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James —JOHN Y —CARL

TA-50 GWQB Discharge Permit

Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: February 22, 2002
In Reply Refer To: ESH-18/WQ&H:02-069
Mail Stop: K497
Telephone: (505) 667-7969

Mr. Curt Frischkorn
Pollution Prevention Section
Ground Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RADIOACTIVE LIQUID WASTE TREATMENT FACILITY AT TA-50

Dear Mr. Frischkorn:

Los Alamos National Laboratory is in receipt of your January 16, 2002, letter requesting additional information for the TA-50 Radioactive Liquid Waste Treatment Facility's Ground Water Discharge Plan Application (DP-1132). The Laboratory has endeavored in this letter and the enclosed attachments to provide comprehensive, detailed answers to the questions posed in your January 16th letter. In several instances, however, the information you requested is not available at this time. This was noted in the response and a commitment was made to provide the information as soon as it becomes available.

Below, each of the questions posed in your letter has been presented (in italics) along with the Laboratory's accompanying response.

1. **NMED Request.** *The most recent influent and effluent quality data for the RLWTF. Analytical data should include nitrate as nitrogen (NO3-N), total Kjeldahl nitrogen (TKN), radiochemistry, general chemistry, metals, and organics.*

   LANL Response. Enclosed in Attachment 1.0 is a copy of the TA-50 Radioactive Liquid Waste Treatment Facility's (RLWTF) Annual Report for CY 2000. This report is a summary of all influent and effluent operational sampling conducted at the TA-50 RLWTF during CY2000. The Annual Report for CY2001 is currently being prepared and will be forwarded to your agency within the next 60 days.

   Additional sampling results from the TA-50 RLWTF not included in the Annual Report are:

   1. Effluent sampling conducted at NPDES Outfall 051 pursuant to the Laboratory's NPDES Permit No. NM0028355. NPDES sampling results are reported to the NMED-Surface Water Quality Bureau and the EPA at the end of each monitoring period; and

2. Effluent sampling conducted at the TA-50 RLWTF effluent holding tanks in support of the Laboratory's Ground Water Discharge Plan Application DP-1132. Ground Water Discharge Plan Application DP-1132 sampling results are reported to your agency quarterly on a voluntary basis prior to plan approval by the NMED.

   Attachment 2.0, Table 1.0, contains a summary of all NO3/NO2-N, F, and TDS weekly composite sample results collected from the TA-50 RLWTF's effluent holding tanks in CY2001 and reported to your agency quarterly. In addition, all available ammonia (NH3-N) and TKN sampling results not reported in the quarterly reports has been included in Table 1.0.

2. **NMED Request.** *Analytical results from the most recent ground water samples collected from the alluvial aquifer in Mortendad Canyon. Analytical data should include NO3-N, TKN, radiochemistry, general chemistry, metal, and organics.*

   LANL Response. Attachment 3.0, Tables 2.0 through 8.0, presents the analytical results from sampling alluvial ground water in Mortandad Canyon in CY2001. Quality assurance reviews have not been completed for all of this data and it should be considered "preliminary" until published in the Laboratory's 2001 Environmental Surveillance Report.

   - Table 2.0. Results for Perchlorate, 2001.
   - Table 3.0. Results for NH3, NO3/NO2, TKN, 2001.
   - Table 4.0. Results for Cl, CN, F, SO4, 2001.
   - Table 5.0. Results for TDS, 2001.
   - Table 6.0. Results for Metals, 2001.
   - Table 7.0. Results for Radiochemicals, 2001.
   - Table 8.0. Results for VOA and SVOA, 2001.

   All data reported in Tables 2.0 through 8.0 are also available on the Water Quality & Hydrology Group's (ESH-18) website: http://wqdbworld.lanl.gov/.

3. **NMED Request.** *Analytical results and disposal plan for the sediment that has been excavated from the sediment traps in Mortandad Canyon.*

   LANL Response. At the conclusion of the Laboratory's Ground Water Integration Team (GIT) Quarterly Meeting in Santa Fe on January 30, 2002, we discussed NMED Request No. 3, as presented above. It is my understanding from our conversation that the sediment at issue is the large material pile located southwest of Sediment Trap No. 1 (the uppermost sediment trap) and adjacent to the road. Attachment 4.0, Figure 2.3.1-1 *Locations of the sediment traps and sediment shafts in Mortandad Canyon* (Mortandad Canyon Work Plan, LA-UR-97-3291, September 1997), illustrates the location of the sediment pile in question (labeled as "Clean-out pile"). Hereafter, I will refer to this pile as the "SW sediment pile".

