounds (618-10, 618-11 Burial Grounds and seven general content burial grounds). Therefore, these two burial grounds should be evaluated with all of the other burial grounds and in the same manner.
13	2		1st bullet	The first bullet states: 'None of the 300-FF-2 OU burial bounds appear to be currently impacting groundwater.' As mentioned in an earlier comment on page 3, this statement is contradicted by earlier information in this document and is not substantiated by detailed information. Either delete this statement or include more detail supporting the conclusion.
13	2	1	1st bullet	The first bullet states: "None of the 300-FF-2 OU burial grounds appear to be currently impacting groundwater." The Proposed Plan must either reference data evaluated to support this statement or the data may be included as an appendix. From review of the *Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit* (DOE/RL-94-85), no groundwater monitoring networks dedicated to the 7 burial grounds were noted. Therefore, the specific data reviewed to make this determination must be identified either by reference or inclusion. Note: as the *Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit* (DOE/RL-94-85), contains data from the evaluation of the entire 300-FF-5

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				groundwater operable unit, the specific data in the document which supports the statement must be identified if this document is referenced. Otherwise, delete the sentence/bullet.
13	2	1	1st bullet	The first bullet states: "None of the 300-FF-2 OU burial grounds appear to be currently impacting groundwater." The word "currently" is noted. The Proposed Plan must identify if these burial grounds negatively impacted groundwater in the past. If groundwater impact has occurred in the past, the Proposed Plan must either reference time-specific data evaluated which indicates groundwater contamination of the past or the data may be included as an appendix. Note: as the *Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit* (DOE/RL-94-85), contains data from the evaluation of the entire 300-FF-5 groundwater operable unit, the specific data in the document which supports the word "current" must be identified if this document is referenced.
13	2	1	New Bullet	Include a bullet which identifies how many groundwater impact observations related to the 618-10, 618-11, and General Content Burial Grounds have been detected in the past.
13	2	1		Include bullets, which generally describe groundwater-monitoring programs for each of the burial grounds. As the monitoring programs provide valuable site (source-specific) characterization information, the groundwater monitoring information should describe each burial ground.
14	1	1		The first sentence omits "burial grounds" in the list of types of sites included as source and candidate sites. Include "burial grounds" in the list.
14	1	1		The second sentence of the first paragraph states: "...and 20 candidate sites where additional characterization is necessary to determine if remedial actions are required." Considering the 20 candidate sites, 3 of which consist of land-based burial grounds, there is very little question that remedial action(s) will be required. Therefore, change the word "if" to "what" between the words "determine" and "remedial".

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14	2	2		The groundwater discussion does not identify the groundwater monitoring observations from well 699-S6-E4D which is downgradient from the 618-10 Burial Ground and not downgradient from the 316-4 Crib. From the HEIS system, the following tritium concentrations were measured at well 699-S6-E4D: 35,000 pCi/L in February '86, 35,000 pCi/L in December '85, 34,000 pCi/L in September '85, 32,000 pCi/L in June '85, 36,000 pCi/L in February '85, etc. In addition to tritium, nitrate concentrations exceeding WAC 173-200 water quality standards (10 mg/l) have been repeatedly measured at well 699-S6-E4D indicating another groundwater contaminant of concern. For example, the following nitrate concentrations were measured at well 699-S6-E4D: 26.7 mg/L in March '91, 26.3 mg/L in April '89, 16.5 mg/L in October '89, 26 mg/L in October '87, 26 mg/L in May '92, 26 mg/L in September '94, etc. A more detailed evaluation of the data would undoubtedly identify additional contaminants of concern. Therefore, a detailed description of the groundwater contamination downgradient from the 618-10 Burial Ground must be inserted into the Proposed Plan and Focused Feasibility Study.
14	2	2		The discussion does not identify the groundwater monitoring observations from groundwater wells located near the 618-11 Burial Ground. The tritium groundwater contamination as has been observed at well 699-13-1A (1,400,000 pCi/L in March '79 and 1,860,000 pCi/L in January '99) cannot be attributed solely to groundwater contamination migrating from the 200 Areas. A discussion of contaminant observations at groundwater wells located near the 618-11 Burial Ground must be included.
14	2	2		The paragraph, which discusses groundwater, is incomplete. The paragraph also includes a conclusion that contaminated groundwater near the 618-10 Burial Ground and the 316-4 Crib "appears to be localized at the 316-4 and is not migrating into other areas." The conclusion is not supported. A description of the current monitoring systems including source-specific networks and non-source-specific monitoring wells should be included in the Proposed Plan and Focused Feasibility Study. Similarly, a description of the monitoring programs at the source- and non-source-specific networks/wells should be included. A preliminary review of the HEIS data reflects irregular monitoring intervals for many of the wells located in the 300-FF-2 OU. The

