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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 16, 2016

16-NWP-090

Mr. Kevin W. Smith, Manager  
Office of River Protection  
United States Department of Energy  
PO Box 450, MSIN: H6-60  
Richland, Washington 99352

Mr. Mark A. Lindholm, President  
Washington River Protection Solutions  
PO Box 850, MSIN: H3-21  
Richland, Washington 99352

Re: Groundwater Monitoring Requirements for 200 West Area Single-Shell Tank (SST) Farms  
Final Status Groundwater Monitoring Plan

Dear Mr. Smith and Mr. Lindholm:

The Department of Ecology (Ecology) has identified additional information needs regarding groundwater monitoring for the 200 West Area SST Farms, encompassed by the following waste management areas (WMA): WMA T, WMA TX-TY, WMA S-SX, and WMA U.

Submittal of final status groundwater monitoring plans for these dangerous waste management units requires information found in both Washington Administrative Code (WAC) 173-303-806, Final facility permits, and WAC 173-303-645, Releases from regulated units, be addressed.

The enclosure provides details on the information that must be provided regarding groundwater monitoring specific to the 200 West Area SST Farms. This includes the information requirements for regulated units subject to groundwater monitoring found in WAC 173-303-806(4)(a)(xx) and 173-303-645(8).

Please provide the draft Engineering Report(s) to Ecology for review by November 30, 2016.

In addition, please provide a schedule for completing the Groundwater Monitoring Plans that will be based on the Engineering Report(s) results. Submittal of the draft Groundwater Monitoring Plans may occur at the same time as submittal of the Engineering Report.

Both the Engineering Report(s) and the Groundwater Monitoring Plans are required as part of your unit group permit application submittal to the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Permit, Revision 9. Ecology will provide feedback on the adequacy of the draft Engineering Report(s) to assist you in providing compliant Groundwater Monitoring Plans.



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If you have any questions, please contact Jeff Lyon, Tank Systems Operation and Closure Project Manager, at [jeff.lyon@ecy.wa.gov](mailto:jeff.lyon@ecy.wa.gov) or (509) 372-7914, or Joe Caggiano, Hydrogeologist, at [joe.caggiano@ecy.wa.gov](mailto:joe.caggiano@ecy.wa.gov) or (509) 372-7915.

Sincerely,

Cheryl L. Whalen  
Cleanup Section Manager  
Nuclear Waste Program

aa  
Enclosure

cc electronic w/enc:

Dave Bartus, EPA  
Dennis Faulk, EPA  
Bill Faught, CHPRC  
Bruce Ford, CHPRC  
Mike Cline, DOE  
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Cheryl Whalen, Ecology  
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Hanford Facility Operating Record  
USDOE-ORP Correspondence Control  
WRPS Correspondence Control

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Steve Hudson, HAB  
Administrative Record  
NWP Central File

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Rod Skeen, CTUIR  
Gabriel Bohnee, NPT  
Russell Jim, YN  
NWP Reader File

**Enclosure**  
**200 West Area Single-Shell Tank Farms Engineering Report and Groundwater Monitoring Plan**  
**Permit Application Information Needs**

The permit application submittal must include detailed plans and an engineering report describing the proposed groundwater monitoring program to be implemented to meet the requirements of WAC 173-303-645(8) [WAC 173-303-806(4)(a)(xx)(E)]. The Engineering Report should satisfy all requirements in WAC 173-303-806 and WAC 173-303-645(8). To assure completeness, Ecology will be looking for the items specified and any supporting technical basis for evaluations/background.

- Geology and hydrogeology of the dangerous waste management unit (DWMU), including a geologic description of any and all pertinent aquifers
- Identify the uppermost (and any other) aquifers that underlie the DWMU
- Communication between uppermost aquifer and any other underlying aquifers
- The groundwater flow system; i.e., points of recharge and discharge
- Natural background constituents in the aquifer
- Contaminants present in the aquifer and sources (radioactive and chemical)
- A history of operations at the DWMU that may have contributed to the contamination present in the uppermost aquifer
- A history of groundwater monitoring at the DWMU and/or discharges from sources affecting the uppermost aquifer (i.e., summary of interim status groundwater monitoring data including changes in monitoring well networks)
- Changes in groundwater flow direction and rate over time
- Changing heads (water levels) over time
- Any computer simulations of groundwater flow and/or flow transport in the uppermost aquifer underlying the DWMU used to identify the location and number of wells
- Aquifer characteristics that help determine the number and location of wells (e.g., longitudinal and transverse dispersivity)
- Number and location of existing and proposed groundwater monitoring wells and the technical justification for each well
- Existing and proposed well construction, including screen length and placement
- Any remediation activities occurring in the area around the DWMU and the effect, if any, on water table elevation and groundwater flow direction at the DWMU in question.

The current Groundwater Conceptual Agreement Package (CAP) establishes the basic information to be included in the Permit, and permit application submittal. The following information requirements constitute additional technical requirements established on a DWMU specific basis reflecting the unique circumstances of the 200 West Area groundwater conditions.

1. The detailed engineering report must include a complete analysis of the following topics to support the design of the groundwater monitoring well network and the monitoring program:
  - a. Information necessary to support the design of the groundwater monitoring well network, such that it is capable of yielding representative samples of groundwater potentially impacted by releases from the DWMUs resulting from changes in groundwater flow direction, declining water tables, and/or degrading wells that may be causing sample contamination.
  - b. Information supporting design of the groundwater monitoring program that is capable of detecting significant statistically increases in groundwater contamination at the earliest practicable time.
  - c. Include uncertainty in groundwater flow direction so that the appropriate number of wells can be located and drilled. This includes one year of background monitoring for WAC 173-303-110(3)(c) and seven constituents unless previously performed to Ecology's satisfaction. Given the three year schedule for drilling and installing new wells, there should be at least two years minimum of planning, scheduling, and construction for any new wells or revised groundwater monitoring networks that are approved by Ecology.
  - d. Describe the approach, input data, any additional information needs, and analysis proposed to evaluate and respond to changes listed in 1(a). Submit a full report of the complete analysis supporting the proposed approaches, including the methodology and results of validation of any modelling. Modifications of the groundwater monitoring network(s) may be needed to ensure they will continue to yield representative samples of groundwater potentially impacted by releases from the DWMUs.
2. The permit application submittal must include a final status groundwater monitoring plan that includes both indicator parameters and dangerous waste constituents pursuant to WAC 173-303-645(4).