

TA-50

# Los Alamos

NATIONAL LABORATORY

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Date: January 25, 2000  
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Ms. Phyllis Bustamante  
Ground Water Quality Bureau  
New Mexico Environment Department  
P.O. Box 26110  
Santa Fe, New Mexico 87502

**SUBJECT: RADIOACTIVE LIQUID WASTE TREATMENT FACILITY, GROUND WATER DISCHARGE PLAN (DP-1132), QUARTERLY REPORT, FOURTH QUARTER, 1999**

Dear Ms. Bustamante:

This letter and the enclosed attachments are intended to serve as Los Alamos National Laboratory's quarterly Ground Water Discharge Plan (DP-1132) report for the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50 for the period from October 1 through December 31, 1999. In December 1998, the Laboratory proposed to submit quarterly reports to the New Mexico Environment Department's Ground Water Quality Bureau (NMED/GWQB) on a voluntary basis. These quarterly reports include effluent and monitoring well analytical results as well as a progress report on the planned upgrades to the RLWTF.

Attachment 1.0, Table 1.0, presents the analytical results from weekly monitoring of the RLWTF's effluent holding tank. The weekly samples are flow-proportioned composite samples prepared from each batch of effluent generated by the RLWTF during a 7-day period. All sample results shown for the fourth quarter of 1999 were below New Mexico Water Quality Control Commission (NM WQCC) Ground Water Standards for nitrate (NO<sub>3</sub>-N), fluoride (F), and total dissolved solids (TDS) with the exception of two TDS exceedances during the weeks of October 18-24, and October 25-31, 1999. For the remainder of the quarter, TDS concentrations remained well below the NM WQCC Regulation 3103 Ground Water standard of 1000 mg/L. After the reverse osmosis (RO) treatment unit was returned to service on December 10, 1999, TDS concentrations in the RLWTF's effluent dropped significantly to 4 mg/L and 12 mg/L for the last two weeks of the quarter. The average TDS concentration for the fourth quarter was 582 mg/L.

In addition to weekly composite sampling, the RLWTF also conducts operational screening (using a HACH Kit) for nitrates (NO<sub>3</sub>-N) in each batch of effluent. Operational screening of effluent samples collected during the fourth quarter of 1999 produced the following maximum, minimum, and average results for nitrate (NO<sub>3</sub>-N), respectively: 9.7 mg/L, 0.6 mg/L, and 4.7 mg/L.

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Attachment 2.0, Table 2.0, presents the analytical results from two rounds (October 26 and December 7, 1999) of ground water sampling at the Laboratory's Mortandad Canyon alluvial monitoring wells. The Laboratory's objective is to closely track any trends that might develop as a result of the improvements made in the RLWTF's effluent quality since March 21, 1999, when nitrate restrictions were initiated. The Laboratory will continue to monitor the alluvial wells in Mortandad Canyon on a routine basis.

In the last quarterly report (ESH-18/WQ&H:99-0425) submitted to your agency on October 29, 1999, the Laboratory reported that the tubular ultrafilter (TUF) needed retrofitting with new filter tubes and would be out of service until mid-November 1999. In the interim, the RLWTF's clarifiers would perform primary treatment. On November 18, 1999, work on the TUF treatment unit was completed and it was returned to service. In addition, new membranes were installed in the reverse osmosis (RO) treatment unit in late-November 1999 and that unit was returned to service on December 10, 1999. The RLWTF is continuing to use the clarifiers for pretreatment for silica and suspended solids removal.

Installation of the interim mechanical evaporator is 90% complete and the project is on schedule to meet the projected ready-to-run completion date of February 28, 2000. The RLWTF has scheduled a management self-assessment followed by independent contractor verification for the end of January, 2000.

On December 14, 1999, the RLWTF's two effluent holding tanks (EHTs) were taken out of service for refurbishing. In the interim, effluent will be stored in two 20,000 gallon portable steel storage tanks, with secondary containment, located inside TA-50 Building 34B. In addition, two 20,000 gallon portable steel storage tanks with secondary containment were installed outside of TA-50 Building 34B for the temporary storage of evaporator distillate. Following further analysis, the stored distillate will be discharge through NPDES Outfall 051 or retreated depending upon its quality.

For your information, since the RO treatment unit returned to service on December 10, 1999, the RLWTF's effluent has consistently met the U.S. Department of Energy's Derived Concentration Guide (DCG) for gross alpha particle activity of 30 pCi/L. Attachment 3.0, Figure 1.0, presents a chart showing the gross alpha activity of the RLWTF's effluent for the month of December 1999.

Please contact me at 667-7969 if you would like additional information regarding this report.

Sincerely,



Bob Beers

Water Quality and Hydrology Group

Enclosures: a/s

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M. Saladen, ESH-18, MS K497  
D. Woitte, LC/GL, MS A187  
WQ&H File, w/enc., MS K497  
CIC-10, w/enc., MS A150

**R E C E I V E D**

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Table 1.0. RLWTF Weekly Effluent Monitoring Analytical Results, October - December, 1999.

Monitoring Period	RLWTF Weekly Effluent Monitoring Analytical Results		
	NO3-N (mg/L)	F (mg/L)	TDS (mg/L)
10/3/99	5.23	0.65	698
10/10/99	1.11	0.58	636
10/17/99	2.99	0.81	804
10/24/99	5.52	1.01	1002
10/31/99	3.21	0.76	1044
11/7/99	4.81	0.64	866
11/14/99	NS	NS	NS
11/21/99	8.85	0.63	858
11/28/99	8.23	0.5	390
12/5/99	6.79	0.16	212
12/12/99	2.03	0.58	460
12/19/99	0.13	<0.01	4
12/26/99	0.09	<0.01	12
<b>4th Quarter 1999 Averages (mg/L)</b>	<b>4.08</b>	<b>0.63</b>	<b>582</b>
<i>NM WQCC 3103 Ground Water Standards (mg/L)</i>	<i>10</i>	<i>1.6</i>	<i>1000</i>

*Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
Fourth Quarter, 1999*

Table 2.0 Analytical Results from Sampling of Mortandad Canyon Alluvial Monitoring Wells (mg/L), October - December, 1999.