The SW sediment pile is fully described, including analytical results from preliminary RFI sampling, in the Laboratory's Mortandad Canyon Work Plan (Mortandad Canyon Work Plan, LA-UR-97-3291, September 1997). A copy of the work plan has been enclosed in Attachment 5.0. Below, I have provided a brief overview of the history and characterization of the SW sediment pile.

Sediment Trap No. 1 in Mortandad Canyon was constructed 1986, enlarged in 1987, and cleaned out and enlarged again in 1992. The available records indicate that the SW sediment pile was formed during the 1987 and 1992 enlargements. It is important to note that the SW sediment pile does not contain any sediment from the post-Cerro Grande Wildfire sediment trap cleaning that occurred in 2000 (all sediment removed from the cleaning of the sediment traps in 2000 was disposed of at TA-54 Area G).

During the 1987 and 1992 cleaning and enlargements, a strategy was employed to segregate the sediment produced during cleaning the traps from those produced during enlargement of the traps. The contaminated sediment that was cleaned from the bottom of Sediment Trap No.1 were placed in a pile NW of Sediment Trap No. 1 (see Attachment 4.0, Figure 2.3.1-1) while the older, uncontaminated, alluvial material generated during enlargement of Sediment Trap No. 1 was deposited in the SW sediment pile. This strategy is supported by the sampling results presented in Table 3.4.4-4 of the Mortandad Canyon Work Plan; sample results were below background screening values for ^{239}Pu at the SW sediment pile whereas elevated ^{239}Pu concentrations in the NW sediment pile represent the contaminated sediment material from the bottom of the sediment trap. The NW sediment pile was removed during the 2000 sediment trap cleaning and disposed of at TA-54 Area G. The Laboratory's Environmental Restoration Project currently has no disposal plan for the SW sediment pile.

4. **NMED Request.** *Analytical results and well construction diagram for monitoring well R - 14, located at the confluence of Ten Site Canyon and Mortendad Canyon. Analytical data should include NO3-N, TKN, radiochemistry, general chemistry, metals, and organics.*

LANL Response. The construction of R-14 has been delayed until May 2002 due to threatened and endangered (T&E) species limitations. The final well completion report will not be available until May 2003. Analytical results from screening and characterization sampling will be available after data validation.

5. **NMED Request.** *The most recent description of the stratigraphy of Mortendad Canyon.*

LANL Response. Attachment 6.0 contains a cross section showing the stratigraphy in Mortandad Canyon.

6. **NMED Request.** *A description of the sources of wastewater generated at TA-55 that are not currently being treated in the nitric acid reduction system (NARS).*

LANL Response. Aqueous waste is discharged from TA-55 for treatment at TA-50 RLWTF by three liquid waste lines:

- Process "Acid" waste line;
- Process "Caustic" waste line; and
- "Industrial" waste line.

A description of each wastestream is provided below.

Process Acid Waste Line
Solutions of approximately 3-molar nitric acid are drained from approximately 20 release points in PF-4 laboratories to the Process Acid Waste Line (PAWL). The release points include: the Evaporator Distillate Storage Tanks (EDST); the glovebox drain; and the automatic overflows for seal or circulating water in wet vacuum and chilled circulating water pumps in PF-4. The EDST contributes the largest volume of waste to the PAWL.

Evaporator distillate that is stored in the EDST has been a problematic waste stream for many years because of radioactivity and high concentrations of nitrates being sent through the TA-55 PAWL to the RLWTF. In April 2001, the Nitric Acid Recovery System (NARS) was brought online at the Plutonium Processing and Handling Facility (TA-55). Evaporator distillate is now sent to a recycle distillation unit – the heart of NARS - that recovers HNO_3 through fractional distillation. The recovered acid is reused in TA-55 processes and the treated water is sent to the RLWTF. By April 2002, it is projected that NARS will allow TA-55 to avoid further discharges of high concentrations of nitrates to the RLWTF. NARS will also recycle 100% of radioactivity back into the TA-55 system, generating activity-free product water.

