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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 HANFORD PROJECT OFFICE
712 SWIFT BOULEVARD, SUITE 5
RICHLAND, WASHINGTON 99352

May 23, 1995

James R. Wilkinson, Program Manager
Department of Natural Resources, Hanford Programs
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801



Re: Confederated Tribes of the Umatilla Indian Reservation
Comments On Proposed Plan For 200-BP-1 Operable Unit

Dear Mr. Wilkinson:

The Environmental Protection Agency (EPA) is in receipt of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) comments concerning remediation at the 200-BP-1 Operable Unit (OU). The CTUIR opposition to barrier use at 200-BP-1 OU as a final remedy is clearly defined in your letter dated April 10, 1995 and suggests deferring remedial activities at 200-BP-1 OU. Deferring remediation at 200-BP-1 OU until some indefinite future time is contrary to the recommendation of "getting on with cleanup using existing technology(s)" that we are all familiar with. The EPA believes the preferred alternative for 200-BP-1 OU (e.g.; Modified RCRA Barrier) meets all identified Applicable and Relevant and Appropriated Requirements (ARARs).

The main concern expressed by the CTUIR appears to be long term protection of groundwater due to uranium migration through the vadose zone down to groundwater. Although modeling exercises predict levels in the groundwater should be higher, measured uranium concentrations under 200-BP-1 OU and down gradient are near background levels. The levels of uranium in the groundwater are between 0 and 5pCi/l while background levels are approximately 3pCi/l. Historical data also show uranium groundwater concentrations in the vicinity of 200-BP-1 OU to be near background levels. Together these data suggest that although model predictions indicate the potential for risks due to uranium to exceed action levels, the actual field data suggests quite a different situation.

In your April 10th letter, the CTUIR indicate three possible remedial strategies for 200-BP-1 OU, 'environmental isolation, containment, and contaminant removal'. The EPA believes the intent of environmental isolation and containment is met through implementation of a surface barrier such as the Hanford Barrier or Modified RCRA Barrier.

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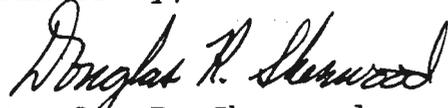
May 23, 1995

Although removal was carried throughout the Remedial Investigation/Feasibility Study (RI/FS) process, selection of such an alternative does not come without great cost and worker exposure. In essence, this alternative would trade off the potential long-term exposure to uranium for a certain near-term exposure to gamma emitting radionuclides like Cesium-134 and Cesium-137. In addition, depending on the level of treatment required for final disposal costs may increase for a removal alternative for the 10 waste sites in 200-BP-1 to nearly 250 million dollars.

Based on your letter of April 10, 1995 and the concerns of the CTUIR with regards to in-place disposal at Hanford, the EPA requests that we meet to further discuss the issues surrounding 200-BP-1, as well as other potential candidates for such actions.

If you have questions on the attached comment responses, please call Paul Beaver of my staff at (509) 376-8665 or me at (509) 376-9529. To set up a meeting on these issues, please call Audrey Dove at (509) 376-6865.

Sincerely,



Douglas R. Sherwood
Hanford Project Manager

Enclosure

cc: Paul Beaver, USEPA
Bryan Foley, USDOE
Tom Gilmore, CTUIR
Richard Holten, USDOE
Russell Jim, YIN
Dave Lundstrom, Ecology
Fenggang Ma, Ecology
Donna Powaukee, Nez Perce
Administrative Record, 200-BP-1 Operable Unit

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This comment is a valid concern and the three parties have agreed in writing to coordinate the closure of the 241-BY Tank Farm with remedial activities at the 200-BP-1 OU.

SUMMARY OF OVERARCHING CONCERNS

1. Comment:

What's the rush to remediate this relatively low-priority 200 Areas site, when the principal driver, namely large-scale liquid waste discharges already has been stopped?

Response: See response to comment #2 below.

2. Comment:

Tribes, stakeholders, regulators, and even the Department of Energy have all agreed that Columbia River corridor sites are the highest and first priority for remediation. With all the across-the-board cutbacks coming, the available dollars and manpower for remediation must be most effectively and efficiently concentrated along the immediate river corridor first.

Response:

The EPA agrees with this comment, although it should be recognized that current budget restraints are the result of showing little or no progress in the cleanup of the Hanford Site. And, since the 200-BP-1 OU was one of the first OU's to be investigated, is now through the RI/FS process, the EPA believes it is prudent to move forward with the decision document (e.g.; record of decision).

3. Comment:

Barrier construction has yet to be demonstrated, from either a technical or engineering standpoint, to fulfill its stated primary function of limiting or diverting infiltrating water and preventing remobilization of vadose zone contamination for short periods of time (years to decades), let alone for the thousands of years required to adequately mitigate the impacts of long-lived uranium contamination distributed throughout more than half a million cubic yards of vadose zone soils.

