0051699

071762

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

AUG 0 9 1999

Mr. Stanislaw Leja
Acting Perimeter Areas Section Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336-6018

SEP 1999
RECEIVED
EDMC

Dear Mr. Leja:

CERTIFICATION OF CLOSURE FOR 100-D PONDS, HANFORD SITE

Please find enclosed two Closure Certifications for the 100-D Ponds. Enclosure 1 is signed by the U.S. Department of Energy, Richland Operations Office (RL), as facility owner/operator, and Bechtel Hanford, Inc. (BHI), as facility co-operator; and Enclosure 2 is signed by an independent registered professional engineer (PE). These signatures certify that closure of the 100-D Ponds was implemented in accordance with the specifications of the Closure Plan. These certifications are required by Washington Administrative Code 173-303-610(6), and were prepared in accordance with Chapter 7 of the 100-D Ponds Closure Plan (Closure Plan). This plan was submitted with a letter to Mr. Steve M. Alexander from Messrs. Glenn I. Goldberg and James E. Rasmussen "Transmittal of the D-Ponds Closure Plan, Revision 2, DOE/RL-92-71, and Responses to State of Washington Department of Ecology (Ecology) Comments," dated April 27, 1998 (CCN 058256). Also provided, for your information, is the 100-D Ponds certification of closure report (Enclosure 3) prepared by an independent registered PE, that documents the verification process utilized by the independent engineer to verify that closure activities were performed in accordance with the Closure Plan which is Attachment 43 of the "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion" (Permit). RL requests that Ecology formally accept these certifications for closure by September 13, 1999.

Closure activities for the 100-D Ponds were initiated in August 1996. Closure activities consisted of excavation and disposal of contaminated soil from the 100-D Ponds to the 218-W-4C burial ground, excavation and disposal of uncontaminated debris to the 183-F clearwell, and verification sampling and computer modeling of the remaining soils. Verification sample results confirm Model Toxics Control Act Method B residential cleanup levels were achieved for the 100-D Ponds soils. The independent PE certification and report state that all closure activities were performed in accordance with the approved Closure Plan.

There is no groundwater contamination attributable to the 100-D Ponds. Continued groundwater monitoring is not required. There are no postclosure actions required to be taken by RL.

071762

AUG 0 9 1999

Should you have any questions, please contact Ms. Ellen Mattlin at 376-2385, or Mr. Glenn I. Goldberg, Project Manager, at 376-9552.

Sincerely,

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division
DOE Richland Operations Office

RAP:GIG

Michael C. Hughes, Vice President
Operations
Bechtel Hanford, Inc.

Enclosures: As stated

cc w/encls:
J. G. April, BHI
J. W. Donnelly
D. A. Faulk, EPA
L. Rudd, Ecology
W. W. Soper, Ecology (2)
Benton County Auditor
Ecology Kennewick Library

071305

Certification of Closure
of the 100-D Ponds by the
Owner/Operator/Co-operator

CERTIFICATION

We the undersigned, hereby certify that the 100-D Ponds closure activities were performed in accordance with the specifications of the approved Closure Plan which is Attachment 43 of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion*, and the closure was completed on June 17, 1999.

OWNER/OPERATOR:

Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

8/4/99
Date

CO-OPERATOR:

Steve D. Liedle, President
Bechtel Hanford, Inc.

7/21/99
Date

CERTIFICATION OF CLOSURE OF THE 100-D PONDS TREATMENT, STORAGE AND DISPOSAL UNIT BY AN INDEPENDENT REGISTERED PROFESSIONAL ENGINEER

I hereby certify that, to the best of my knowledge and belief, the 100-D Ponds Treatment, Storage, and Disposal unit has been clean closed in accordance with the specifications of the approved Closure Plan which is Attachment 43 of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion.* The closure was completed on June 17, 1999.

John D. Ludowise Date 7-15-99

John D. Ludowise
State of Washington
Registration No. 23766

JOHN D. LUDOWISE
STATE OF WASHINGTON
23766
REGISTERED
PROFESSIONAL ENGINEER

7-15-99

EXPIRES: 2/9/2000

Independent Registered Professional Engineer's Closure Certification Report for 100-D Ponds

Introduction

The 100-D Ponds treatment, storage, and disposal (TSD) unit is located on the Hanford Site and was used as a land surface impoundment for the disposal of liquid effluent. The site was constructed to receive nonradioactive, dangerous liquid waste.

The 100-D Ponds TSD unit is located adjacent to and north of the north perimeter fence of the 100-D Area. This TSD unit was constructed in 1977 and operated until 1994. The unit consists of two surface ponds, which were interconnected by pond effluent transfer piping.