Process Caustic Waste Line
The "caustic" waste line receives discharges from a dozen discharge points containing sodium, potassium, calcium, and magnesium hydroxide solutions. Most discharge points are in gloveboxes. Many of the caustic solutions are the result of neutralizations to precipitate plutonium. The caustic wastes range from weakly basic (pH 8-10) to molar concentrations.

Industrial Waste Line
The "industrial" waste line receives discharges from 61 locations in laboratories and mezzanine rooms on the main floor and approximately 15 additional discharge locations in the basement of PF-4. A variety of industrial sources contribute to the "industrial" waste line including the following: laboratory-bench sinks; janitor's sinks; safety showers; decontamination showers; overflow drain for the caustic scrubber system; near-floor drains for the disposal of water or solutions piped to that area; steam condensate lines; ventilation condensate lines; drains for lightly contaminated or non-contaminated water tanks; and reservoirs/ automated basement sumps. In addition, overhead product from the NARS is discharge into the "industrial" waste line when the concentration of nitrate (as Nitrogen) is below 10 ppm. All discharges to the "industrial" waste line flow by gravity through a sediment interceptor designed to remove materials (e.g., mop strings) that might plug the line.

NMED Request. *In addition to submitting the information requested above, please commit to the following addition to the current monitoring requirements, or propose an alternative for NMED approval:*

1. *LANL shall collect weekly flow-proportioned composite samples from the effiuent holding tank at the RL WTF , and quarterly ground water samples from monitoring wells MCO-3, MC0-4B, MCO-6, and MCO- 7. Samples shall be analyzed for perchlorate (CIO4). Analytical results shall be submitted with the RL WTF quarterly reports.*

LANL Response. The Laboratory will commit to the above request for quarterly perchlorate monitoring at Mortandad Canyon observation wells MCO-3, MCO-4B, MCO-6, and MCO-7. Sample results will be reported to the NMED quarterly beginning with the first quarter of 2002.

Presently, the Laboratory reports perchlorate results from monthly composites of the RLWTF's effluent in a monthly Derived Concentration Guideline (DCG) Report. Attachment 7.0 contains a copy of the September 2001 DCG Report. The DCG report is submitted by the Laboratory to the Department of Energy (DOE) with copies to the NMED/DOE Oversight Bureau and the NMED-Surface Water Quality Bureau. The Laboratory proposes to add the NMED-Ground Water Quality Bureau to the monthly DCG Report distribution list in lieu of your request for weekly composite sampling for perchlorate.

Please contact me at 667-7969 should you have any questions or concerns regarding this information.

Sincerely,

Bob Beers
Water Quality and Hydrology Group

BB/am

Attachments: a/s

Cy: J. Davis, NMED/SWQB, Santa Fe, New Mexico, w/o att.
J. Bearzi, NMED/HWB, Santa Fe, New Mexico, w/o att.
J. Vozella, DOE/OLASO,w/o att., MS A316
G. Turner, DOE/OLASO, w/att., MS A316
J. Holt, ADO, w/o att., MS A104
A Stanford, FWO-DO, w/o att., MS K492
S. Yarbro, NMT-DO, w/o att., MS E500
S. Evans-Carmichael, NMT-7, w/o att., MS E539
D. McLain, FWO-WFM, w/o att., MS J593
R. Alexander, FWO-WFM, w/o att., MS E518

Cy (continued):
D. Moss, FWO-WFM, w/att., MS 518
P. Worland, FWO-WFM, w/att., MS E518
L. McAtee, ESH-DO, w/o att., MS K491
P. Thullen, ESH-DO, w/o att., MS K491
D. Stavert, ESH-DO, w/o att., MS K491
S. Rae, ESH-18, w/att., MS K497
C. Nylander, ESH-18, w/att., MS K497
D. Rogers, ESH-18, w/att., MS K497
M. Saladen, ESH-18, w/att., MS K497
D. Woitte, LC-GL, w/o att., MS A187
WQ&H File, w/att., MS K497
IM-5, w/att., MS A150