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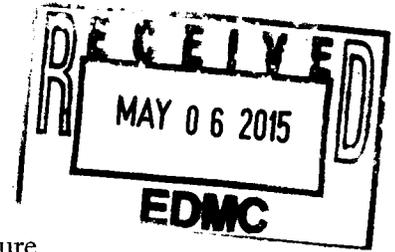
STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 4, 2015

15-NWP-081

Mr. Ryan E. Beach, General Engineer  
Office of River Protection  
United States Department of Energy  
PO Box 450, MSIN: H6-60  
Richland, Washington 99354



Re: Planning for Waste Management Area (WMA) A-AX Retrieval and Closure

References: See page 3

Dear Mr. Beach:

The Department of Ecology (Ecology) strongly supports the characterization and closure of the Resource Conservation and Recovery Act Treatment, Storage, or Disposal Facility unit, WMA A-AX. Therefore, Ecology requests the prompt completion of the Data Quality Objective (DQO) process for WMA A-AX that was begun and terminated a few years ago.

All Single-Shell Tank (SST) actions including retrievals, soil investigations, and closure plans are ongoing efforts to bring the SSTs into compliance with the *Hanford Federal Facility Agreement and Consent Order* (HFFACO) Appendix I, Section 2.2. Section 6.5 of the HFFACO Action Plan provides clear expectations for conducting investigations and discusses the importance of the DQO.

Ecology encourages the United States Department of Energy (USDOE) to follow the DQO process with a work plan to characterize in-tank waste as well as contaminated media (ex-tank waste). The work plan should be submitted to Ecology for review and approval. Also, Ecology suggests this process be as collaborative as possible to expedite the retrieval of wastes from tanks in these two farms A-AX and to expedite closure through required actions, such as characterization and closure of this WMA.

The following are some expectations Ecology has for this process:

- Characterization of wastes within the tanks in these farms to expedite preparation of acceptable Tank Waste Retrieval Work Plans.
- Characterization of all media contaminated by releases from tanks and activities in these two tank farms; specifically determining the magnitude and extent of soil and groundwater contamination attributable to these farms, including ancillary equipment.
- Development of a process for Ecology participation and input when opportunities arise to capture additional characterization information. Recently USDOE initiated the removal of piping in an effort to upgrade the ventilation system. Ecology requests that USDOE take this opportunity to inspect the open pipe in WMA A-AX and sample any contents.



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- Better inform Performance Assessments regarding soil investigations and ancillary equipment assumptions.
- Gather sufficient data to prepare a Resource Conservation and Recovery Act Facility Investigation report that supports a thorough and acceptable Corrective Measures Study report.
- Prepare and submit an acceptable closure plan.

Some items of concern are:

1. The distribution of strontium-90 and chromium species in the surrounding soil and groundwater beneath A-105 and other tanks that leaked high-level Plutonium Uranium Extraction Facility (PUREX) waste. Ecology would like USDOE to re-log the laterals beneath A Farm tanks and as well as temperature logging of drywells in A Farm.
2. The high soil temperatures that are shown in the well log of A-C9383 located between A-104 and A-105 are another concern. Ecology believes these temperatures could result from strontium-90 decay as described by Zachara et al. (Reference 1). The *Field Sampling and Analysis Plan for Soil Samples at Waste Management Area A-AX, RPP-PLAN-57332* (Sampling and Analysis Plan [SAP]) states this sampling effort will be part of the characterization efforts at WMA A-AX (Reference 2).

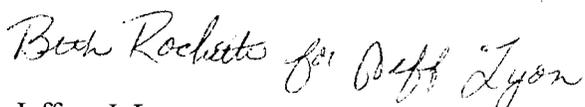
The SAP omits the fact that tank A-105 was sluiced twice after the bottom rupture the second time with 1M sulfuric acid; then 600,000 gallons of cooling water was added following sluicing with up to 200,000 gallons of water may have leaked from A-105 (Reference 3, pages 29-33). Chromium speciation, especially Cr+6 and its mobility in the vadose zone, is important (Reference 4). Thus, Ecology strongly suggests an enhanced evaluation of the constituents of concern and their speciation. This information on mobility and concentrations of hazardous constituents would be very important for the A-AX Performance Assessments.

3. Releases from AX Farm were mostly from piping that runs midway through the farm between tank rows AX-101 and AX-103 and tank row AX-102 and AX-104. Soils in this area should be characterized to determine the contaminants and their extent in the soil.

Ecology requests a meeting with the Office of River Protection to discuss scheduling and completion of these plans and documents.

If you have any questions, please contact me at [jeff.lyon@ecy.wa.gov](mailto:jeff.lyon@ecy.wa.gov) or (509) 372-7914, or Joe Caggiano, Hydrogeologist 3, at [joe.caggiano@ecy.wa.gov](mailto:joe.caggiano@ecy.wa.gov) or (509) 372-7915.

Sincerely,



Jeffery J. Lyon  
Tank Systems Operation and Closure Project Manager  
Nuclear Waste Program

jc/aa

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- Reference 1: J. M. Zachara, R. J. Serne, M. D. Freshley, F. M. Mann, F. J. Anderson, M. I. Wood, T. E. Jones, and D. A. Myers, "Geochemical Processes Controlling Migration of High Level Wastes in Hanford's Vadose Zone," *Vadose Zone Journal* 6(4):985-1003. doi:10.2136/vzj2006.0180, 2007
- Reference 2: RPP-ENV-37956, Rev. 2, "Hanford 241-A and 241-AX Tank Farms Leak Inventory Assessment Report," WRPS, J. G. Field, and L. A. Fort, 2014
- Reference 3: RPP-PLAN-57332, Rev. 0, A. W. Radloff, C. L. Tabor, R. D. Childress, "Field Sampling and Analysis Plan for Soil Samples at Waste Management Area A-AX," WRPS, 2014
- Reference 4: J. M. Zachara, C. C. Ainsworth, B. E. Brown, Jr., J. G. Catalano, "Chromium Speciation and Mobility in a High-Level Waste Vadose Zone Plume," *Geochimica et Cosmochimica Acta* 68(1):13-30, 2004

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NWP Central Files  
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