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				description should also include an identification of the constituents monitored.
14	2	2		The groundwater discussion indicates that well 699-S6-E4A is used to monitor groundwater downgradient from the 316-4 Crib. Include an explanation why well 699-S6-E4A is not detecting contamination from the 618-10 Burial Ground. It is noted that two of the 618-10 Burial Ground monitoring well network wells are located directly downgradient from the 316-4 Crib.
14	2	2		The last sentence of the paragraph states: "Based on monitoring information and estimates of travel times from well 699-S6-E4A to the nearest downgradient wells and the Columbia River (43 days and 7.3 years, respectively), the contamination appears to be localized at the 316-4 Crib and is not migrating into other areas." Include an explanation why the contamination is stated as being from the 316-4 Crib and not the 618-10 Burial Ground or the 618-10 Burial Ground and the 316-4 Crib. Figure 5 may be interpreted to indicate that contamination appears to be localized at the 618-10 Burial Ground and the 316-4 Crib. Therefore, either include an explanation or delete or modify the conclusion.
14	2	2nd bullet		The last sentence contains the term "empty containers". The same term is noted in Table A-3 of Appendix A. As the word "empty" has regulatory meaning in RCRA, either include a definition for "empty" or describe what "empty" means in the context in which it is used.
14	2	3	Last Par.	The next-to-last sentence of the paragraph states: "The remedial actions presented in this Proposed Plan address contaminated soil and groundwater associated with the 300-FF-2 OU and are consistent with the ongoing cleanup actions in the 300 Area." The sentence infers that 300-FF-2 OU soil and groundwater will be addressed consistently with medias of the 300-FF-1 and 300-FF-5 OUs. As Ecology has previously indicated, remedial action objectives of the 300-FF-1 OU do not satisfy MTCA ARARs (e.g., soil cleanup level of 1,000 mg/kg as a remedial action objective). Therefore, either delete the sentence or include an identification that the remedial action objectives of the 300-FF-1 OU do not satisfy MTCA ARARs.

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15			Fig. 5	Figure 5 should identify which monitoring wells are used to monitor the 316-4 Crib.
15			Fig. 5	Figure 5 does not show all wells, which exist around the 618-10 Burial Ground. For example, the HEIS system and the Hanford Site Annual Groundwater Monitoring report identify the following wells: 699-S6-E4CP, 699-S6-E4CT, and 699-S6-E4CS. Either include an explanation why all wells have not been included on Figure 5 or include all wells.
15			Fig. 5	Figure 5 includes a groundwater flow direction of due east. Figure 5 also includes additional monitoring wells located southeast of the 618-10 Burial Ground and the 316-4 Crib (e.g., wells 699-S6-E4E, 699-S6-EF, 699-S6-E4G, 699-S6-E4H, and 699-S6-E4J). Include an identification that groundwater-flow directions have consistently been observed to be due easterly or include an explanation/description of all groundwater flow directions observed. As the Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit has identified that a tritium plume is believed to have originated from the 200 Area of the Hanford Site and now effects the northern portion of the 300-FF-5 OU, it would appear the data may suggest a southeasterly groundwater flow direction as well as an easterly one. Therefore, either identify all groundwater flow directions or include an explanation in the text that all local groundwater-monitoring wells (which monitor the uppermost aquifer) have consistently shown an easterly groundwater flow direction.
15			Fig. 5	Figure 5 includes additional groundwater monitoring wells located southeast of the 618-10 Burial Ground and the 316-4 Crib. Include a discussion of groundwater monitoring observations from these wells. In particular, identify if wells 699-S6-E4E, 699-S6-EF, 699-S6-E4G, 699-S6-E4H, and 699-S6-E4J have detected 618-10 Burial Ground or 316-4 Crib contaminants. Specifically, identify if the following contaminants have been detected in these wells: uranium, other transuranic radionuclides, transuranic radionuclide degradation products, petroleum constituents, and tri-butyl phosphate.

