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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JAN 03 1996

JAN 1996 RECEIVED EDMC

Mr. Russell Jim
Confederated Tribes and Bands
of the Yakama Indian Nation
P.O. Box 151
Toppenish, Washington 98948

Dear Mr. Jim:

RESPONSE TO THE CONFEDERATED TRIBES AND BANDS OF THE YAKAMA INDIAN NATION (YIN) COMMENTS REGARDING COVER LETTER (ATTACHMENT 1), THE 200-BP-1 PROPOSED PLAN (ATTACHMENT 2), THE 300 AREA PROCESS TRENCHES CLOSURE PLAN (ATTACHMENT 3), AND THE 100-KR-2 FOCUS PACKAGE

References: (1) YIN letter to J. D. Wagoner form R. Jim, "Hanord 100-KR-2, 200-BP-1 and 300 Area Process Trenches; Comments on Remedial Actions Being Planned by DOE/RL," dated May 9, 1995. 41206

(2) EPA letter to R. Jim from L. E. Gadbois, "Comments on the 100-KR-2 Focus Package," dated March 21, 1995.

Attached please find the subject responses to the YIN comments dated May 9, 1995, (Reference 1). References to the 100-KR-2 Focus Package comments were previously prepared and transmitted by the U.S. Environmental Protection Agency (Reference 2) and are not being resubmitted in this transmittal. 40660

We apologize for the delay in responding to your comments. Several of the key comments are related to land use and we were concerned that our responses would be premature. In the future, if we do not anticipate being able to respond to your comments in a reasonable period of time, we will notify you.

Sincerely,

Richard A. Holten, Director
Restoration Projects

RAP:RGM

Attachments: As stated

cc w/attach:
S. Alexander, Ecology
P. Beaver, EPA
R. Cook, YIN
G. Eidam, BHI
D. Einan, EPA
S. Liedle, BHI
D. Powaukee, NPT
D. Sherwood, EPA
L. Treichel, EM-442
J. Wilkinson, CTUIR
J. Woolard, BHI
T. Wooley, Ecology

Attachment 1

RESPONSES TO YAKAMA INDIAN NATION (YIN) COMMENTS REGARDING COVER LETTER

The key issues raised in the cover letter pertain primarily to the U.S. Department of Energy's (DOE) intent to permanently dispose of long-lived wastes on the 200 Area Plateau. The cover letter raises issues relative to YIN reserved rights to the area and comparability with commercial waste requirements.

While DOE has not formally made a decision to declare a land use for the 200 Area, the likely scenario is that the 200 Area and a surrounding buffer zone would be designated as a waste management area with no specified date for making this land available for other uses. Thus, the 200 Area and the surrounding buffer zone could not become open and unclaimed land for treaty purposes for at least the foreseeable future. This long-term waste management designation would be consistent with the radioactive waste disposal mission of the 200 Area as identified in several previous Environmental Impact Statements (EIS) such as DOE/EIS-0113, "Disposal of Hanford Defense High-Level, Transuranic and Tank Waste" and DOE/EIS-0119, "Decommissioning of Eight Surplus Production Reactors at the Hanford Site." At some point, limited tribal or public use of the this land could be considered, but would be permitted under deed restrictions which would certainly preclude irrigation or intrusive activities in or near waste disposal sites. As such, we would not expect to establish risk scenarios which involve irrigation or unlimited intrusion.

The formal decision process on general land uses for the Hanford Site is scheduled to begin in FY 1996 with the issuance of the Hanford Environmental Remediation EIS and the Draft Comprehensive Land Use Plan for the Hanford Site. Issuance of these documents would include appropriate consultation with your representatives.

Several comments were also made about lack of comparability with commercial waste requirements specified by the Nuclear Regulatory Commission. The key regulatory statutes for closure of the 200 Area Sites will be either RCRA or CERCLA both of which maintain a policy of protection of the worker, the public, and the environment and thus are comparable with the intent of Nuclear Regulatory Commission regulations.

Attachment 2

RESPONSES TO COMMENTS ON THE HANFORD 200-BP-1 OPERABLE UNIT PROPOSED PLAN

General Comments:

YIN Comment #1: Identification and consideration of surface barriers, on-site land filling, institutional controls and use of material from the basalt outcroppings or McGee Ranch as part of long-term interim or final remedial measures for cleanup of the 200-BP-1 Operable Unit place unacceptable restrictions on future beneficial use of the land, provide little consideration of the cultural and religious values placed on areas by the Native Americans, require an unacceptable, irreversible and irretrievable commitment of resources, are inconsistent with and preclude implementation of the expected solution for cleanup of the Hanford Site and therefore violate section 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations, and do not recognize systems-engineering as a viable means of effectively and efficiently utilizing available resources (see comment numbers 2, 6, 7, and 8).

RL Response: As stated in our response to comments in the cover letter, DOE anticipated that future use of the 200 Area will be restricted indefinitely. However, DOE will evaluate ways to minimize the restrictions and commitment of resources where feasible and reasonable. For example, DOE is currently evaluating other sources for and alternatives to basalt rip-rap and McGee Ranch soil. Further, implementation of the Proposed Plan would not preclude many of the traditional Native American uses for the Hanford land.

The 40 CFR 300.430 (a)(ii)(B) states "Operable units, including interim action operable units, should not be inconsistent with nor preclude implementation of the expected final remedy." The preferred alternative indicated in the 200-BP-1 Proposed Plan is a final remedy. Therefore, the identification and consideration of surface barriers, on-site land filling, institutional controls and use of materials to implement this remedy is not in violation of 40 CFR section 300.430 (a)(ii)(B).

YIN Comment #2: Information presented in the document indicates that a plume of contamination exists between 15 and 50 feet below ground surface and that highly mobile contaminants are still present in the soil column below 50 feet. While current groundwater contaminant concentrations may not be as elevated as historical levels, this plume as well as the deeper contaminants will continue to act as a future source of groundwater contamination. Depending on future use of the land, such as potential worst-case irrigation scenario, this source could result in increasing groundwater contaminant concentrations (see comment number 3).

RL Response: The worst case scenario assumes agricultural land use for the 200 Area. Restrictions on 200 Area land use will almost certainly preclude agricultural scenarios.

