

U.S. ENVIRONMENTAL PROTECTION AGENCY

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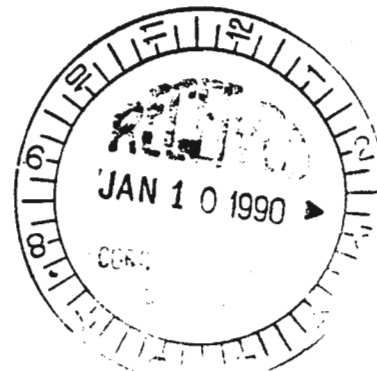


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 P.O. Box 550, A7-70
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December 26, 1989

REPLY TO
ATTN OF:

A7-70



Richard J. Nevarez
 U. S. Department of Energy
 P. O. Box 550 (A6-80)
 Richland, Washington 99352

Dear Mr. Nevarez:

Re: REVIEW OF DRAFT LIQUID EFFLUENT STUDY PROJECT PLAN AND WASTE
 STREAM CHARACTERIZATION REPORT

I have been assigned the responsibility for review of the Liquid Effluent Study Program for the U. S. Environmental Protection Agency. My initial review of this program has focused on the Draft Liquid Effluent Study Project Plan and the Waste Stream Characterization Report. The primary objective of my review has been to identify waste streams and receiving sites requiring detailed flow and transport modeling to assess the environmental impacts of these on-going disposal activities on existing and future groundwater quality. A consistent approach to flow and transport analysis is needed to compare the environmental impacts of continued liquid discharges to the receiving soils and groundwater. Flow and transport analysis coupled with an adequate liquid effluent characterization effort provides the basis for assessing the need for additional effluent controls or renegotiation of liquid effluent discharge milestones.

EPA suggests that on January 8, 1990 we meet to discuss the details of the flow and transport analysis so that once this effort is initiated in March of 1990 all parties are in agreement as to the approach to be used.

My comments are divided between the Draft Liquid Effluent Study Project Plan and the Waste Stream Characterization Report.



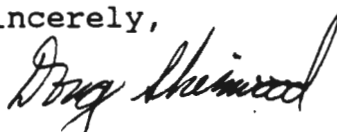
Richard J. Nevarez

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December 26, 1989

If you have any questions on these comments, please feel free to call me at 376-9529. I look forward to contributing to this effort as it represents a major stepping stone to development of a flow and transport analysis for inactive sites.

Sincerely,



Douglas R. Sherwood
Unit Manager

DRS:ADD
Enclosure

cc: R. Freeberg, DOE
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T. Michelena/R. Stanley, Ecology
W. Staubitz, USGS
R. Thompson, WHC
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EPA COMMENTS

ON

LIQUID EFFLUENT STUDY PROJECT PLAN

SEPTEMBER 1989, REVISION 1

1. General Comments

This document represents a brief overview of the tasks to be undertaken during the 14-month Liquid Effluent Study. Due to the summary nature of this document, it is difficult to determine what specifically will be done. The emphasis of this plan appears to be directed toward the designation of liquid effluent streams under the state's dangerous waste regulations. An equally important objective is to assess if continued disposal of these liquid effluents will result in the need for additional remedial actions or complicate remedial actions at other sites. If continued disposal makes clean up actions at certain receiving sites inevitable, it would be preferable to design an effluent treatment system to attempt to limit the need for such future remediations at active discharge locations. It is not clear how the Department of Energy plans to perform "an assessment of the potential for contaminant migration at each of the waste sites". In addition, no description is given as to how receiving sites will be evaluated to determine if liquid effluent discharge milestones require renegotiation.

The stated approach to modeling contaminant migration relies on the use of existing data and models that are consistent with the methodology used in the Hanford Defense Waste Environmental Impact Statement (HDW-EIS). The methodology used in the HDW-EIS utilizes natural recharge under partially saturated conditions to assess long-term releases from nearly dry sites. This is a far different type of assessment than is required for a continued liquid discharge application. In addition, even if the HDW-EIS type of approach was to be used, it is unrealistic to believe that simulations could have been completed between the end of March and the first of August.

A secondary approach would select "representative locations of interest" and perform an assessment using aggregate data. A credible flow and transport analysis will be required to evaluate the potential for groundwater contamination resulting from continued liquid effluent discharges.

Several receiving sites may lend themselves to direct evaluation due to large discharge volumes and available groundwater monitoring data, but others will require some

form of flow and transport analysis. Due to the short term nature of this program, it is not possible to perform a credible flow and transport analysis for each of the facilities. Therefore, it will be critical to choose receiving sites and effluent compositions that represent cases where remedial actions may be likely as a result of continued liquid effluent discharge.