Response: See response to Introduction comment #8.

4. Comment:

Despite the availability of data to the contrary, the Proposed Plan ignores the impact of time on future migration of and changing exposure potential to widespread contamination that, as proposed, is not and will not ever be isolated from the environment--or the Columbia River. Time simply cannot be ignored when "addressing" contaminants with half-lives measured in hundreds of millions of years--or in safeguarding Tribal rights and interests.

Response:

Identified ARARs require 1,000 years of protection for the groundwater due to uranium discharges. According to modeling and historical data, the preferred alternative provides protection for the groundwater beyond 1,000 years as mandated in 40 CFR 191 and 192.

5. Comment:

The risk assessment that justified selection of this remedial alternative is based on only a single potential exposure pathway, a single contaminant of concern, and current conditions. Future risks associated with much higher predicted uranium discharges to the Columbia River over thousands of years or from potential exposure of other highly radioactive contaminants at the surface have been ignored, greatly minimizing apparent risk through time, and permitting selection of an ineffective long-term remedial option.

Response:

The risk assessment looks at various pathways and contaminants, not a single pathway or contaminant. The risk assessment located in the 200-BP-1 OU RI Report evaluates exposure to the contaminants in the subsurface via inhalation, direct exposure, and ingestion. In addition, Uranium concentrations entering the groundwater are evaluated against EPA's drinking water criteria. By meeting EPA's drinking water criteria at the water table, future risks associated with this OU at the Columbia River are addressed.

6. Comment:

Barrier effectiveness is misrepresented by overly simplistic or unrealistic assumption of homogeneous subsurface conditions or that all infiltration is a vertical straight shot to groundwater. Discontinuous caliche layers or local sedimentary-facies aquitards in Hanford's subsurface introduce considerable lateral spreading, temporal variability, and other localized complexities into the generally downward path. Lateral spreading of infiltrating water is a necessary result of Hanford's highly variable subsurface conditions. Under such conditions, no barrier of reasonable areal extent could prevent infiltration within a sufficiently large area that could not eventually migrate into and leach existing contamination.

Response:

This is a valid concern shared by EPA. The EPA has provided similar comments to DOE's barrier development program and recommends CTUIR staff communicate this concern to DOE's barrier development program also.

7. Comment:

Barrier construction consumes valuable land and resources. Little appreciation is evident of the cumulative and indirect impacts, true costs, or large-scale environmental degradation associated with mining vast quantities of basalt and top soil required to facilitate the more widespread application of barriers at Hanford. These unrecognized but directly connected actions will result in accumulating, areally extensive, adverse environmental impacts simply

being displaced and actively encouraged elsewhere in the name of "remediation" at Hanford.

Response:

EPA recognizes the CTUIR concerns regarding consumption of natural resources. The three parties are currently evaluating alternative materials for barrier construction. One alternative proposed is using concrete rubble from old buildings instead of the basalt riprap.

8. Comment:

The Proposed Plan selects and attempts to justify a "remedial alternative" that is really a Last-ditch measure to be employed only after other proactive remedial alternatives have been tried and failed.

Response:

Evaluation of the 10 alternatives against the initial 7 criteria (Overall protection of Human Health and the Environment; Compliance with Federal and State Regulations; Long-Term Effectiveness and Performance; Reduction of Toxicity, Mobility, or Volume Through Treatment; Short-Term Effectiveness; Implementability; and Cost) as detailed in the Focused Feasibility Study, indicate the preferred alternative to be the best overall choice for remediating the 200-BP-1 OU. The EPA is interested in 'other proactive remedial alternatives' the CTUIR may have identified.

9. Comment:

There is naive and excessive reliance on institutional controls, of which barriers comprise but one example, to control either contaminated site access or exposure potential over extremely long periods of time. CTUIR staff believe it is unrealistic to rely so heavily on such controls, which in this case must last thousands of years longer than any other human endeavor in history or prehistory. The increasingly rapid pace of cultural change in modern society necessitates that the most effective means of true control (such as environmental isolation, containment, or contaminant removal) must be tried first. Institutional controls give the all-important appearance of doing something, but offer no substance or long-term protection.

Response:

Contaminant removal and treatment are normally considered preferred options for cleanup of contaminated soils. However, the detailed analysis indicate the volume of contaminated soil needing to be removed is neither cost effective and will potentially result in further adverse impacts to the environment.

Barriers are a form of environmental isolation and containment with the intention on protecting human health and the environment through the elimination of exposure pathways.

10. Comment:

Barriers are not a panacea, a cure-all to just cover up all the difficult problems that exist at Hanford. The true purpose of selecting this remedial alternative appears to be "so that these barriers can be used more extensively on the Hanford site as well as other semi-arid environments" (Proposed Plan), but such increased use will be at the expense of real remedial actions and the health of affected communities. Barriers have their place at Hanford, but a blind and widespread reliance on what is really a last-resort strategy with limited effectiveness and application decidedly does not.