DOE does not agree with the concerns over deeper contaminants. Implementation of an effective surface barrier will significantly reduce infiltration of water into the vadose zone and restrict migration of any of the vadose zone contaminants such that groundwater outside the buffer zone around the 200 Area will be available for use sometime in the future.

YIN Comment #3: Although this summary document does not detail the scenario by which exposure to subsurface soils and groundwater could occur, it is assumed the scenarios are similar to those used in the Hanford Remedial Investigation and Feasibility Study Report for the Environmental Restoration Disposal Facility (ERDF) (DOE/RL-93-99, Revision 1). As a result, risk from exposure to soils from the 200-BP-1 Operable Unit should be higher than what is reported in this summary document. Also, the groundwater scenario should have resulted in higher groundwater contaminant concentrations, faster travel times to the site boundary and, therefore, more contaminants of potential concern being retained for further consideration in the risk assessment. Groundwater use for irrigation and livestock should also have been evaluated with this data incorporated into an inter-related ecological/human health risk assessment.

RL Response: The assumption that the scenario by which exposure to subsurface soils could occur is similar to ERDF is incorrect. The 200-BP-1 Operable Unit (OU) exposure scenario assumes the contaminated soils are uncovered (for whatever reason) and a person is directly exposed to the soils. If the ERDF scenario were used at 200-BP-1 OU, the associated risks would be much lower than reported in the summary document.

The risk associated with groundwater was not calculated for 200-BP-1 OU. The groundwater scenario simply uses the Safe Drinking Water Act Maximum Contaminant Level as an acceptable or unacceptable risk level in the groundwater beneath the OU. Therefore, calculating groundwater travel times to the site boundary were not considered a necessary part of the discussion for this source OU. Modeling was performed using various precipitation infiltration rates to predict the migration of Uranium, due to its mobility and presence in the soil column. As demonstrated by current monitoring efforts, the modeling is conservative. The modeling predicted higher contaminant levels in the groundwater than is currently observed. Refer to our response to general comments 1 and 2 relative to irrigation and livestock.

YIN Comment #4: Also, as with the ERDF document, it is likely the risk assessment for the 200-BP-1 Operable Unit is short-sighted and incomplete in that it 1) assesses only the carcinogenic and non-carcinogenic effects from exposure to the contaminants on a single most-exposed individual and ignores effects on the overall population; 2) focuses only on the effects of contaminant exposure on an individual of this generation and ignores other effects, such as bio-accumulation and mutagenesis, that may affect future generations; 3) ignores bio-accumulation and mutagenic effects within and upward through the food chain; 4) assumes human health screening values are also appropriate for ecological receptors and; 5) does not consider additive risks from contaminants already in the underlying groundwater system.

RL Response: Although many of the scenarios mentioned above were not evaluated, scenarios that were evaluated showed an unacceptable risk associated with exposure to the contaminated soil. The scenario for 200-BP-1 is considered conservative and adequately representative of possible future conditions. Therefore, the evaluation of additional scenarios was not necessary and would be an unnecessary use of resources.

YIN Comment #5: Comments such as these, related to the usefulness of applied risk assessment methodologies, will continue until appropriate land use and exposure scenarios have been negotiated and agreed to with representatives from Native American Nations (see comment number 4).

RL Response: See response to cover letter comments and general comments 2 and 3.

YIN Comment #6: The scenario for 200-BP-1 is considered conservative. Actual risk(s) from exposure to soils from 200-BP-1 may actually be lower and the groundwater scenario is extremely conservative, possibly resulting in lower contaminant concentrations than levels reported in the proposed plan.

The proposed plan for the 200-BP-1 Operable Unit does not meet any of its remedial action objectives. Risk due to exposure from soils could exceed specified ranges under more-appropriate exposure scenarios. Limiting biotic intrusion places unacceptable restrictions on future use of the land by Native Americans and their future generations. Groundwater would continue to be impacted under more-appropriate fate and transport modeling scenarios and would result in unacceptable human health and ecological risk (see comment number 5).

RL Response: See response to general comments number 1 and 4.

YIN Comment #7: The preferred alternative (Alternative D: Modified RCRA Barrier) may not be in compliance with all identified ARARs. This alternative does nothing to remediate existing soil contamination. This soil will continue to be a source of groundwater contamination and therefore pose continual, unacceptable risks to future generations of Native Americans as well as the food-chain resources on which they rely. Furthermore, selection of this alternative is inconsistent with, and precludes, implementation of the expected solution for cleanup of the Hanford Site and is therefore in violation of 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations (see comment number 16)

RL Response: DOE believes that the preferred alternative (Modified RCRA Barrier) does meet the basic remedial action objective of protecting human health and the environment.

The 40 CFR 300.430 (a)(ii)(B) states "Operable units, including interim action operable units, should not be inconsistent with nor preclude implementation of the expected final remedy." The preferred alternative indicated in the 200-BP-1 Proposed Plan is a final remedy. Therefore, the identification and consideration of surface barriers, on-site land filling, institutional controls and use of materials to implement this remedy is not in violation of 40 CFR section 300.430 (a)(ii)(B).

YIN Comment #8: Justification for the preferred alternative is based on the statement that it will not create additional waste site(s). It is unclear how DOE can then justify the Environmental Restoration Disposal Facility as it would result in the contamination of the underlying clean soil column and vadose zone (see comment number 7).

Justification for the preferred alternative is based on the statement that, since the contaminated soils must remain on the Hanford Site for the foreseeable future regardless of the alternative chosen, and the most significant contamination is located from 15 to 50 feet below the ground surface, it makes sense to leave the waste in place at this operable unit. This statement is very short-sighted and inhibits recycling efforts and the identification and development of systems-engineered technologies within DOE and its contractors for cleanup of the Hanford Site. This statement also ignores the Native American's expected final remedy of the Hanford Site and the return of the land for unrestricted and beneficial traditional use (see comment number 18).

RL Response: The two statements mentioned above are two of many facts and were not solely relied upon for choosing the preferred alternative. Please refer to the 200-BP-1 Remedial Investigation/Feasibility Study (RI/FS) for a more detailed discussion. DOE recognizes that the introduction of new systems-engineered cleanup technologies in the future would have a bearing on decisions similar to this one in the future. In regard to land use, see response to general comments 1 and 2.