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17	1		Add'l Bullet	Include a bullet, which identifies "Waste management from facility operations, facility transition, D&D, remediation, etc. throughout the 300 Area."
17	1	3		The first sentence states: "To determine whether contaminants pose a threat to human health, the type of future land use (and, therefore, the amount of time an individual may be exposed to contaminants) must be identified." In addition to assessing threat to human health, applicable ARARs require the threat to the environment also be evaluated. Also, in addition to land use, exposure pathways must also be understood to allow the threat to human health and the environment to be evaluated. Therefore, the first sentence should be re-written to include the assessment of the threat to the environment taking into consideration exposure pathways (i.e., groundwater, surface water, drinking water, etc.). Recommended wording is as follows: "To determine whether contaminants pose a threat to human health and the environment, the potential exposure pathways and the type of potential future land use (and, therefore, the amount of time an individual may be exposed to contaminants) must be identified."
17	1	3		The acronym commonly used for the *Hanford Comprehensive Land-Use Plan and Environmental Impact Statement* is "HCLUP-EIS".
17	1	3		A statement needs to be added to the paragraph, which indicates the designation of land in the 300 Area for industrial use does not automatically identify the land as qualifying for MTCA industrial cleanup standards. There is a process inherent in MTCA that identifies limitations for the application of industrial cleanup standards. Some of the most important criteria are the absence of impacts to groundwater, surface waters and drinking water. In none of the 300-FF-2 OU documents that Ecology has currently reviewed has it been indicated that the OU was subjected to an evaluation to determine if the 300 Area qualifies for MTCA industrial cleanup standards. This evaluation has been previously and repeatedly requested in relation to the satisfaction of applicable ARARs as required by the CERCLA process. Furthermore, should it be determined that a property qualifies for industrial standards, a process exists within MTCA to refine further the determination of the applicable cleanup standards. If there is potential

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				negative impacts to ground, surface and drinking waters, MTCA requires that cleanup values protective of groundwater must be applied. Currently, it appears this evaluation has not been done and that MTCA industrial cleanup values that are not protective of groundwater have been selected. Given the considerable contamination in the 300-FF-2 OU and its proximity to groundwater, the Columbia River and drinking water sources for local communities, the selection of cleanup standards that are not protective of groundwater are not justified and therefore, do not satisfy applicable MTCA ARARs. These issues need to be either addressed or identified in this document.
17	1	3	2	The following statement is made concerning the use of the EIS as a landuse decision document: "The Final Hanford Comprehensive Land-Use Plan and Environmental Impact Statement (HCP-EIS) (DOE/EIS-02220F) preferred land-use alternative specifies industrial use for a majority of the land in vicinity of the 300 Area, and conservation (mining) in some areas closer to the Columbia River. With only two exceptions, all of the currently identified 300-FF-2 OU waste sites are included in areas that have been designated for industrial land use. ...In addition to the HCP-EIS preferred alternative, these land-use scenarios are consistent with assumptions made in the 300-FF-1 and 300-FF-5 ROD and current use/long-range planning by DOE, the City of Richland and Benton County." This is an issue that arose during Ecology's review of the 300-FF-2 Focused Feasibility Study. Ecology's concern is whether it is appropriate for an EIS and ROD to set forth land-use designations for the Hanford Site? This problem may be resolved as the HRA-EIS has been finalized. Update this section to reflect current conditions. If the decision on land-use has not been made for the 300 Area and this document is proceeding under the assumption final land use will be industrial, state it as an assumption and include language to reflect when it will be necessary for the decisions in this ROD to be reviewed once final land-use decisions are made.
17	1	3	4 thru 7	This section indicates that the justification for land use determination is The *Final Hanford Comprehensive Land-Use Plan and Environmental Impact Statement*. This

