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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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January 6, 2003

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EDMC

Mr. Pat Sobotta
Environmental Restoration and Waste Management
Nez Perce Tribe
P.O. Box 365
Lapwai, Idaho 83540-0365

Dear Mr. Sobotta:

Re: Responsiveness Summary for Comments Regarding 300 Area Process Trenches

Thank you for submitting comments on the 300 Area Process Trenches Groundwater Monitoring Plan. Enclosed please find a copy of the Responsiveness Summary published in response to all comments received. The Responsiveness Summary is also available on the Internet at http://www.ecy.wa.gov/programs/nwp/pdf/300aptrs.pdf

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If you have any questions, please feel free to contact me at (509) 736-3029.

Sincerely,

John B. Price

John B. Price
Environmental Restoration Project Manager
Nuclear Waste Program

Enclosure

cc: Sandra Lilligren, NPT
Ken Niles, OOE
Administrative Record: 300 Area Process Trenches

RESPONSIVENESS SUMMARY
FOR THE
Closure/Post-Closure Monitoring Plan for the 300 Area Process Trenches

Introduction

This Responsiveness Summary is the result of written comments on the draft Permit modification for changes to post-closure monitoring at the 300 Area Process Trenches. The draft permit modification proposed approval of the *300 Area Process Trenches Groundwater Monitoring Plan* (PNNL-13645), thereby replacing the existing groundwater monitoring plan (*Groundwater Monitoring Plan for the 300 Area Process Trenches*, WHC-SD-EN-AP-185). The proposed modification was available for public comment from May 20, 2002 to July 5, 2002. The Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit sets the conditions for management of dangerous and mixed waste at the U.S. Department of Energy (U.S. DOE), Hanford Facility, located in Richland, Washington. The 300 Area Process Trenches were operated between 1975 and 1994 to receive effluent (outflow) containing dangerous wastes from nuclear research and fuel fabrication laboratories in the Hanford 300 Area. Current management of the 300 Area Process Trenches is governed under the Hanford Facility Permit, Part IV, Unit-Specific Conditions for Units in Post-Closure.

The proposal by U.S. DOE for changes to post-closure monitoring for the 300 Area Process Trenches has been denied by Ecology.

On February 6, 2002, Ecology granted USDOE a 180-day temporary authorization that allowed use of the proposed *300 Area Process Trenches Groundwater Monitoring Plan* This temporary authorization was reissued on June 10, 2002, which allowed use of the proposed plan through December 9, 2002. Ecology has denied approval of this proposed monitoring plan because there is not enough monitoring data available adequately evaluate it. However, because additional monitoring data will not be available until September 2003, Ecology has allowed USDOE to monitor under the proposed plan though September 2003 in order to collect that data. After September 2003, USDOE is required to follow the existing groundwater monitoring requirements of the Permit (WHC-SD-EN-AP-185).

The public comments received to date require additional evaluation. Initial responses are provided below. Once the monitoring data has been submitted, Ecology will make an evaluation based on analytical data collected from December

2001 through September 2003. At that time Ecology will prepare more detailed technical responses to public comments.

This Responsiveness Summary is intended to address all the comments received and show how the comments were evaluated. This Responsiveness Summary will be made part of the Hanford Facility Administrative Record for future reference.

This Responsiveness Summary is organized as follows:

- Response to PUBLIC CITIZENS (Michael Cochran)(p. 2)
- Response to Nez Perce Tribe (p. 4)
- Response to Oregon Office of Energy (pg. 5)

COMMENTER:

MICHAEL COCHRAN
WENATCHEE, WASHINGTON

1) Section 7.3.1 states that the objective of the statistical evaluation is to confirm that natural attenuation is occurring. But, the monitoring program as outlined in this document fails to address many of the elements as required by EPA OSWER Directive 9200.4-17P regarding monitored natural attenuation. Specifically, it fails to address these issues as outlined in the Directive:

a) Detect changes in environmental conditions (e.g., hydrogeological, geochemical, microbiological or other changes) that may reduce the efficacy of any of the natural attenuation processes.
b) Identify any toxic and/or mobile transformation products.
c) Verify that the plume(s) is not expanding (either downgradient, laterally or vertically)

Therefore, it is uncertain how this sampling plan intends to confirm natural attenuation is actually occurring.