YIN Comment #9: The proposed plan fails to integrate potential closure and remedial activities with other adjacent units such as the BY Tank Farm. In accordance with the systems-engineering approach, similar and/or adjacent facilities should be considered jointly when possible in order to effectively and efficiently utilize available resources for cleanup of the entire Hanford Site and the expedited release of current and future areas for other beneficial use. Under the Hanford Federal Facility Agreement and Consent Order Action Plan (Sections 3.3, 5.5, and Appendix C), such integration is required to ensure that unit contamination is most economically and efficiently addressed by preventing overlap and duplication of work (see comment numbers 5 and 19).

RL Response: Comment noted. DOE recognizes the potential risk associated with placement of a barrier at 200-BP-1 due to future remediation of the adjacent BY Tank Farm. However, all parties have agreed to work closely in the future to ensure remediation of the BY Tank Farm does not adversely affect remediation activities for the 200-BP-1 OU.

Specific Comments:

YIN Comment #1: It is not agreed that 2 feet of clean soil cover can be so pointedly stated as a means by which contaminant migration and exposure is reduced. The addition of cover can actually increase contaminant mobility because it may have resulted in the elimination of site vegetation that originally aided in reducing water infiltration through the soil column.

Also, unless this cover is composed of a highly impermeable material, it is unlikely to have any significant impact on reducing contaminant mobility and therefore exposure through the groundwater pathway. Two feet of soil cover is also not likely to provide noticeable protection from surface or airborne exposure because it is not thick enough to prevent bare spots from arising due to erosion (water and air). It may be more correct, and therefore it is recommended here, to eliminate any reference to this minimal soil cover with the protection of human health and the environment.

RL Response: The addition of 2 feet of clean cover was conducted several years ago as an interim, short term action to prevent further spreading of contaminants due to wind and water. This type of action has been very effective in maintaining contamination control on an interim basis.

YIN Comment #2: Use of surface barriers as long-term interim or final remedial measures is not consistent with, and precludes, implementation of the Native American's expected solution for cleanup of the Hanford Site and expedited return of the land for unrestricted and beneficial traditional and cultural use. These barriers, as well as other proposed activities that do not consider Native American values, are therefore in violation of 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations.

RL Response: See response to general comments 1 and 2.

YIN Comment #3: It is not agreed that an overall statement can be made that contaminant concentrations entering the groundwater from the 200-BP-1 Operable Unit are declining. Information presented in the document indicates that a plume of contamination exists between 15 and 50 feet below the ground surface and that highly mobile contaminants are still present in the soil column below 50 feet. While current groundwater contamination concentrations may not be as elevated as historical levels, this plume as well as the deeper contaminants will continue to act as a future source of groundwater contamination. Depending on future use of the land, such as a potential worst-case irrigation-use scenario, this source could result in increasing groundwater contamination.

RL Response: The statement, "contaminant concentrations entering the groundwater from the 200-BP-1 OU are declining," is an observation stemming from groundwater sampling data. The groundwater data indicates a continuing decline in contaminant levels. In addition, during the investigations of 200-BP-1 OU, soil samples were analyzed for moisture content. The results indicate the soil column moisture content to be between 3% and 4%, with natural moisture content between 2% and 3%. This indicates that moisture in the soil column is near steady state levels (i.e.; before Hanford operations) and the flux of water entering the groundwater is very near equilibrium.

It is recognized that a small amount of the highly mobile contaminants remain in the soil column, although the majority of these contaminants have already reached the groundwater. The plume that currently exists between 15 and 50 feet below the ground surface consists mainly of relatively immobile contaminants such as strontium and cesium.

YIN Comment #4: Although this summary document does not detail the scenario by which exposure to subsurface soils and groundwater could occur, it is assumed the scenarios are similar to those used in the Hanford Remedial Investigation and Feasibility Study Report for the Environmental Restoration Disposal Facility (ERDF) (DOE/RL-93-99, Revision 1). For the ERDF: a) contaminated soils would be brought to the surface as a result of drilling (500 year drilling scenario). Risk from exposure are diluted 1,000-fold as a result of being spread out over the site (mixed with cleaner soils); b) for the groundwater scenario, infiltration rates were assumed to be approximately an order of magnitude higher than what would be expected under current climatic conditions; c) use of contaminated groundwater was only evaluated for human receptors. Use of contaminated groundwater for crops of livestock was assumed not to occur; and d) it was assumed that the contaminants of greatest concern from an ecological perspective would be identified with a human health risk-based screening process.

RL Response: The assumption that the scenario by which exposure to subsurface soils could occur is similar to ERDF is incorrect as was stated during a December 1994 meeting with YIN staff. The 200-BP-1 OU exposure scenario assumes the contaminated soils are uncovered (for whatever reason) and a person is directly exposed to the soils. In addition, exposure was evaluated for a receptor down gradient based on wind dispersion of the contaminated soils. If the ERDF scenario were used at 200-BP-1 OU, the associated risks would be much lower than reported in the summary document.

The risk assessment used the very conservative estimate of 22.5 cm/yr for maximum future infiltration rates (current estimates of infiltration are generally less than 1 cm/yr). A groundwater irrigation-use scenario is not considered to be a credible use, and therefore was not included in the risk assessment.

Infiltration rates used for transport modeling of Uranium ranged from 0.1 cm/yr to 22.5 cm/yr. The modeling was performed for the site in its current state (i.e.; with no action taken) to assess the potential migration of uranium to groundwater in excess of EPA's proposed safe drinking water due to natural precipitation. The infiltration rates used in the modeling represent conservative assumptions of the upper and lower possible infiltration rates on the Hanford Site. The modeling indicated a potential exceedance of the proposed MCL for uranium (the most restrictive requirement). For this reason, performing additional risk assessments is not warranted and would be a misuse of resources.

YIN Comment #5: The proposed plan for the 200-BP-1 Operable Unit does not meet any of these remedial action objectives. Risk due to exposure from soils could exceed specified ranges under more-appropriate exposure scenarios (see Comment 4). Limiting biotic intrusion places unacceptable restrictions on future use of land by Native Americans and their future generations. Groundwater would continue to be impacted under more-appropriate fate and transport modeling scenarios and would result in unacceptable human health and ecological risk (see Comment 3 and 4).