The TSD unit was constructed within the boundaries of what was formerly the 188-D Ash Disposal Basin (waste site 126-D-1). The 188-D Ash Disposal Basin received coal ash/water effluent from the 184-D Powerhouse between 1950 and 1966, when the ash basin was retired.

The 100-D Ponds TSD unit was used mainly for the impoundment and disposal of nonradioactive, nondangerous liquid effluents from the 183-D Water Treatment Facility and included backwash from multimedia water filters and effluents from periodic washdowns of water settling basins. The unit also received minor amounts of liquid effluents from the 189-D mechanical development laboratory and raw Columbia River water from the 182-D Reservoir.

The 100-D TSD unit is being clean closed under the standards in the Washington Administrative Code (WAC) 173-303-610. Closure of the unit is being conducted in accordance with the approved Closure Plan which is Attachment 43 of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion* (Ecology 1999). Certification of closure by an independent registered professional engineer is required under WAC 173-303-610(6).

Closure of the 100-D Ponds TSD unit is governed by two documents: 1) the *100-D Ponds Closure Plan* (DOE-RL 1997) and the *Sampling and Analysis Plan for the 100-D Ponds Voluntary Remediation Project* (DOE-RL 1996). A summary of each of these documents is provided below.

- The Closure Plan (DOE-RL 1997) specifies that: 1) only dangerous waste constituents derived from 100-D Ponds operations are addressed; 2) influent piping, surrounding coal ash piles, and any contamination associated with the coal ash or influent piping are not in the scope of the Closure Plan; 3) radioactive waste is outside the scope of the Closure Plan; 4) corrosive chemicals, mercury, and volatile organic chemicals (e.g., paint thinners and solvents) are the only potential dangerous wastes received at the unit; and 5) the strategy for closure of the 100-D Ponds unit is "clean closure" under WAC 173-303-610(2). Remediation of the 100-D Ponds unit consisted of the removal and disposal of contaminated sediment followed by the collection and analysis of soil samples that demonstrated that the site is clean.

- The sampling and analysis plan (SAP) (DOE-RL 1996) was prepared to collect samples that would demonstrate that near-surface soils remaining after contaminated sediment removal are below the cleanup levels consistent with the Washington State *Model Toxics Control Act* (MTCA) (WAC 173-340) Method B requirements. The SAP specifies: 1) sample locations; 2) analytes; and 3) quality assurance/quality control (QA/QC) requirements. The SAP required the collection of 16 verification samples, and analysis of the samples for a list of contaminants of concern.

The actions taken to close the 100-D Ponds unit are summarized in Appendices A and B of the Closure Plan ("Summary of Remediation and Validation Sampling and Analysis at 100-D Ponds" and "Demonstration of Compliance with Clean Closure Standards for 100-D Ponds," respectively). These appendices were reviewed for accuracy and consistency with the governing documents listed above.

Review of Analytical Data

Attachment A-1 of Appendix A of the Closure Plan provides a copy of the logbook (EFL-1309) used by the field samplers to record pertinent data regarding the sampling event. The observations and data recorded in the logbook are generally consistent with the requirements of the SAP (DOE-RL 1996). All samples (including filed blank, duplicate, and split samples) were collected at the locations specified by the SAP, with two minor exceptions: 1) the location of one sample in the percolation pond was moved because the location specified in the SAP (DOE-RL 1996) was in an area that had been partially backfilled with soil during construction of a ramp for waste removal activities; 2) samples were generally collected from a depth of 10 to 12 inches compared with the 12 to 24 inches specified in the SAP. These deviations are noted in the Closure Plan. The first exception is a minor deviation from the SAP (DOE-RL 1996) specifications because sample locations were chosen randomly and the relocation of the one sample preserves the random nature of the sampling. The second exception is also minor since the sampling depth was somewhat arbitrarily set at 12 to 24 inches. Contaminated sediments were removed in a layer immediately above the present surface. Sampling in the 10 to 12 inch layer below the present surface would be expected to be more representative of residual contamination than the 12 to 24 inch interval specified in the sampling plan.

Attachment A-2 of Appendix A of the Closure Plan provides copies of the analytical laboratory analyses data sheets. Results were reported for all samples collected and for all analytes listed in the SAP (DOE-RL 1996). The data validation reports for inorganics (Kearney 1996a) and for pesticide/polychlorinated biphenyls (PCBs) (Kearney 1996b) noted no major deficiencies and only a few minor deficiencies due mainly to matrix spike/matrix spike duplicate recoveries being outside QC limits.

