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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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January 24, 2001

Mr. Kevin Leary
U.S. Department of Energy
Richland Operations Office
P.O. Box 550, MSIN: H0-12
Richland, Washington 99352

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EDMC

Mr. Michael Thompson
U.S. Department of Energy
Richland Operations Office
P.O. Box 550, A5-13
Richland, Washington 99352

Dear Mr. Leary and Mr. Thompson:

Re: Liquid Effluent Retention Facility (LERF) Unsaturated Zone Monitoring Alternatives Evaluation, Suspension of Groundwater Monitoring Statistical Evaluation Requirements, LERF RCRA Permit Modification, and Leachate Monitoring Performance Criteria

The Washington State Department of Ecology (Ecology) has issued two letters^{1,2} regarding consideration and evaluation of an alternative monitoring program (e.g., unsaturated zone monitoring) for the LERF. The letters encouraged the U.S. Department of Energy (USDOE) to address and evaluate the environmental monitoring alternatives as applicable to the LERF. To date, Ecology has had no indication that the previously identified issues have been addressed and/or evaluated. Once again, Ecology urges the USDOE to evaluate and address these issues. Ecology foresees the implications of the alternative monitoring approach selected for the LERF to be potentially applicable at other RCRA treatment, storage and disposal units at the Hanford Site. Ecology expects workshops and/or discussions between Ecology and USDOE representatives regarding the LERF path forward to be initiated by mid-February 2001.

Ecology hereby gives notice of an Ecology permit determination and Ecology's intent to modify the Hanford Resource Conservation and Recovery Act (RCRA) Permit via the Class 2 and/or 3 permit modification process during calendar year 2001. To ultimately achieve the stated requirements and/or intent of WAC 173-303-650(2)(a), and by application of authority provisions of WAC 173-303-283 and -815(2)(b)(ii), Ecology has determined that the unsaturated

¹ Letter dated July 21, 2000, from Jeanne Wallace, Ecology, to Michael Thompson, USDOE, Re: Liquid Effluent Retention Facility (LERF) Unsaturated Zone Monitoring Alternatives

² Letter dated January 12, 2001, from John Morse, USDOE, to Laura Cusack, Ecology, Re: Groundwater Monitoring Program at the Liquid Effluent Retention Facility (LERF)

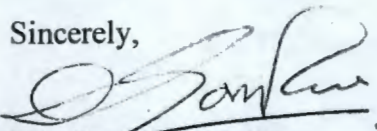
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Mr. Michael Thompson
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zone monitoring objectives of WAC 173-303-655(6) are applicable to the LERF. The actions taken to impose an alternative monitoring program are being required to protect human health and the environment because of USDOE's current inability to monitor releases from the unit to the groundwater, and the current lack of a system to monitor releases from the unit to the unsaturated zone. Therefore, Ecology will modify the LERF interim status groundwater monitoring permit provisions to include permit conditions that will provide for the timely evaluation of environmental monitoring alternatives for the LERF. The permit conditions will identify an evaluation schedule and will include specific criteria by which the evaluation will occur. In addition, the permit conditions will include a requirement for the development of an unsaturated (i.e., vadose) zone monitoring system/program. The schedule (i.e., schedule of compliance) for the development of an unsaturated zone monitoring system/program will include, but not be limited to, the following: the secondary liner and/or leachate collection system design life certification, the secondary liner and/or leachate collection system design and installation manufacturer's warranty, an effective leachate monitoring program, etc. As most recently indicated during a meeting on December 21, 2000, and a subsequent electronic mail message on December 27, 2000, leachate collection and level reading is not acceptable as the sole means of monitoring the LERF. In other words, leachate monitoring constitutes only a component of the environmental monitoring that will be required at the LERF. The alternative environmental monitoring program required at the LERF will consist of vadose zone and leachate monitoring.

An enclosure with this letter identifies and describes LERF permitting and alternative monitoring issues. The enclosure also requests the following information be submitted by the following dates: calculation(s) and certification(s) of liner design and expected performance be provided by February 15, 2001, and basin waste and leachate information for all isotope concentrations including gross alpha and gross beta measurements be submitted by February 15, 2001.

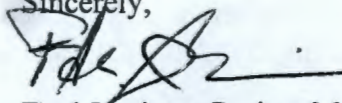
If you have any questions about this letter, please contact Alisa Huckaby at 509/736-3034 or Joe Caggiano at 736-5720.

Sincerely,



Dib Goswami, Ph.D.
Senior Hydrologist,
Nuclear Waste Program

Sincerely,



Fred Jamison, Project Manager
Waste Management Project
Nuclear Waste Program

ADH:JC:lkd

Enclosure

cc: Doug Sherwood, EPA
Marvin Furman, USDOE
Greg Sinton, USDOE
Roger Szelmeczka, FHI
John Fruchter, PNNL

Stuart Luttrell, PNNL
Mark Sweeney, PNNL
Merylyn Reeves, HAB
Mary Lou Blazek, OOE
Administrative Record: LERF

**Enclosure: Liquid Effluent Retention Facility (LERF)
Permitting and Alternative Monitoring Issues and Information Requests
January 24, 2001**