Also, the proximity of the BY Tank Farm, or other adjacent facilities, should not be considered a deterrent to implementation of the appropriate remedial measure at the 200-BP-1 Operable Unit. In accordance with the systems-engineering approach, similar and/or adjacent facilities should be considered jointly, as possible, in order to effectively and efficiently utilize available resources for cleanup of the entire Hanford Site and the expedited release of current and future areas for other beneficial use. Under the Hanford Federal Facility Agreement and Consent Order Action Plan (Sections 3.3, 5.5 and Appendix C), such integration is required to ensure that activities remain physically consistent and to ensure that unit contamination is most economically and efficiently addressed by preventing overlap and duplication of work (see also Comment 19).

RL Response: In regard to land use, see response to general comments 1 and 2.

DOE agrees with the YIN that the proximity to the BY Tank Farm should not be a deterrent to implementation of the appropriate remedial measure at the 200-BP-1 OU and adjacent facilities should be considered jointly to ensure consistency of remedial actions and to minimize the expenditure of resources.

YIN Comment #6: It is not agreed that on-site land filling of excavated waste from the 200-BP-1 Operable Unit should be considered as the only disposal option. Most treatment scenarios currently being proposed by DOE are not considered long-term approaches to reducing the toxicity, mobility, or volume of the contamination nor a means of providing for the long-term protection of human health and the environment. On-site land-filling therefore becomes an unacceptable scenario of relocating the problem and/or potentially delaying the impact of the contamination on future generations and food-chain resources.

Other means of waste disposal such as treatment with deep geological disposal should be considered as they would result in greater long-term protection of human health and the environment and prevent yet another area of the Hanford Site from being contaminated as a result of improper or short-sighted waste disposal practices.

Although significant volumes of waste material may be generated as part of remediation of source and groundwater operable units at the Hanford Site, the driving force would be to identify and implement recycling and treatment technologies to minimize the final waste volume requiring disposal and reduce or eliminate its toxicity and mobility to render it safe for handling and off-site transportation. Treatment to achieve this disposal goal can incorporate best available technologies that can be implemented in a timely manner. The melter/slagger process being evaluated at Oak Ridge is an example of a technology that could be used to reduce the volume and mobility of radioactive

wastes. Calcining or super critical CO_2 application are examples of technologies that could reduce the toxicity, mobility, and volume of chemical wastes.

Systems-engineered treatment facilities such as these would not only result in lower short-term risks by rendering the waste safer to handle and transport, but also satisfy the much larger goal of providing effective long-term protection and permanence. Also, given sound engineering practices, public opposition to off-site disposal would be minimized. Systems-engineering is a viable means of effectively and efficiently using available resources to remediate the Hanford Site in a manner that will result in the long-term protection of human health and the environment and the expedited release of land for unrestricted beneficial use.

RL Response: There currently is no appropriate off-site disposal facility with the capability of accepting the volumes of materials present at the 200-BP-1 OU. Therefore off-site disposal of wastes from the 200-BP-1 OU was not considered a feasible alternative. Past consultation with the YIN indicate deep geologic disposal at Hanford is not an accepted method for disposal of radioactive waste.

If the preferred alternative for 200-BP-1 OU involves excavation of the contaminated soils, and the same remedy were to be selected for the remaining 55 or more waste sites in the B-Plant Aggregate Area (not to mention the remaining 200 Area), then excavation of these 55 waste sites would essentially require excavating the entire 200 East Area soil column down to groundwater. Although this may be technically possible, several key factors make this alternative impractical. The cost of excavation and waste handling would undoubtedly be astronomical. Worker safety concerns would be a vital consideration. In addition, a disposal site would be necessary for disposal of extensive volumes of contaminated soil. This last directly connected action will result in dislocation of native soils, additional wastes site(s), destruction of habitat, and other environmental impacts. The balance and tradeoffs between containment in place versus removal and disposal elsewhere was addressed in the RI/FS for 200-BP-1, and the resulting decision in the proposed plan indicates that the three parties determined that containment of contaminants in place is, on balance, the preferred alternative. DOE recognizes that, as indicated in your comment, the introduction of new cleanup technologies in the future could have a bearing on decisions similar to this one in the future.

DOE believes that the preferred alternative does provide long term protection as evaluated in the supporting documents (e.g.; 200-BP-1 RI Report and FS Report) for human health and the environment.

YIN Comment #7: Actions such as these place unacceptable restrictions on future use of the land by Native American People. The long-term picture of Hanford and the expedited release of land for unrestricted beneficial use is not being considered by the Department of Energy.

RL Response: See response to general comments 1 and 2.

YIN Comment #8: Although the summary report does not identify the source of this borrow material, as stated in the Hanford Remedial Investigation and Feasibility Study Report for the Environmental Restoration Disposal Facility (ERDF)(DOE/RL-93-99, Revision 1), this source is likely the basalt outcroppings or McGee Ranch. However, little consideration is given of the cultural and religious values placed on these areas by the Native Americans. As with the ERDF site, construction of barriers with material from these areas will require an unacceptable, irreversible and irretrievable commitment of resources.

RL Response: In recognition that the Native Americans place cultural and religious values on certain parts of the Hanford Site, borrow areas that were already extensively disturbed by early farming or Hanford operations were identified to support the barrier construction. DOE recognizes Native American concerns and is currently evaluating other Hanford basalt sites and the use of alternative materials such as concrete rubble from decommissioned buildings throughout the Hanford Site in place of the basalt rip-rap.

YIN Comment #9: Supporting facilities such as these should be discussed in the summary report as they may have a significant impact on the long-term performance of the alternative as it relates to protection of human health and the environment. Significant volumes of wash water could be generated during operation of this alternative. Depending on the type of collection, treatment, and disposal proposed, the volumetric flow rate of this stream has the potential to significantly impact long-term contaminant availability to human and ecological receptors and thus the subsequent evaluation of the facility.