Ecology Response: Ecology agrees. The First Five Year Review Report for the Hanford Site (available electronically at http://yosemite.epa.gov/R10/CLEANUP.NSF/webpage/Hanford,+Washington or in hard copy through U.S. EPA, Richland, WA) stated that:

> "By Summer of 2004, there will be three years' worth of groundwater monitoring data to support the next formal assessment of the remedy in the 2005 Five-Year Review. This will be a more appropriate time to reevaluate the effectiveness of the natural attenuation remedy for this plume. DOE must ensure that the operation & maintenance (O&M) plan for 300-FF-5 requires gathering the data necessary to evaluate whether or not natural attenuation is occurring, and whether active response measures should be initiated (see Action Item 300-4, below)."

Therefore, the confirmation of natural attenuation will be made through the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Five-Year Record of Decision (ROD) Review, not through this RCRA closure/post-closure groundwater monitoring plan. Text in the second paragraph of the Summary of the *300 Area Process Trenches Groundwater Monitoring Plan*

(PNNL-13645) is similarly confusing about the relative roles of the Washington Dangerous Waste regulations and CERCLA. Ecology will ask U.S. DOE to revise the document for better clarity.

2) The OSWER Directive 9200.4-17P also requires that a natural attenuation monitoring program should be sufficient to enable a determination of the rate(s) of attenuation and how that rate is changing with time. The adequacy of the Shewhart-CUSUM control chart method to establish a rate is not well documented in the scientific literature. If the method is actually useful for determining rate of attenuation, then this planning document should provide a detailed discussion or reference to it.

Ecology Response: Ecology agrees. See response to previous comment.

3) On page 7.3, first paragraph, a reference is made to a report by Washington State University which "endorsed the control chart methodology", (WSU 1999). This document is not listed in the references section of the report. Therefore, it is impossible for the public to obtain the document and make an independent evaluation of its findings. The Department of Ecology should make this report available to the public prior to making its final approval of the plan so that the public may judge its relevance to the 300 area monitoring program. Other published reports (e.g., Use of combined Shewhart-CUSUM control charts for ground water monitoring applications, Gibbons, R.D., 1999, Ground Water) provide a good discussion of the limitations of the method.

Ecology Response: Ecology agrees, and will ask U.S. DOE to make the document available to the public at the U.S. DOE Hanford web page for documents, http://www.hanford.gov/rl/resource.asp.

4) While the plan states that the preferred statistical method requires data to be independent and normally distributed, it makes no attempt to confirm that the baseline data for each monitoring well conforms to these requirements. The plan must include a suitable analysis of the baseline data to determine whether the data are indeed independent and normally distributed. Otherwise, the results of the Shewhart-CUSUM method will be in doubt.

Ecology Response: Ecology agrees. Ecology approved the temporary implementation of the *300 Area Process Trenches Groundwater Monitoring Plan* (PNNL-13645) under a series of two temporary authorizations that expire

December 9, 2002. The existing permit condition applies after that: *Groundwater Monitoring Plan for the 300 Area Process Trenches* (WHC-SD-EN-AP-185). The latter plan does not include specific reference to Shewhart-CUSUM method. Ecology plans to evaluate the validity of applying the Shewhart-CUSUM method for the 300 Area Process Trenches. Ecology has required USDOE to submit enough monitoring data to allow us to make that evaluation, and expects to receive the data by September 2003. Ecology will consider this reviewer's comment when making a final determination on which statistical method it will require and allow.

5) EPA guidance states that control chart methods such as the Shewhart-CUSUM do not efficiently handle truncated data sets (i.e. nondetects). Yet, detect frequency for some of the analytes for some of the wells as shown in Tables 7.1 and 7.2 are very low. The plan makes no mention of how it will modify the data to account for it.

Ecology Response: See response to previous comment.

COMMENTER:

NEZ PERCE TRIBE ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT
PO BOX 365
LAPWAI, ID 83540-0365

1. As this document seeks to update the groundwater monitoring plan for the 300 Area process trenches due to area change of status from assessment monitoring to compliance monitoring, and subsequently from compliance monitoring to corrective action monitoring, we support the implementation of this groundwater monitoring plan with one cautionary statement.

   It is clear (section 4.4.3, **Reported Values of the Constituents of Concern in Groundwater**, fourth paragraph) that an important consideration in the future is to be able to determine the relationship of uranium levels in well 399-1-17A to fluctuating river levels. This requires the implementation of effective and strong institutional controls in order to maintain institutional memory of the uranium issue. Institutional controls are not being addressed in this groundwater plan, as stated in the Introduction. These controls are to be treated in the update to the *Operation and Maintenance Plan for the 300-FF-5 Operable Unit* (DOE 1996), which at the time of the release of this groundwater monitoring update had not yet been released. ERWM would like to see and evaluate this update.