Sampling Location	Sample Date: October 26, 1999					Sample Date: December 7, 1999				
	NO3-N	TKN	NH3	TDS	F	NO3-N	TKN	NH3	TDS	F
MCO-3	4.1	0.3	<0.2	505	0.6	6.1	0.2	<0.2	425	0.6
MCO-4B	6.8	0.2	<0.2	293	1.2	NS	NS	NS	NS	NS
MCO-6	14.2	<0.2	<0.2	367	1.2	9.5	0.4	<0.2	306	1.3
MCO-7	24.5	<0.2	<0.2	437	1.3	19.0	0.3	<0.2	380	1.4
MCO-7 duplicate	24.5	<0.2	<0.2	433	1.3	NA	NA	NA	NA	NA
<i>NM WQCC Ground Water Standards</i>	<i>10</i>			<i>1000</i>	<i>1.6</i>	<i>10</i>			<i>1000</i>	<i>1.6</i>

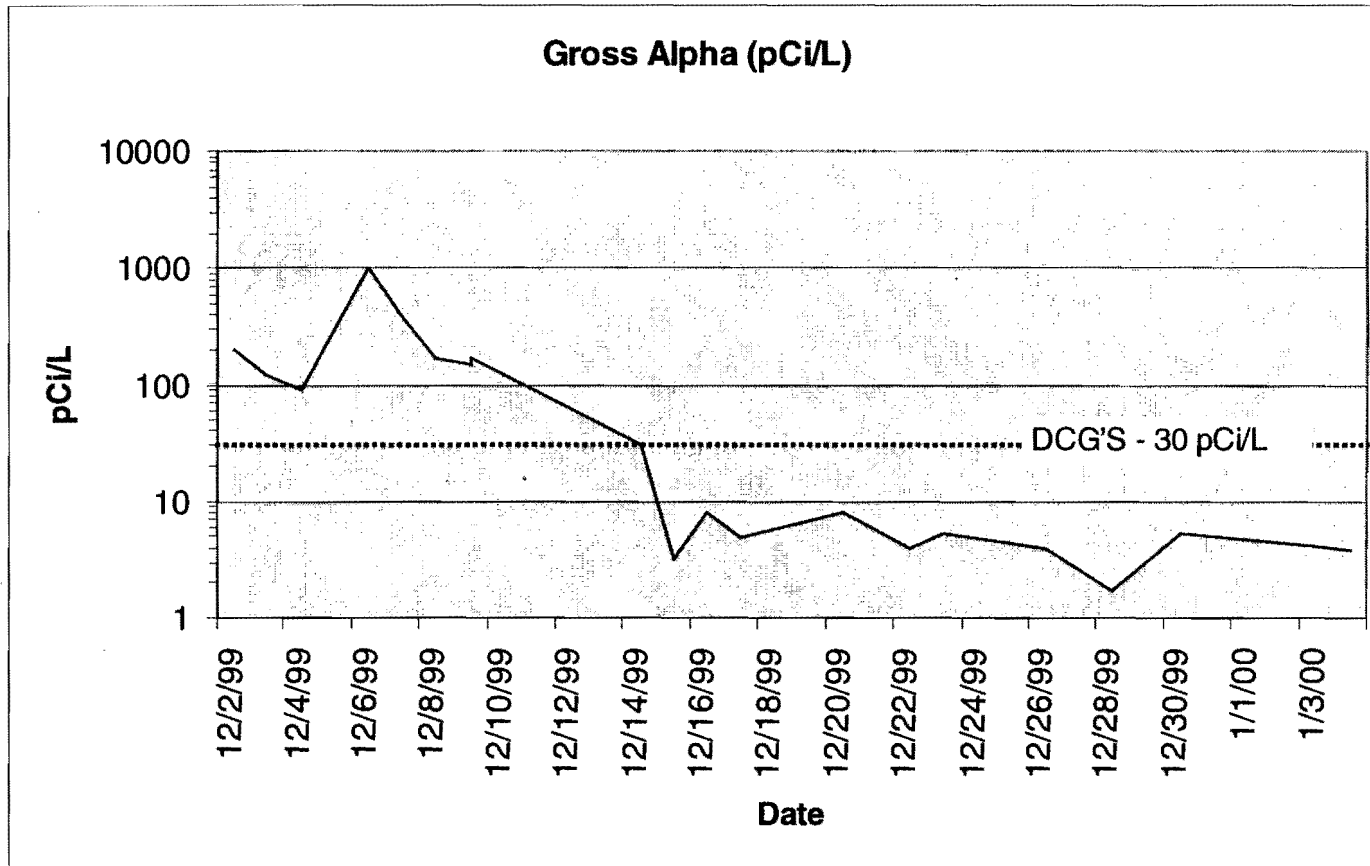
Notes:

NA means that no sample was collected during this sampling event.

NS means that no sample was collected at this well due to insufficient water.

All units: mg/L

Figure 1.0. RLWTF Effluent Gross Alpha Results, December 1999.



Notes:

1. On December 10, 1999, the RO treatment unit was returned to service.
2. DCG means Derived Concentration Guides established by the U. S. Department of Energy (DOE).