RL Response: Comment noted. Since this alternative has not been proposed as the preferred alternative, this evaluation was not considered necessary to include in the proposed plan. The evaluation may be found in the 200-BP-1 RI/FS.

YIN Comment #10: It is not agreed that the remaining alternatives provide for long-term protection of human health and the environment. Modeling and exposure scenarios as discussed in Comments 3 and 4 will greatly modify risk calculations and resulting risk values. Furthermore, these alternatives do not address existing soil contaminants which will continue to be a source of groundwater contamination and unacceptable risk to human health and the environment.

Systems-engineering is a viable means of effectively and efficiently using available resources to remediate the Hanford Site in a manner that will result in the long-term protection of human health and the environment and the expedited release of land for unrestricted beneficial use. DOE's continued consideration of non-systems-engineered approaches will likely be inconsistent with, and preclude, implementation of the Native American's expected solution for cleanup of the Hanford Site and will therefore be in violation of 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations.

RL Response: See response to general comments 1 and 2, and specific comment 3.

YIN Comment #11: It is not agreed that the remaining alternatives will comply with all applicable and appropriate requirements. As stated above in comment 5, the proposed plan for the 200-BP-1 Operable Unit does not meet any of its remedial action objectives. Risk due to exposure from soils could exceed specified ranges under more-appropriate exposure scenarios. Also, groundwater would continue to be impacted under more-appropriate fate and transport modeling scenarios and would result in unacceptable human health and ecological risk under more-appropriate future-use scenarios.

Furthermore, Alternative H: Excavation and Fixation, would result in an increase in total waste volume and therefore violate Chapters II and III of DOE Order 5820.2A. Relocation of the waste to an on-site landfill (Alternatives F, G, and I) would result in the contamination of yet another area of the Hanford Site due to improper and short-sighted waste disposal practices and prevent the release of land for unrestricted beneficial use. These alternatives are inconsistent with, and preclude, implementation of the expected solution for cleanup of the Hanford Site and are therefore in violation of 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations.

RL Response: See response to specific comment 5.

It is noted that alternatives F, G, H, and I might result in the contamination of other areas of the Hanford Site. This is one of the reasons why these alternatives were not selected as the preferred alternative.

YIN Comment #12: It is not agreed that the remaining alternatives provide for the effective and permanent long-term protection of human health and the environment. Modeling and exposure scenarios as stated above in Comments 3 and 4 greatly modify risk calculations and resulting risk values. Furthermore, treatment technologies considered within this document are not considered long-term approaches. Systems-engineering is a viable means of effectively and efficiently using available resources to remediate the Hanford Site in a manner that will result in the long-term protection of human health and the environment and the expedited release of land for unrestricted beneficial use.

RL Response: See response to specific comments 3 and 4.

YIN Comment #13: It is not agreed that radionuclides cannot be transformed into a less hazardous substance. Oak Ridge's melter/slagger process has the potential for separating transuranic from low level wastes and would also render the waste form less mobile and therefore less toxic. Other technologies, such as calcining and super critical CO2 application, can reduce the volume, toxicity, and mobility of the contaminated waste. Alternatives considered for the 200-BP-1 Operable Unit are not considered long-term approaches for cleanup of the site.

RL Response: DOE agrees that rendering radionuclides less mobile might be interpreted as making them less toxic. However, such actions do not affect the underlying radioactivity of the material or the need for long-term storage or disposal.

YIN Comment #14: While worker safety is critical, it should not be the means by which alternatives are dismissed from further consideration. Technologies are available and in use to protect workers from radiation exposure.

RL Response: Worker safety is evaluated in both the short-term effectiveness and implementability criteria, however, it is only one of several factors used to evaluate alternatives. Although technologies exist to protect workers from radiation exposure, the cost associated with them is high, requiring an evaluation against the CERCLA cost criterion.

YIN Comment #15: As discussed above in Comment 8, although the summary report does not identify the source of the borrow material, as stated in the Hanford Remedial Investigation and Feasibility Study Report for Environmental Restoration Disposal Facility (ERDF) (DOE/RL-93-99, Revision 1), this source is likely the basalt outcroppings or McGee Ranch. However, little consideration is given of the cultural and religious values placed on these areas by the Native Americans. As with the ERDF site, construction of barriers with materials from these areas will require an unacceptable, irreversible and irretrievable commitment of resources. The implementability of these types of alternatives should be considered "low".

RL Response: See response to specific comment 8.

Implementability is defined as "the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option." Technically and administratively, the proposed alternative is easily implemented.

YIN Comment #16: It is not agreed that this alternative may be in compliance with all identified ARARs. This alternative does nothing to remediate existing soil contamination. This soil will continue to be a source of groundwater contamination and therefore pose continual, unacceptable risks to future generations of Native Americans as well as the food chain resources on which they rely. Furthermore, selection of this alternative is inconsistent with, and precludes, implementation of the expected solution for cleanup of the Hanford Site and is therefore in violation of 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations.

RL Response: See responses to general comments 1 and 2.

YIN Comment #17: It is not agreed that this alternative should be considered a final solution for remediation of the 200-BP-1 Operable Unit, or should it be considered a means to prevent further spreading of contamination from the site as it does nothing to remediate existing contaminants in the soil column.

Furthermore, it is interesting to note here that justification for this alternative is based on the statement that it will not create additional waste site(s). How, then, can DOE justify the Environmental Restoration Disposal Facility as it would result in the contamination of the underlying clean soil column and vadose zone.

RL Response: The preferred alternative is believed to provide the best balance of trade-offs among the alternatives with respect to the CERCLA criteria used to evaluate remedies.

YIN Comment #18: This statement is very short-sighted and inhibits recycling efforts and the identification and development of systems-engineered technologies within DOE and its contractors for cleanup of the Hanford Site. This statement also ignores the Native American's expected final remedy of the Hanford Site and the return of the land for unrestricted and beneficial traditional and cultural use.

RL Response: See response to general comment 1 and 2.