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				document is insufficient to use as the sole justification for land use determination. WA State's Model Toxics Control Act includes a series of criteria that must be met in order to determine the cleanup criteria that must be used for any contaminated site. A discussion of further justification for land use determination is needed and a detailed evaluation of the MTCA criteria is necessary to support subsequent cleanup criteria. Include this information in the document.
17	2		Highlight C	Include a reference for the 300 Area Revitalization Project Management Plan in the second paragraph of "Highlight C".
17	2	2	3-end	The following statement is made concerning using groundwater as a secondary media of concern: "External exposure to radiation from solid wastes and contaminated soils is the primary exposure route. Air, biota, and groundwater are secondary media of concern because of the likelihood of these media becoming contaminated is less and/or the magnitude of their potential contamination is small. This statement cannot be supported by other groundwater work at Hanford. In the 200 Area, compounds that were also thought absorbed by the soils have demonstrated considerable mobility. Considering the proximity of the considerable contamination in the 300-FF-2 OU to ground water, the Columbia River and drinking water sources for local communities, an enormous contamination potential is present. This statement is not technically defensible and should be removed.
17	2	2	4 thru 5	This section (Human Health) '... includes the industrial and inadvertent intruder scenarios.' As mentioned in an earlier comment, cleanup of contaminated sites outside the fence surrounding the main 300 Area Complex are to be cleanup up to residential standards. Therefore it is necessary to discuss the residential resident scenario for this document as well. Include this information in the proposed plan.
17 thru 10			Risk Assesmt	The human health risks of Table 1 were apparently generated without consideration of risks associated with contaminated ground or surface water. Therefore, HSRAM and RESRAD values must be re-generated which calculate potential contaminant migration using assumptions which are

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				supported by actual monitoring data representative of the contamination concentrations occurring in groundwater and surface water beneath and beside the 300-FF-2 OU.
17 thru 20			Risk Assesm't	The assessment of site risk as explained on pages 17 through 20 appear to be based upon questionable assumptions. The Focus Feasibility Study (FFS) Appendix E describes the risk assessment methodology. Examples of questionable assumptions are the following statements: "However, groundwater is unlikely to become contaminated through migration of 300-FF-2 contamination, because there is no significant driving force (i.e., large volumes of water) to move contaminants through the vadose zone to groundwater. Monitoring wells that observed levels of contamination in the past are no longer contaminated, as the levels have dissipated due to groundwater attenuation." The methodology description also includes the following explanation: "Because of the uncertainty that migration of 300-FF-2 OU contaminants could ever take place, no calculations of potential contaminant migration have been performed." Previous studies have documented that groundwater contamination is occurring beneath the 300-FF-2 OU. Specifically, the "Remedial Investigation/Feasibility Study Report for the 300-FF-5 Operable Unit" (DOE/RL-94-85, Rev.0) indicates contaminated seeps located along the 300 Area's river edge. These contaminated seeps represent the movement of contaminated groundwater. In addition, river stage strongly influences both groundwater flow and contaminant exchange rates between the aquifer and the river. While this effect is most pronounced near the river, it is also observed throughout the operable unit. Gradient reversals, causing flow to move from the river into the 300-FF-5 Operable Unit are common and are facilitated by the high transmissivities measured in the Hanford formation. Therefore, the risk assessment must be inclusive of groundwater and surface water and must consider that 1) contamination is present and 2) contamination is mobile.
18			Risk Assesm't	As Table 2 has omitted several preliminary remediation goals (PRGs) associated with additional contaminants of concern (COCs), (i.e., tritium, nitrate, potassium-40, fluoride, petroleum constituents, etc.), it is necessary to re-generate the risk calculations to confirm if the inclusion of