The analytical results are summarized in Appendix A of the Closure Plan (DOE-RL 1997). The summary provided in Appendix A accurately represents the information contained in the sampling field log (EFL-1309) (Attachment A-1), and the analytical results, and data validation reports (Attachment A-2). The statistical summary in Appendix A of the Closure Plan follows the Washington Department of Ecology methods for comparing the analytical results against

cleanup limits. Analytical results were all within regulatory cleanup levels listed in Table A-3 of the Closure Plan. Because most of the chromium results were less than the detection limit, chromium was handled as a special case, as recommended by Ecology guidance (Ecology 1992 and Ecology 1993). The conclusion that the chromium results are within the background levels is consistent with this guidance.

Review of Impacts to Groundwater and Vadose Zone

Appendix B of the Closure Plan (DOE-RL 1997) evaluates the effect that discharges to the 100-D Ponds had on the subsurface soils and groundwater.

The analytical results of groundwater samples collected from 1 upgradient well and 3 down gradient wells after 1992 were used to evaluate the impact on groundwater. With the exception of chromium (which is present in samples collected from the upgradient well) chemicals found in the downgradient wells are at levels below regulatory limits. The source of chromium is upgradient of the 100-D Ponds. The groundwater monitoring results indicate that the 100-D Ponds are not contributing significant amounts of contaminants to the groundwater.

Elevated pH levels have also been observed in two of the downgradient wells. The elevated pH levels are most likely due to the alkaline nature of the coal ash that underlies and surrounds the 100-D Ponds. The coal ash is not within the scope of the closure action.

The effect that 100-D Ponds had on subsurface soil was evaluated using a computer model (PHREEQC) developed by the U.S. Geological Survey for simulating geochemical reactions. Since PHREEQC is only capable of modeling equilibrium conditions it was assumed that contact time between the water and soil minerals was long enough to reach equilibrium. This assumption provides a conservative estimate since contact times are generally too short to achieve equilibrium. The problem was modeled in 3 steps: 1) infiltrating water is reacted with the coal ash underlying the ponds; 2) the solution that results from step 1 is then reacted with typical minerals of the Ringold Formation (that underlies the coal ash); and 3) the solution that results from step 2 is mixed with groundwater while maintaining equilibrium with the sediments in the Ringold Formation.

There were no data available regarding the initial solution composition for Step 1. It was assumed to be essentially water from the Columbia River mixed with metals in concentrations based on TCLP results of the sediments that were removed from the 100-D Ponds. This is a conservative assumption since the water treatment plant, which supplied the bulk of the water to the 100-D Ponds treated water from the Columbia River. Any metals that would have been present in the infiltrating water would have been leachate from the sediments. Leachate from the TCLP test would be expected to have higher concentrations of metals than river water because the TCLP test uses a more aggressive leaching reagent (acetic acid) than water.

No analytical data were available concerning the mineral phases present in the coal ash. A representative coal ash mineral composition was therefore based on published tables of mineral

constituents in ash from various coals. The selection of a representative coal ash composition provides a reasonable basis for the mineralogical properties of the coal ash.

The results of the modeling indicate that the 100-D Ponds did not contribute significant amounts of metals to the vadose zone or groundwater.

Conclusion

A review of pertinent documents, discussed above, showed no major deficiencies with respect to compliance with the Closure Plan (DOE-RL 1997). The minor deficiencies in Appendix A do not materially affect the conclusions documented in that appendix. No deficiencies were noted in Appendix B. The information provided in Appendices A and B of the Closure Plan (DOE-RL 1997) appears to be a true and accurate representation of the condition of the 100-D Ponds TSD unit.

REFERENCES

BHI 1996, *D-Pond Remediation Project Self Assessment Summary Report,* SA# D-Pond-001-96, August 21, 1996, Bechtel Hanford, Inc., Richland, Washington.

DOE-RL, 1996, *Sampling and Analysis Plan for the 100-D Ponds Voluntary Remediation Project,* DOE/RL-96-43, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1997, *100-D Ponds Closure Plan,* DOE/RL-92-71, Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Kearney, 1996a, Data Validation Report, *Inorganics - Data Package No. W01139-QES (SDG No. W01139)*, 100-D Ponds Verification Sampling, November 12, 1996, A. T. Kearney, Inc., Richland, Washington.

Kearney, 1996b, Data Validation Report, *Pesticide/PCB - Data Package No. W01139-QES (SDG No. W01139)*, 100-D Ponds Verification Sampling, November 12, 1996, A. T. Kearney, Inc., Richland, Washington.

Ecology, 1992, *Statistical Guidance for Ecology Site Managers,* Publication Number 92-54, August 1992, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1993, *Statistical Guidance for Ecology Site Managers, Supplement S-6,* "Analyzing Site or Background Data with Below-Detection Limit or Below-PQL Values (Censored Data Sets)," August 1993, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1999, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion,* Permit Number WA7890008967, Rev. 5, June 17, 1999, Washington State Department of Ecology, Olympia, Washington.