YIN Comment #19: As discussed above in comment 5, the proximity of the BY Tank Farm, or other adjacent facilities, should not be considered a deterrent to implementation of the appropriate remedial measure at the 200-BP-1 Operable Unit. In accordance with the systems-engineering approach, similar and/or adjacent facilities should be considered jointly, as possible, in order to effectively and efficiently utilize available resources for cleanup of the entire Hanford Site and the expedited release of current and future areas for other beneficial use. Under the Hanford Federal Facility Agreement and Consent Order Action Plan (Sections 3.3 and 5.5 and Appendix C), such integration is required to ensure that activities remain physically consistent and to ensure that unit contamination is most economically and efficiently addressed by preventing overlap and duplication of work.

RL Response: The adjacent BY-Tank farm is not a deterrent, but is a consideration when evaluating the alternatives against the CERCLA criteria of implementability, cost, as well as worker and tank safety issues.

DOE agrees that adjacent facilities should be considered jointly, where possible, when considering cleanup options.

Attachment 3

RESPONSES TO COMMENTS ON THE 300 AREA PROCESS TRENCHES CLOSURE PLAN

Specific Comments:

YIN Comment #1: Integration of cleanup and closure activities at the Hanford Site is the intent of the systems-engineering approach. However, the scope of this approach reaches far beyond simply integrating closure activities for a RCRA TSD facility with remedial activities for a CERCLA past-practice unit. Systems-engineering involves the integration of all RCRA and CERCLA units at the Hanford Site. Such integration, wherever and whenever possible, will result in efficient and effective site-wide utilization of available resources and in the expeditious return of land for other beneficial use.

It should be clarified here that integration between RCRA and CERCLA units will not ensure that a single remedial technology or waste handling method can be utilized within the overall area (300-FF-1 and 300 Area trenches). Integration is a function of similarities between the types of contaminants present and their associated cleanup goals that result from the appropriate and mutually-agreed upon application of risk assessment methodologies. Integration is also a function of disposal site criteria and ARARs such as Chapters II and III of DOE Order 5820.2A which requires segregation and minimization of wastes. Thus, integration between units at the Hanford Site could result in the operation of several different technologies and waste handling and disposal activities.

RL Response: Agreed, integration does not ensure the same remedial technologies. However, as stated in the closure plan, integration does ensure physical consistency. In this case, the Draft Proposed Plan for the 300-FF-1 Operable Unit (OU), which includes the 300 Area Process Trenches (300 APT), proposes the same remedial alternative for each process waste site (including the 300 APT) because all process waste sites pose similar risks and contain similar types of waste. Therefore, remedial technologies, waste handling, and disposal methods should be the same for the process waste sites. The details for the remedial alternative, as defined by the Record of Decision (ROD), will be provided in the Remedial Design for the 300-FF-1 OU.

YIN Comment #2: While it is agreed that the level of cleanup attainable at any contaminated area is a function of the performance of the selected remedial technology or technologies, it is not agreed that this level of cleanup should bind another area to the same performance criteria or associated waste disposal methods, nor that development of improved technologies is not warranted. As stated above in Comment 1, integration between RCRA and CERCLA units does not ensure that a single technology or waste handling or disposal method can be utilized for the overall area. Technology selection and handling and disposal are functions of the types of contaminants present, their associated cleanup goals, disposal site criteria, and ARARs.

Also, separation of treatment waste or products must be performed as required in the ARARs, including Chapters II and III of DOE Order 5820.2A which requires waste segregation and minimization. Where necessary, technology development should be pursued to find techniques which are adequate to remediate wastes consistent with the design criteria cited in the base letter for this attachment.

RL Response: RL concurs that the level of cleanup for the 300-FF-1 OU is based on protection of human health and the environment, future land use, and ARARs. The cleanup standard will be the same for all process waste sites in the 300-FF-1 OU regardless of the remedial technology. Separation of waste materials will be undertaken based on site specific technical considerations. There are no ARARs that require segregation of these wastes by process units, because the wastes from various process waste units are substantially similar in composition.

YIN Comment #3: As stated in review comments of other Hanford documents and as re-stated below, HSBRAM methodology is considered to be inadequate in many areas including the calculation of risk from exposure to contaminated soils (500-year drilling scenario), assumed infiltration rates for the groundwater fate and transport model, assumed groundwater use, and the identification of ecological contaminants of concern using a human health-based screening process.

a) For the drilling scenario, the highest exposure to soil contaminants would occur during handling as the soil is removed from the ground. This is before it could be spread out over the land and subsequently diluted. The ecological impact of this scenario and its inter-relationship with human effects should also assume exposure to the drill cuttings prior to any dilution.

b) The base condition model should assume an irrigation-use scenario as a possible worst-case situation. Such a future scenario is possible as part of traditional and cultural Native American use of the land (unrestricted use). This scenario would result in higher groundwater contaminant concentrations, faster travel times to the site boundary and therefore, more contaminants of potential concern being retained for further consideration in the risk assessment.

c) Assuming groundwater will not be used for irrigation or livestock places unreasonable restrictions on future use of the land by Native Americans and therefore presents an incomplete assessment of risk from exposure to the groundwater contaminants. Groundwater use of irrigation and watering livestock as well as for domestic drinking purposes should be incorporated into an inter-related ecological/human health risk assessment. The Yakama Nation should approve the scenarios developed to address these uses.

d) Without supporting facts, it is not agreed that human health screening values are also appropriate for ecological receptors. In addition, cumulative effects of exposure on the food chain cycle should be considered as well as how these exposures may ultimately effect human health and the religious, cultural and socioeconomic values placed on the land and its resources by Native American people and their future generations.

Also, a risk assessment prepared using HSBRAM methodology is short-sighted and incomplete in that it 1) assesses only the carcinogenic and non-carcinogenic effects from exposure to the contaminants on a single most-exposed individual and ignores effects on the overall population; 2) focuses only on the generation and ignores other effects, such as bio-accumulation and mutagenesis, that may affect future generations; 3) ignores bio-accumulation and mutagenic effects within and upward through the food chain and; 4) does not consider additive risks from contaminants already in the underlying groundwater system.

Comments to HSBRAM methodologies such as these will continue until appropriate land use and exposure scenarios have been negotiated and agreed to with representatives from Native American Nations.