The revised project plan remains deficient in its approach to assessment of the environmental impacts of continued liquid effluent discharge. Consequently, this approach gives no real basis for relating the results of this study to the environmental impacts of continued discharge.

Recommendation

EPA recommends that the Draft Liquid Effluent Study Project Plan be revised to indicate how the results of the study will be used to influence discharge practices or develop liquid effluent treatment processes, and minimize future environmental impacts. No course of action is described in the event that dangerous waste constituents or unacceptable environmental impacts are identified. A clear statement of the final product or outcome of the study is required.

EPA recommends that liquid effluent compositions and their appropriate receiving sites be selected for flow and transport analysis prior to initiation of the flow and transport analysis task in March. Receiving sites should also be identified that do not require flow and transport analysis due to the presence of an acceptable monitoring system and limited existing groundwater contamination from adjacent sources. Liquid effluent compositions would also require review and refinement in order to select contaminants of concern in each liquid effluent stream. This review would be used to develop an agreed upon list of contaminants and receiving sites requiring flow and transport analysis. In addition, liquid effluent compositions may be identified that contain few, if any, contaminants of concern and would not require flow and transport analysis. EPA recommends that the Department of Energy and Washington State Department of Ecology meet to review receiving sites and liquid effluents requiring flow and transport analysis.

An example of a receiving site EPA proposes for flow and transport analysis is 216-U-17 which receives UO₃ plant process condensate.

Radionuclide data contained in Section A.17 of Volume 2 of the Waste Stream Characterization Report indicates that average uranium concentrations exceed that proposed maximum contaminant level (MCL) for uranium 25-30 pCi/L by a factor

of 5,000. MCL's are also exceeded for beta, strontium-90, cesium-137, chromium, fluoride, mercury and nitrate.

Groundwater data for wells around 216-U-17 contain radionuclides and nitrate far in excess of the appropriate MCL's in advance of January 1988. These facts suggest that due to the presence of existing contamination, groundwater data would not be appropriate indicator of future environmental impacts. Therefore, flow and transport analysis represent the only means to evaluate continued liquid effluent discharge at 216-U-17.

A similar selection process should be undertaken to identify other receiving sites that require flow and transport analysis.

Enclosure 2

EPA COMMENTS

ON

WASTE STREAM CHARACTERIZATION REPORT

AUGUST 1989

1. General Comment

Volumes for liquid effluents discharged to individual receiving sites are required for all sites. Volumes and concentrations of contaminants of concern are required to calculate site inventories and release fluxes for continuing discharges.

Recommendation

EPA recommends that volume of liquid effluent released to a given receiving site be expressed as total volume released to date with an approximate discharge rate, and future projected discharge volume with a projected discharge rate. This subdivision of discharge volumes will allow us to analyze the extent of the existing problem and the potential benefit to be derived from early development of effluent treatment capabilities to limit future releases.

2. General Comment

This report represents a substantial characterization effort, based on available data, and appears to be fairly comprehensive. For the purpose of flow and transport analysis, most of the potential contaminants of concern have been identified. One aspect of this characterization that is not fully discussed is the subject of incidental releases. Additional information is needed to document such releases. More definitive information is needed to document the many releases of "corrosive solution".

Recommendation

EPA recommends that additional detail be provided as to the composition of the incidental releases of corrosive solutions. In some cases, these releases exceed 100,000 pounds and, therefore, represent a significant quantity of corrosive and potentially hazardous material.

3. General Comment

Previous flow and transport analysis performed to support the Hanford Defense High-Level Transuranic and Tank Waste Environmental Impact Statement (HDW-EIS) identified dominant

radionuclides. Dominant radionuclides were defined as those radionuclides responsible for the major fraction of the dose-to-man for a specific scenario and pathway analysis. For flow and transport analysis pathways, the dominant nuclides were uranium, plutonium, iodine-129, technitium-99, strontium-90 and carbon-14. Of these nuclides, uranium, plutonium, and strontium-90 data are provided for nearly all effluents, while data for iodine-129, technitium-99, and carbon-14 are missing for nearly all liquid effluents. According to Table 12, Summary of Radionuclide Results, only 24 samples were tested for iodine-129, only five samples were tested for technitium-99, and no sample results are reported for carbon-14. Analysis for these additional radionuclides for selected effluents will be required.

Recommendation

EPA recommends that analysis for carbon-14, technitium-99, and iodine-129 be added to the on-going effluent characterization parameters list for selected radioactive liquid streams. Elevated concentrations of technitium-99 and iodine-129 have been found in groundwater near active receiving sites. Carbon-14 has not been identified in the groundwater at elevated levels, but may be present in certain liquid discharges.

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Subject REVIEW OF DRAFT LIQUID EFFLUENT STUDY PROJECT PLAN AND WASTE STREAM CHARACTERIZATION REPORT		

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