Response:

The purpose of conducting the treatability test is to determine whether barriers can be adequately relied upon to protect human health and the environment on the Hanford Site and other semi-arid environments. It should be noted that the Hanford Barrier, which was constructed as a treatability test, is not necessarily the final remedial action for the 216-B-57 crib.

As discussed in the Introduction comment #7, barriers are an acceptable alternative. This proposed cleanup action is the first cleanup proposal in the 200 Area in regards to radioactive source units. This proposed alternative should not be viewed as an across the board remedial action for radioactive source units. Each different type of waste disposal unit and/or operable unit will be evaluated independently to determine the most effective remedial alternative.

11. Comment:

CTUIR staff do not support the hurried completion of final remedial actions such as recent construction of a barrier over the B-57 crib without proper DOE and regulator consultation with affected tribes. Moreover, it is further unacceptable to refer to this final remedial action as an "experiment" or a "constructability test", when it is clear that neither DOE nor regulators will ever revisit actual remediation of the crib.

Response:

The CTUIR is reminded that the affected Indian Tribes and other interested parties were formally notified requesting comment on the proposed (treatability test) action. The final decision for remedial action of the 216-B-57 crib will be made only after consultation with the affected Indian Tribes and public comment is complete. The EPA is committed to further developing government to government relationships with the affected indian tribes.

CTUIR staff have indicated opposition to supporting testing of the Hanford Barrier, but indicate "Barrier construction

has yet to be demonstrated, from either a technical or engineering standpoint...". The testing of the prototype barrier is essential to the barrier development program in determining its effectiveness over long periods of time and under varying climactic conditions. The CTUIR are urged to provide input on the testing of the prototype barrier before additional testing proceeds.

12. Comment:

Tribal treaty rights and Federal government's trust responsibility to tribes exist in perpetuity. CTUIR staff do not believe that such rights and responsibilities are best fulfilled by this proposed short-sighted and short-term solution to very long-term problem.

Response:

The EPA requests further dialogue regarding tribal rights the CTUIR believe may be jeopardized by this proposed action.

BASIS OF TRIBAL CONCERNS

The use of a surface barrier does "address" contaminated soils by removing exposure pathways (ie; plant uptake, direct exposure, and ground water) and provides substantive protection for the future. The use of a surface barrier does isolate the contamination from the accessible environment.

The statement of containing or removing the most highly contaminated soils, which will remain hazardous and pose severe health and environmental threats for thousands of years requires clarification. The most highly contaminated soils (15-50 feet) will decay away within 500 years. The only long term threat is the potential leaching of Uranium to groundwater and the groundwater either pumped to the surface and consumed or flows to the river and is consumed, or plants uptake the Uranium and an animal eats the plants. Excavation of the higher contaminated soils would still require a barrier to prevent precipitation from infiltrating through the soil column transporting the deeper contaminants (e.g.; Uranium) to groundwater.

The recommendations (isolating, containing, or removing the most highly contaminated soils) provided in this section require CTUIR perspective on the tradeoffs associated with their implementation. The contaminants contained in the upper portion of the soil column have relatively short half lives and is so strongly bound to the soils that water simply cannot transport the contaminants to the groundwater before the contaminants decay away. Removing the soil from this site would require additional space in the Environmental Restoration Disposal Facility (ERDF) creating an additional waste site, enlarging ERDF, and further degrading natural habitat area (e.g.; old growth sagebrush).

The long term (beyond 500 years) risks associated with the 200-BP-1 Operable Unit results from Uranium contamination in the soil. As discussed earlier, contaminant removal to address long term risks will require excavation well beyond the highly contaminated soils present between 15 and 50 feet. Although all source operable units in the 200 Area may not require deep excavation to remove uranium, there are clearly other sites that may require deep excavation. One notable example is the BC cribs Control Area containing 26 waste management units, located in the southern portion of the B-Plant Aggregate Area. 22 of the BC Cribs and 7 of the BY Cribs received very similar wastes. The EPA is interested in the CTUIR's position regarding this issue.

Through the use of a barrier, natural vegetation can be re-established, thus restoring surface usage of the land and natural resources without creating additional waste sites. It is EPA's evaluation that the affected Indian Nations will be allowed to practice their reserved treaty rights of hunting, gathering roots and berries, and pasturing livestock on the barrier however, EPA is interested in a specific CTUIR evaluation on this subject.

FIRST PRIORITIES FIRST

One of the main causes of the current budget cuts are the apparent delay in actually performing remediation of the Hanford Site. It is imperative DOE show progress in cleaning up the Hanford Site.