Finally, it is not agreed that future use of the 300 Area has been determined to be for industrial purposes. The Native American's expected solution for cleanup of the Hanford Site includes return of the land for unrestricted and beneficial traditional and cultural use. Pre-determination of the use of the 300 Area as industrial may be inconsistent with and preclude this expected outcome and may therefore be in violation of Section 40 CFR 300.430(a)(ii)(B) of CERCLA regulations.

RL Response: Based on the Future Site Uses Working Group Report and consultation with the regulatory agencies, the expected future land use for the 300-FF-1 OU is industrial. DOE has determined that an industrial land use scenario is the appropriate land use designation to be used for cleanup planning purposes. A final land use determination will be adopted as part of the DOE land use designation efforts currently underway. See also the response to comment number four under cover letter comments.

YIN Comment #4: It has not been agreed that an ERDF facility is appropriate for the Hanford Site. As stated in comments to the RI/FS report, the ERDF would result in alternatives including excavation and on-site disposal ranking higher in operable unit RI/FS documents versus alternatives involving treatment mechanisms. Thus, the ERDF would inhibit recycling efforts and the identification and development of innovative technologies, such as calcining, super-critical CO_2 application and the melter/slagger process at Oak Ridge, and ignore the systems-engineering approach to efficiently and effectively use available resources for cleanup of the entire Hanford Site and the release of land for unrestricted and beneficial use. The ERDF would be inconsistent with and preclude implementation of the Yakama Nation's desired final remedy for the Hanford Site and thereby be in violation of section 40 CFR 300.430(a)(ii)(B) of CERCLA regulations. Also, the ERDF will result in contamination of the underlying clean soil column and vadose zone. It is unclear how DOE's justification of a preferred alternative for remediation of the 200-BP-1 Operable Unit can be based on the statement that it will not create additional waste site(s) while DOE continues to propose the ERDF for remediation of other areas.

Finally, as stated above in Comments 1 and 2, integration does not ensure that the same remedial technologies or waste handling and disposal methods can be utilized for all contaminants present in the overall area. If TSD unit soils can indeed be designated as non-dangerous waste, disposal with other dangerous wastes would be in violation of Chapters II and III of DOE Order 5820.2A as well as other ARARs.

RL Response: The evaluation of remedial alternatives for the 300 APT was not prejudiced by ERDF. Potential in-situ alternatives and numerous treatment alternatives were evaluated. The option of removing contaminated material to ERDF was only one of many viable remedial alternatives evaluated. Further comments regarding the ERDF facility were addressed in Appendix A of the Declaration of the Record of Decision Responsiveness Summary. Comments regarding integration have been addressed in the response to comment number 1 above.

Treatment, storage, and disposal (TSD) unit soils, although designated as non-hazardous waste, contain radionuclide contamination. Disposal of such waste with other dangerous waste is allowed within the confines of the ERDF facility as specified in the ERDF ROD and consistent with ARARs applicable to the 300 Area and to ERDF.

YIN Comment #5: A discussion should be provided of other effluent limits, such as limits on alpha activity.

RL Response: Discharges to the 300 APT have been re-routed to the 300 Area Treated Effluent Disposal Facility and there have been no effluent discharges to the 300 APT since December 1994. The 300 APT were physically isolated from receiving discharges in January 1995.

YIN Comment #6: Beryllium is not listed in Table 3-5 as a constituent of the fuel fabrication process. Thus, questions arise as to what other chemical and radiological constituents may be lacking from Tables 3-4 and 3-5.

RL Response: Beryllium was erroneously left out of these tables and will be added. Beryllium has been evaluated in the baseline risk assessment, contained in the Phase I Remedial Investigation report, and was identified as a contaminant of potential concern. However, through detailed risk assessment performed during the preparation of the Phase I Remedial Investigation Report for the 300-FF-1 OU and further discussed in the Phase III Remedial Investigation/Feasibility Study, beryllium was determined not to be a contaminant of concern for the 300 APT or for the rest of the 300-FF-1 OU.

YIN Comment #7: As stated above in Comment 3 as well as in comments to other Hanford documents, HSBRAM methodology has been found lacking in many areas and thus results in inadequate calculations of risk from exposure to both soil and groundwater contaminants (radioactive and chemical). Furthermore, it is not agreed that modified closure of the unit is appropriate as such determination would place unacceptable restrictions on the land for cultural and traditional use by Native Americans. Appropriate and mutually-agreed upon land use and exposure scenarios must be determined for use in site risk assessments before any contaminants of concern or cleanup or closure actions can be agreed to.

RL Response: Please see response to comment 3 in regard to HSBRAM. Modified closure is considered appropriate for the land use designation being used for cleanup planning purposes for the 300-FF-1 OU as described in Condition II.K of the Hanford Facility Dangerous Waste Permit.

YIN Comment #8: While the source of Tritium contamination beneath the 300-FF-5 Operable Unit is reported as being attributable to the 200 Area, the source of Strontium-90 and Technetium-99 should be clarified. These contaminants are listed in Appendix 7D under the summary of pre-ERA and post-ERA sampling data for the 300 Area trenches, but do not appear in other document sections or discussions. Although Section 3.3 of the document stated other discharges to the 300 Area trenches were minor and/or significantly diluted and were therefore considered insignificant when compared to discharges from fuel fabrication operations, detection of these contaminants in the groundwater system indicate a potentially significant, and thus unidentified, source may be present. If attributable to soils within the 300 Area trenches, risk calculations and proposed cleanup and closure actions could be altered. SOURCES OF CONTAMINANTS SHOULD BE IDENTIFIED AND REMEDIATED, IF NECESSARY.

RL Response: Remediation of groundwater beneath the 300 APT is being addressed as part of the 300-FF-5 OU. Documentation for the 300-FF-5 OU has identified dichloroethene, trichloroethene, nickel, and total uranium as contaminants of concern because these constituents are currently present at levels above drinking water limits. Tritium, Strontium-90, and Technetium-99 are currently present in the groundwater at levels below MCLs. Tritium and Technetium-99 levels in the groundwater are currently declining. Strontium-90 is directly attributed to sources identified in the 200-PO-1 OU.

YIN Comment #9: It should not be inferred here that current contamination levels have any role in determining future land use and, thus, the associated health-based cleanup goals.

RL Response: The last sentence will be modified as follows: "This is consistent with future land use of the 300 Area as an industrial site."