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				applicable COCs decreases risk levels below the "generally" represented risk level of 1 X 10^{-6}.
18	1		Insert 3rd item	The third item in the insert assesses potential health dangers. The WA State Model Toxics Control Act requires a risk factor of one in a hundred thousand. MTCA should be called out as an ARAR under CERCLA. Therefore it is necessary than any cleanup meet the most restrictive ARAR and this section should indicate that the criteria to be met is 1 in a hundred thousand.
18	2	2	3	The comment is made: "Comparison of representative contaminant concentrations to the PRGS in Table 2 indicates that the risk to future site users would be expected to be above the risk range of 1X10-4 to 10X10-6 and above a hazard index of 1.0 (Industrial land use) As an ARAR, MTCA accumulative risk for contaminant concentrations at a site is 1X10-5 and individual 1X10-6 (individual industrial 1X10-5). Risk that is least as stringent as the above risk range is considered applicable for determining preliminary remediation goals in soil and ground water. Risk associated with industrial exposure for all pathways is not necessarily protective. (see earlier comment on the application of MTCA)
18	2	3	End	At the end of the paragraph, the value of 500 mrem is used as a threshold value for the inadvertent intruder scenario. As has been discussed, it is inappropriate to use a NRC related value to determine risk. Risk must be based on risk factors. Therefore update this section to indicate the risks involved or justify the use of this risk value in a CERCLA document.
18	2	4		The fourth paragraph describes the ecological risk evaluation. The 300-FF-2 OU FFS and Proposed Plan conclude that the risks associated to the pocket mouse population is not transferred to predators. This conclusion needs to be supported by more current and detailed risk assessments than those performed for the 300-FF-1 and 300-FF-5 OUs. On the Hanford Site, when there is evidence of biological intrusion, the evidence is collected and disposed of as a radiologically contaminated biological waste. The conclusions described in the 300-FF-2 OU draft documents

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				do not appear to agree with current policy or procedures. Similarly, as is reflected by the numerous Hanford Site Occurrence Reports, radiologically contaminated material configuration control remedy is continually reported for indications of ecological and biological effects that go beyond mice. In other words the accuracy associated with the conclusion that the increased risk does not have an affect on mouse populations and is not transferred to predators should be confirmed by current ecological risk assessments which have adequately evaluated the pathways, exposures and risks. In addition, ecological risk assessments made for other Hanford Site areas also should be discussed, especially those assessments made for the 100 Area.
19 thru 20				Due to the inherent uncertainties with burial ground risk assessment (as described in Appendix E of the "Focused Feasibility Study for the 300-FF-2 Operable Unit"), risk ranges or bounding scenarios need to be calculated and included in the Proposed Plan.
21			Tab. 2	Table 2 does not include tritium or nitrate. Both tritium and nitrate have been repeatedly observed exceeding applicable water quality standards in groundwater monitoring wells located downgradient from both the 618-10 and 618-11 Burial Grounds.
21			Tab. 2	Elevated potassium-40 measurements were noted in HEIS data collected from well 699-S6-E4D located downgradient from the 618-10 Burial Ground. Identify if potassium-40 was evaluated for inclusion as a contaminant of concern. Similarly, elevated fluoride measurements were observed in wells located downgradient from the 618-10 Burial Ground. Identify if fluoride was evaluated for inclusion as a contaminant of concern.
21		Table 2		Table 2., Comparison of Maximum Contaminant Concentrations to Preliminary Remediation Goals in an Industrial Scenario, is significantly incomplete (see earlier comment addressing contaminants of concern issues). To reiterate, there are repeated references to other contaminants of concern in the appendices and attached Tables that are not found in Table 2. Inorganic and organic species (for example organic compounds such as TCE and DNAPLs) are reference frequently in the attachments and mentioned in 300-FF-5 as impacting ground water and are not found in