Ecology's July 21, 2000, letter¹ referenced Ecology's variance from certain interim status groundwater monitoring requirements that were provided by Ecology in a letter dated September 22, 1999². Specifically, the variance allows USDOE to monitor the groundwater in the vicinity of the LERF using only two downgradient monitoring wells. The conditions of the variance specified in the letter² were that the variance would be in effect for no longer than eighteen months or until one of the three remaining groundwater monitoring wells is unable to produce representative samples of groundwater. Ecology has reviewed Groundwater Sample Reports provided for groundwater monitoring wells 299-E35-2, 299-E26-10, and 299-E26-11. The information indicates that the groundwater level at well 299-E35-2 occurred below the pump intake and that a Kabis sampling device was used to sample on July 5, 2000. The information also indicates there was insufficient water on July 5, 2000, to purge to achieve stable field measurements (i.e., turbidity). Ecology has concluded that groundwater monitoring well 299-E35-2 no longer yields groundwater samples representative of the aquifer. In addition, Ecology was notified in a letter dated January 12, 2001³, that groundwater monitoring well 299-E-35-2 is no longer capable of providing a representative sample for groundwater monitoring purposes. Therefore, Ecology considers the groundwater monitoring variance to no longer be in effect. In addition, Ecology hereby suspends further statistical evaluation of groundwater monitoring results associated with the two remaining yielding wells. This suspension will be in effect until further notice from Ecology. However, as indicated in this enclosure's transmittal letter, Ecology intends to impose permit conditions which will specify monitoring types/components and schedules for the development and implementation of an alternative monitoring program for the LERF.

During a meeting on December 21, 2000, Ecology representatives were provided a matrix entitled *Decision Logic Matrix for Environmental Monitoring at LERF*. The first two notes on the decision matrix are of particular interest. The unstated, but implied, assumption is that the liner always functions as designed and installed for the entire design life of LERF. Ecology representatives have explained that this particular assumption cannot be accepted without confirmatory vadose zone and leachate monitoring. To better understand the context of the notes, Ecology representatives have recently performed a review of the permit/permit application and administrative record documentation for design life certifications and/or manufacturer's warranty/guarantees specifically related to the leachate collection system and/or the secondary liner. Apparently, language contained in a previous version of the permit application stated "[T]he length of service for this surface impoundment is estimated at 3 to 5 years." The text of the permit application was later changed to indicate that the estimated design life of the LERF is 30 years. Also noted during the administrative record review was indication that a liner repair was necessary for basin 44, a leak detection repair was necessary, and numerous engineering

¹ Letter dated July 21, 2000, from Jeanne Wallace, Ecology, to Michael Thompson, USDOE, Re: Liquid Effluent Retention Facility (LERF) Unsaturated Zone Monitoring Alternatives

² Letter dated September 22, 1999, from Stan Leja, Ecology, to Marvin J. Furman, USDOE, Re: Variance From Interim-Status Groundwater Monitoring Requirements at the Liquid Effluent Retention Facility

³ Letter dated January 12, 2001, from John Morse, USDOE, to Laura Cusack, Ecology, Re: Groundwater Monitoring Program at the Liquid Effluent Retention Facility (LERF)

change notices (ECNs) were issued during construction of the LERF. While numerous test results, construction evaluations, repair and/or revision reports, etc. were noted, calculation(s) and certification(s) specific to the liner (by manufacturer and the overseeing independent engineer) of the 30 year design life and/or the expected time of performance were not found. As Ecology will modify the permit to include leachate monitoring as a component of an alternative environmental monitoring program, it is requested that calculation(s) and certification(s) of liner design and expected performance be provided so that they may be included and/or referenced in the permit during this modification. As Ecology representatives will need to review information to draft the above described permit conditions, it is requested that USDOE submit the requested documentation by February 15, 2001.

Ecology considers the effluent monitoring to constitute a component of the environmental monitoring that will be required at the LERF. During a July 12, 2000, LERF monitoring workshop, the leachate sump design and monitoring were described. Ecology appreciates the information provided during the workshop (i.e., description of leachate rate measurements based on weekly inspections of LERF level and leachate sump pumpings and indication that leachate samples are analyzed for gross alpha and gross beta concentrations). During the July 12, 2000, workshop, Ecology representatives indicated that the leachate monitoring criteria would be modified in the permit to include more meaningful liner performance criteria. To consider leachate monitoring criteria, Ecology requests information (preferably analytical data collected to date) which describes LERF basin waste and leachate. At a minimum, Ecology is interested in obtaining basin waste and leachate information for all isotope concentrations including gross alpha and gross beta measurements in both basin waste and leachate. As Ecology representatives will need to process information to draft the above described permit conditions, it is requested that USDOE submit the requested information by February 15, 2001.

Ecology understands the LERF unit is currently comprised of three surface impoundments with capabilities for the construction of a fourth surface impoundment. Ecology also understands that construction activities associated with the fourth surface impoundment have not proceeded beyond excavation. Ecology hereby gives notice of intent to also include permit conditions that require an Ecology-approved vadose monitoring capability (e.g., access tubes for neutron moisture probes beneath the second liner) to be installed prior to further construction on the fourth basin, in the event that the fourth basin is determined to be necessary. The technical and regulatory basis of this requirement has been well established by the necessity to design and implement an alternative monitoring program for the three existing surface impoundments. Ecology acknowledges and appreciates the fact that the incomplete basin also offers the opportunity to test various types of vadose zone monitoring techniques that may have application at the operating three basins.