YIN Comment #10: Submittal of this closure plan should have been integrated more closely with the 300-FF-1 Operable Unit Feasibility Study report such that more specific closure details could have been documented and thus evaluated. As written then, this document is little more than a Work Plan for preparation of the closure report.

RL Response: The closure plan has been revised in the past few months to be consistent with documentation for the 300-FF-1 OU. The 300 APT closure plan will be submitted to the regulators, stakeholders, and the public concurrently with the 300-FF-1 proposed plan. By submitting these document for concurrent review adequate details will be available for evaluation.

YIN Comment #11: WAC 173-303-645(b)(iv) also states that in order to provide an adequate margin of safety in the prediction of potential migration of liquid, the owner or operator must base any predictions made on assumptions that maximize the rate of liquid migration.

As discussed in Comment 3 as well as in comments to other Hanford documents, the maximum rate of liquid migration would occur under an irrigation-use scenario. Such a future scenario is possible as part of traditional and cultural Native American use of the land (unrestricted use). Such a scenario would have to be applied before any proposition of halting groundwater monitoring is considered.

RL Response: The land use designation being used for cleanup planning purposes on the 300-FF-1 OU is industrial use. Although an irrigation scenario might be appropriate for evaluation in an area for which unrestricted use were the land use scenario, it is not appropriate in the 300-FF-1 OU. Groundwater monitoring is currently part of the cleanup plan for the 300 Area groundwater.

YIN Comment #12: As stated in Comment 3 as in comments to other Hanford documents, HSBRAM methodologies to determine contaminants of concern in both soil and groundwater are inadequate in that they do not consider appropriate worst-case exposure scenarios. Contaminants of concern cannot be agreed to until appropriate HSBRAM methodology has been negotiated with Native American Nations.

RL Response: RL appreciates the concern expressed regarding HSBRAM methodology, and would welcome specific input from the Native American Nations. See also response to cover letter comment 4.

YIN Comment #13: As part of the systems-engineering approach toward cleanup of the Hanford Site and the effective and efficient use of available resources, recycling and re-use of waste materials should be addressed.

RL Response: Agreed. The bird screens and fencing of the 300 APT, if removed, will be evaluated during the remedial design process to determine if recycling or re-use of these structures is more appropriate than disposal. The sentence will be modified as follows: "The bird screen and TSD unit fencing, if removed and if uncontaminated, will be evaluated during the remedial design process to determine whether the structures will be disposed, recycled or re-used."

YIN Comment #14: Fixation (grouting) of waste materials is not considered a long-term approach toward protecting human health and the environment. Grouting also increases the volume of waste material, thus resulting in far more material that may require future treatment and disposal. Other methods of integrated treatment should be considered and implemented with disposal in deep geologic units.

RL Response: Fixation of soil wash fines would only be undertaken if soil washing were the selected remedial alternative and fixation was required to meet the ERDF waste acceptance criteria.

YIN Comment #15: As stated above in Comments 3 and 9, it is not agreed that future use of the 300 Area has been determined to be for industrial purposes. The Native American's expected solution for cleanup of the Hanford Site includes return of the land for unrestricted and beneficial traditional and cultural use. Pre-determination of the use of the 300 Area as industrial may be inconsistent with and preclude this expected outcome and may therefore be in violation of Section 40 CFR 300.430 (a)(ii)(B) of CERCLA regulations.

Also, as stated above in Comment 13, other methods of integrated treatment should be considered and implemented with disposal in deep geologic units.

RL Response: As stated above in comment 3, industrial use is the land use designation being used for cleanup planning purposes.

YIN Comment #16: As stated above in Comments 3 and 7 as well as in other comments to Hanford documents, HSBRAM methodology is considered to be inadequate in many areas of assessing contaminant exposure and risk. HSBRAM does not consider a possible worst case irrigation-use scenario of the land. Subsequently, determinations of contaminant transport through proposed barriers are incomplete.

RL Response: Please refer to the response to comment 3, 11, and 12.

YIN Comment #17: Use of barriers would result in the continued release of contaminants to groundwater as a result of a worst-case irrigation-use scenario. Such a scenario is possible as part of traditional and cultural use of the land by Native Americans.

RL Response: Please refer to the response to comment number 3, 11, and 12. Groundwater issues are being addressed as part of the 300-FF-5 OU.

YIN Comment #18: No consideration is given here of the socioeconomic, traditional and cultural values placed on the land by Native Americans.

RL Response: Cultural and socioeconomic values have been further evaluated in the 300-FF-1 FS.

YIN Comment #19: This section of the SEPA Checklist should include a discussion of previous use of the Hanford Site by Native Americans.

RL Response: The section of the SEPA checklist referred to in this comment provides the current status of the main areas of the Hanford Site used for agricultural purposes. Currently no main areas of the Site have been used for agricultural purposes by any person since 1943. Additional discussion of site uses, including previous Native American uses is found in the Administrative Record, including the 300-FF-1 FS.

YIN Comment #20: This statement is correct in that Native Americans will not be displaced from the Hanford Site nor kept from regaining traditional and cultural use of the land.

RL Response: The 300 Area is currently used for industrial purposes and the expectation for cleanup purposes is that it will continue to be used for industrial purposes for the foreseeable future. This is the basis for the determination that no one will be displaced due to the proposed cleanup.

YIN Comment #21: This statement is correct. However, it appears to contradict previous statements in the SEPA Checklist and the associated closure plan report that imply future use of the site will be for industrial purposes. Prior statements should be corrected to be consistent with the language in this part.

RL Response: As stated above, industrial use is the land use designation being used for cleanup planning purposes.

YIN Comment #22: Restoration of the Hanford Site should be coordinated with Native American Nations to ensure aesthetic values are adequately addressed.

RL Response: Environmental restoration activities conducted within the 300-FF-1 OU, including the 300 APT will be coordinated with the regulators, stakeholders, Native American Indian Nations, and the public.

YIN Comment #23: This review, as part of the historical and cultural preservation of the Hanford Site, should be coordinated with Native American Nations to ensure these elements are appropriately addressed.

RL Response: A cultural resource review was performed at the 300 APT. This report was submitted to Native American Nations.