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				table 2. These constituents of concern have a pronounced environmental impact. The Table requires substantive review and edit. Cleanup values for Industrial soil reference in Table 2 are not protective of all pathways. Designation of land in the 300 Area for industrial use does not automatically qualify the land for MTCA Industrial Cleanup Standards. (See earlier comment on land designation issues).
21	1		1	Although the 300-FF-2 OU draft documents identify Remedial Action Objectives (RAOs), they do not currently contain a proposed approach for achieving remedial action objectives (i.e., soil cleanup levels have not been identified). If specific lookup values are not available due to the lack of site-specific information, then a specific approach for determining these cleanup levels needs to be identified (i.e., describe the specific steps that will be followed in the RD/RA workplan process). For non-radionuclides, contaminant-specific cleanup levels must be identified or a site-specific risk-based approach must be identified. All cleanup levels must meet the RAOs of protection of human and ecological receptors and protection of water quality in ground waters and surface waters.
21	1		2nd Bullet	The second bullet needs to be re-worded to address compliance points. Specifically, the compliance monitoring program requirements of WAC 173-340-410 are designed to monitor source units (at appropriate compliance points) to confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of an interim action or cleanup action, confirm that the interim action or cleanup action has attained cleanup standards, and confirm the long-term effectiveness of the interim action or cleanup action once cleanup standards have been attained.
21	1	1		The first sentence of the first paragraph states: "Remedial action objectives (RAOs) were developed based on potential future land uses, applicable or relevant and appropriate requirements (ARARs), and worker safety." According to the risk assessment methodology as described in Appendix E of the *Focused Feasibility Study for the 300-FF-2 Operable Unit* (DOE/RL-99-40, Draft A), "the conceptual model for the 300-FF-2 OU presents external exposure to radiation from the soil and solid wastes as the primary exposure routes

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				because they represent the most abundant source of potentially contaminated material." This description of the conceptual model used implies that potential future land uses (e.g., non-industrial, recreational, residential, etc.) were not considered by the conceptual model. The risk assessment methodology description goes on to say the following: "Surface water, groundwater, air and biota are secondary media of concern for evaluating potential exposures because the likelihood of these media becoming contaminated is small and/or the magnitude of their potential contamination is small." Clearly, the conceptual model used for the risk assessment does not consider groundwater quality or pre-existing groundwater contamination associated with 300-FF-2 operable units.
21	1	1	4 thru 6	The statement is made: 'Current land-use documents identify that the 300 Area will remain an industrial area for a t least the next 50 years.' Please include a reference justifying this statement.
21	1	2nd Bullet		The following statement is made: "Prevent migration of contaminants through soil to groundwater and the Columbia River such that concentrations reaching groundwater and the river do not exceed ARARs or risk-based criteria." This RAO developed for the 300-FF-2OU waste sites underlines Ecology's concern in the selection of institutional controls (restrictive access and monitoring) as the primary remedy component for ground water and the river (see above comment). Sources of contamination from the Hanford Site must be identified and removed or remediated before releases are allowed to impact ground water, and remediated in ground water before contaminants reach the Columbia River. The use of the river or ground water to attain a concentrations that is protective is not allowed under state authority. Ecology at this time does not feel that the existing institutional controls in the 300 Area are protective of human health and the environment nor are they in agreement with EPA Final Policy on the Use of Institutional Controls quoted above. Detailed descriptions of site-specific institutional controls and environmental monitoring are lacking in 300-

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				FF-1, 300 FF-5 RODs and FF-2 OU FFS and the proposal. Institutional controls and continued monitoring are repeatedly identified for most of the options and an inherent component of the preferred alternatives for a majority of the units in the 300-2 OU FFS and proposal, although details are not provided. The proposal document needs to be rewritten and IC requirements established that would bring it into agreement with EPA Policy and state and federal regulations. The proposal indicates "Potential ARARs for remedial action are documented in the 300-FF-2 OU FFS (Pg. 21, Paragraph 1)." At this time, any assumptions in the 300-FF-2 FFS concerning ARARs that are consistent with the FF-1 and FF-5 are in question and the above concerns and recommendation applies. If the reference to consistency remains, Ecology recommends that indication of Ecology's position be added to the document.
21	2	2		Include an identification in the no action alternative description that this alternative does not satisfy applicable relevant and/or appropriate ARARs.
21	2	3		The last sentence of the paragraph states: "The RTD alternative assumes an excavation depth sufficient to meet all RAOs, including protection of groundwater and the Columbia River." The selection of 1,000 mg/kg lead soil cleanup level as a preliminary remediation goal does not satisfy applicable MTCA ARARs. Specifically, WAC 173-340-700 through –760 (MTCA Cleanup Standards) are not satisfied as applicable ARARs. For example, the groundwater cleanup standards of WAC 173-340-720 are applicable to the 300-FF-2 OU source sites. WAC 173-340-720 requires that "groundwater cleanup levels shall be based on estimates of the highest beneficial use and the reasonable maximum exposure expected to occur under both current and potential future use site conditions." The 300-FF-2 OU Proposed Plan and Focused Feasibility Study clearly indicate that remedial action objectives were developed assuming that exposure to contaminants (lead in this example) could occur with industrial use of the site. The risk-calculation assumptions clearly do not satisfy WAC 173-340-700 through –760. Therefore, either delete or re-write the above referenced sentence. If the sentence is not deleted or re-