BARRIERS AS A "REMEDIAL" STRATEGY

The use of barriers is an acceptable form of remediation to EPA and the state of Washington and has received public support in the past. Barriers reduce or eliminate infiltration of water thus removing a transport mechanism and reducing potential mobility. Threats to human health and the environment are addressed by removing exposure pathways such as direct exposure, inhalation and ingestion of the contaminated soils, plant uptake of the contaminants, animal intrusion into the contaminated soils, and groundwater contamination.

PERMANENCE OF INSTITUTIONAL CONTROLS

This entire section indicates the desire of the CTUIR to not rely on institutional controls. Although this is a desire of the three parties, current technology does not exist to make the radionuclides, not radioactive. Therefore, some form of institutional controls, whether active or passive must be established.

PREJUDICING FUTURE OPTIONS

The CTUIR is correct in its assessment that if a barrier is placed over these waste sites, no further remedial actions are envisioned unless the barrier fails or does not perform as expected. It should be noted however, that a final record of decision is necessary for the 200 Area NPL site. If, prior to issuance of the final record of decision, technology is developed to more effectively reduce risks posed by radionuclides, the barrier may be reevaluated.

BARRIER EFFECTIVENESS

It is recognized that lateral spreading of infiltrated water into the vadose zone may occur, although infiltration at Hanford is small and not expected to be of concern. Based on CTUIR comments pertaining to downward movement of moisture being retarded by heterogeneities in soil composition and cemented layers, leaching of contaminants will be slowed even further than the modeling effort indicates.

It should be noted that the transport model used to evaluate the possible transport of Uranium is considered conservative. Actual recharge rates on the Hanford Site, from three separate evaluations, vary from 0.05 cm/yr to over 10 cm/yr. The modeling effort covered these possible ranges of infiltration. The higher infiltration rates are estimated for areas where the ground surface has been disturbed and plants are not present. Revegetation will be included as part of remediation thus reducing infiltration rates.

The proposed barrier(s) are not designed to enhance runoff of normal snow and rainfall, but provides characteristics to enhance evapotranspiration. Extreme storm events however will more than likely create some amount of runoff and this is one aspect of the testing and monitoring of the Hanford Barrier constructed over the 216-B-57 crib.

Further clarification concerning uranium in the groundwater is necessary. Currently, uranium concentrations in the groundwater are near background levels. Also, the modeling scenario results are not uranium levels in the aquifer, but uranium levels entering the groundwater from the vadose zone. Actual groundwater levels will be much lower than the vadose zone levels predicted by the model.

LONG-TERM IMPACTS ARE NOT BEING CONSIDERED

The comment that Uranium concentrations are currently entering the groundwater below this OU requires clarification.

The proposed plan states that Technetium-99 and Cobalt-60 have entered the groundwater, not Uranium.

The modeling, which is very conservative, indicates the possibility that Uranium may reach groundwater, although modeling should not be solely relied upon to make final decisions. ARARs for this OU indicate protection of the groundwater from Uranium discharges to be 1,000 years and modeling indicate the barrier will meet this objective. Also, historical data indicate uranium migration will not occur for thousands of years under current conditions.

Approximately 212,520,000 liters (56,147,952 gallons) were discharged to cribs 216-B-43 through 216-B-49 from November 1954 to December 1955. If an area of 3 acres is assumed for infiltration, the cribs received nearly 2,850 inches of 'solution' during a 13 to 14 months period. Using a natural infiltration rate of 0.05 to 10 cm/yr (0.02 to 4 in/yr), the amount of time required for natural precipitation to equal the 2,850 inches is from 700 to 142,000 years. Also, natural precipitation will have a lesser ability to mobilize Uranium than the solution containing the Uranium which was discharged to the cribs. The discharges to crib 216-B-50 received waste from the In Tank Solidification unit, discharges began 10 years after the last discharges to the other 7 cribs, and contained lower levels of contaminants. Therefore the volume discharged were not considered in the above discussion. It should be noted however, that the discharges to crib 216-B-50 may have transported some radionuclides previously present in the soil column downward, although no uranium has reached the groundwater as a result.

EVALUATION OF INDIAN VALUES

Affected Tribes have provided extensive comments to the three parties regarding the three parties lack of evaluation of Indian values and concerns. In an attempt to better understand Indian values and concerns, a workshop was held in December 1994. During the workshop, the three parties and the affected Indian Tribes were unable to agree to any detailed information on how the three parties could better evaluate Indian values and concerns as reserved by the Treaty of 1855. The three parties are interested in any recommendation the CTUIR may have in assisting DOE and the regulators to better consider and evaluate tribal values and concerns.

CONCLUSION

The EPA believes the reserved rights as established by the Treaty of 1855 will be upheld through implementation of a barrier at 200-BP-1 OU. CTUIR have indicated that the preferred

alternative does not uphold reserved treaty rights. The EPA requires additional information from the CTUIR concerning this issue.