Ecology Response: The Nez Perce Tribe comment requests the opportunity to review and evaluate the 300-FF-5 O&M Plan update. Ecology has requested through U.S. DOE that a copy be transmitted to the Nez Perce Tribe.

COMMENTER:

OREGON OFFICE OF ENERGY
625 MARION ST. NE, SUITE 1
SALEM, OR 97301-3742

1. Overall, we found the comprehensive nature of the plan a positive step, yet there are several areas we believe could be improved upon to conclusively prove the selection of monitored natural attenuation as appropriate.

Ecology Response: Monitored natural attenuation was the remedy selected under a Comprehensive Environmental Response, Compensation and Liability Act (CERLCA) interim action record of decision for the 300-FF-5 groundwater operable unit. This plan is intended to fulfill the WAC 173-303-645 requirements for closure/post-closure groundwater monitoring plan. The data collected under this plan may support an evaluation of the effectiveness of monitored natural attenuation, but that should be a secondary goal. Ecology believes that that the second paragraph of the documents' "Summary" is confusing because its lists the CERCLA regulatory authority first and the Dangerous Waste Regulations authority second. Ecology will ask the U.S. DOE to revise the possibly confusing text.

2. The 11 wells selected to represent the 300 Trench do not appear to fully bound the conditions outlined in the plan . . . To resolve these two monitoring gaps well 1-18A/B should continue to be monitored and that two additional wells should be constructed west of the 300 trench to provide full monitoring of the groundwater flow paths noted in the presented plan.

Ecology Response: Ecology plans to evaluate the validity of applying the Shewhart-CUSUM method for the 300 Area Process Trenches. Ecology has required USDOE to submit enough monitoring data to allow us to make that evaluation, and expects to receive the data by September 2003. Ecology will consider this reviewer's comment during the course of its evaluation.

3. The Shewhart-CUSM method proposed to assist in data analysis is a powerful statistical tool for analyzing long term changes to the mean of a data set and to detect high value spurious events. However, use of the methodology may require normalization of the data or analysis as separate populations.

Ecology Response: See response to previous comment.

4. . . . two additional vadose zone characterization and monitoring locations should be established within or between the two trenches to clarify the source term and to more closely monitor infiltration through the vadose zone . . .

Ecology Response: Ecology is requiring groundwater monitoring of the 300 Area Process Trenches in compliance with WAC 173-303-645. Source characterization is not within the scope of that monitoring requirement. Corrective action requirements could include additional vadose zone characterization. Ecology has not made the determination that such characterization is required. It's possible that characterization could be required in response to the ongoing CERCLA evaluation of the effectiveness of monitored natural attenuation. The response to reviewer's comment #1, above, noted the potential confusion between the respective requirements of CERCLA and Dangerous Waste Regulations, due to the sequence of text in the groundwater monitoring plan.

5. Several comments concerned the selection of appropriate contaminants of concern. In summary, these comments suggested monitoring for nitrate and silver, and analysis of radionuclides by alpha, beta and gamma spectral scans

Ecology Response: The contaminants of concern in the current document were derived from the results of all previous monitoring for the process trenches. The previous monitoring included a full suite of EPA Appendix IX analytes. Ecology previously excluded constituents (e.g., silver) from the list of constituents because they were not capable of posing a substantial present or potential hazard to human health or the environment. The results of earlier sampling are available through publicly available groundwater monitoring reports and databases.

6. Several comments concerned the adequacy of the current well network and the need for further evaluation and interpretation of groundwater conditions. In summary, these comments discussed the need for additional monitoring to identify "fast flow paths," the frequency and timing of water table elevation measurements, comparison of specific conductance to contaminant concentrations, and the ability of the currently monitored network to address changes in river stage/groundwater level changes.

Ecology Response: Ecology has required USDOE to submit enough monitoring data to allow us to make an evaluation of the Shewhart-CUSUM statistical method. Ecology will consider the density of the monitoring network and other

hydrogeologic factors during the course of its evaluation. The results of earlier sampling are available through publicly available groundwater monitoring reports. In general, monitoring requirements were decreased in response to long-term observation of the groundwater regime.

7. The presence of cis-DCE and TCE indicate the need to monitor for the occurrence of DNAPLs as part of the long term monitoring plan.

Ecology Response: The presence of organic contaminants near their solubility limit in water would indicate a strong potential for the dense non-aqueous phase liquids (DNAPLs). Because the reported concentrations are significantly lower than that, a DNAPL evaluation is not needed.