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				written, include an identification that the selected RAOs do not satisfy Washington State law or applicable ARARs.
21 thru 23				From the description of the "plug-in approach" proposed for the 20 candidate sites, it appears an additional alternative to "characterize and select RTD, cover system, containment or institutional control/continued monitoring remedy" should be added to the list of alternatives being considered.
22	1	2		The last sentence of the paragraph states: "Therefore, the RTD alternative would rely on existing cover systems and institutional controls to ensure protection of human health and the environment until it is implemented." WAC 173-340-410 requires compliance monitoring. To satisfy WAC 173-340-410 compliance monitoring requirements, re-write the sentence to include "and compliance monitoring" between the words "cover system" and "and institutional controls".
24	2	1	2	The following statement is made concerning contamination below 15 feet: "It is anticipated that the RAOs at many site would be achieved at depths of less than 4.6 m (15 ft.). If RAOs cannot be achieved in the top 4.6m (15 ft) or at the bottom of the engineering structure, balancing factors would be used to determine the extent of additional removal operations." Washington State law requires that all contamination be remediated such that all pathways of the state are protected. Therefore, if a detailed risk assessment indicates a threat is posed by contamination below 15 feet, remediation must continue in order to protect ground water and surface water pathways.
26	2	5	3	The following statement is made concerning alteration of cleanup standards after remediation begins: "If it is determined that the RAOs cannot be met within a reasonable time frame, an alternative concentration limit or a technical impracticability waiver may be needed to achieve compliance with groundwater protection ARARs." Under state law the ability to adjust concentration limits set for a site to meet compliance is non-negotiable unless an

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				extensive re-evaluation of new scientific information supports the decision. Under state law, cleanup standards for sites are set for a site before remediation begins to ensure human health and the environment are protected. Modification of cleanup levels either following remediation or during verification analysis is contrary to MTCA. A remediation level that is greater than an applicable standard can be applied at a site with a restrictive covenants and appropriate institutional controls implemented to limit potential exposure to residual hazardous substances. However; if a cleanup action cannot achieve risk based cleanup standards or remediation levels are set at values greater than human health risk base levels then the site cannot be released from no further action and/or liability constraints by the state. Until the human health base risk levels defined by federal and state regulations are achieved, the site is open to further state cleanup actions. A waiver or altering concentrations cannot be used to demonstrate compliance with human health risk base standards.
29	1 & 2			The RTD/Contingency Remedy Approach for Source Sites within the 300 Area Complex as described in the two paragraphs on page 29 must be removed from the Proposed Plan. As indicated by January 2000 EPA correspondence, the contingency remedy as described in the Proposed Plan is unacceptable to both EPA and Ecology.
30	2	3		The plug-in approach for candidate sites is described in the third paragraph. Several land-based source site units are among the 20 candidate sites. For example, the JA Jones 1 site (burial ground or landfill), the three drain fields (surface-impoundment-like units), a trench (surface-impoundment-like unit), and two burial grounds (landfills) are included among the 20 candidate sites. The plug-in approach was intended to be applied to waste sits having "having similar characteristics due to common waste management practices (e.g., liquid waste disposal trenches), common media, and common contaminant types" (source: *The Plug-In Approach: A Generic Strategy to Expediting Cleanup*, DOE/EH-413-9903, May 1999). As such, the underlying premise for applying the generic approach is waste site similarities. If the descriptions of Table A-3 of the Proposed Plan are reviewed, it may be concluded that little is known

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				about waste contaminants of certain candidate site source units. In addition, the management practices of the burial grounds or landfills are neither similar nor "common". Perhaps most importantly, the uncertainty and variability associated with burial grounds is accurately described in the 300-FF-2 Focused Feasibility Study by the following: "Various burial grounds supporting the 300 Area fuel fabrication and laboratory activities operated from the mid-1940's to mid-1970's and received a broad spectrum of hazardous, radiological, and mixed waste, including uranium, fission products, constituents of transuranic waste, acids, solvents, and metals (including pyrophoric materials). Burial grounds are difficult to characterize due to their heterogeneous nature, and quantitative data are generally not available. Records documenting the inventory for many of the burial ground sites are poor, especially for those that operated in the 1940's and 1950's." Therefore, all candidate sites included in Table A-3 should not categorically be eligible for the "plug-in approach', as they clearly don't meet the "plug-in approach" criteria.
30	2	3		The plug-in approach for candidate sites is described in the third paragraph. Several land-based source site units are among the 20 candidate sites. For example, the JA Jones 1 site (burial ground or landfill), the three drain fields (surface-impoundment-like units), a trench (surface-impoundment-like unit), and two burial grounds (landfills) are included among the 20 candidate sites. The plug-in approach was intended to be applied to waste sits having "having similar characteristics due to common waste management practices (e.g., liquid waste disposal trenches), common media, and common contaminant types" (source: *The Plug-In Approach: A Generic Strategy to Expediting Cleanup*, DOE/EH-413-9903, May 1999). Source-specific characterization is typically documented in a Remedial Investigation/Feasibility Study (RI/FS). In addition, a RI/FS was not generated for the 300-FF-2 but rather a limited field investigation (*Limited Field Investigation Report for the 300-FF-2 Operable Unit*, DOE/RL 96-42) was issued prior to the issuance of the 300-FF-2 Proposed Plan and Focused Feasibility Study documents. In addition, the Proposed Plan indicates that additional characterization is necessary for the 20 candidate sites. Therefore, the "plug-in approach" should not be applied to the 20 candidate sites until each site meets the necessary criteria (i.e., having similar characteristics due

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				to common waste management practices (e.g., liquid waste disposal trenches), common media, and common contaminant types).
31			Fig. 6	Figure 6 provides a flow chart for the contingency remedy decision making process. Both Ecology and EPA have concluded the "contingency remedy" approach for source sites within the 300 Area complex, as described in the draft FFS and Proposed Plan, is inappropriate and must be removed. This approach, as it is currently described, is inconsistent with EPA policy on the use of contingency remedies. In order for this to be a contingency remedy, an alternative cleanup approach (e.g., limited action), the specific criteria for invoking this approach (e.g., reasonably anticipated future use as a parking lot), and the specific process that will be employed for the alternative approach (e.g., an ESD) must be identified in the Proposed Plan for the public to comment on. In other words, DOE would be soliciting comments on two specific cleanup approaches and obtaining feedback on both at the same time. In addition, both cleanup approaches must be acceptable under the CERCLA nine-criteria analysis. As it is currently written, DOE is explaining the current process that already exists for modifications to a signed ROD. As such, it adds nothing, but potential confusion, to the document and thus should be removed completely.
36			Glossary	As the "contingency remedy" has not been accepted by EPA or Ecology (as indicated in an EPA letter addressed to Bilson, issued January 2000), the definition should be deleted from the glossary.
36			Glossary	A definition of "burial ground" needs to be included in the glossary. The Proposed Plan does not clearly distinguish between burial grounds, dumping areas and pits, all of which may be considered "burial grounds".
36			Glossary	A definition of "compliance monitoring" needs to be included in the glossary. WAC 173-340-200 defines "compliance monitoring" as meaning: a remedial action that consists of monitoring as described in WAC 173-340-410.

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37			Glossary	A definition of "point of compliance" needs to be included in the glossary. WAC 173-340-200 defines "point of compliance" as meaning: the point or points where cleanup levels established in accordance with WAC 173-340-720 through 173-340-760 shall be attained.
37			Glossary	The definition for "operable unit" needs to include an identification that groundwater operable units have been defined or established at the Hanford Site.
37			Glossary	The definition for "plug-in approach" should include the following source site attributes for applying the generic approach: similar characteristics due to common waste management practices, common media, and common contaminant types.