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HSWA LANL 5/1147/50

May 12, 1999

Jay Coghlan
Concerned Citizens for Nuclear Safety
107 Cienega St.
Santa Fe, NM 87501

Subject: **Status of Current and Planned Upgrades at the TA-50 Radioactive Liquid Waste Treatment Facility and the Ground Water Discharge Plan (DP-1132) Application**

Dear Mr. Coghlan:

We are responding to your March 29, 1999 request for information about status of current and planned upgrades at the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) and the associated Ground Water Discharge Plan (DP-1132) application. These responses are based upon our review of the Ground Water Discharge Plan, correspondence between NMED and the laboratory, and meetings with the laboratory and TA-50 personnel.

Your questions regarding TA-50 discharges during 1998 that exceeded New Mexico Water Quality Standards and DOE Derived Concentration Guidelines will require additional time. This also applies to your questions regarding TA-16. We will provide a response to those questions as soon as our data search and review is complete. If you have any questions regarding this response please contact Ralph Ford-Schmid or Bob Weeks at 827-1536.

Sincerely,

Tim Rustad FOR SY
Steve Yanicak
NMED, DOE OB, LANL POC

cc with enclosures:
Greg Lewis, NMED, Director, WWMD
John Parker, NMED, Chief, DOE OB
Jim Davis, NMED, Chief, SWQB
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1. What is the current and planned status of retrofitting reverse osmosis equipment.
   - Is RO equipment now in the facility's "production" line?
   - If not, is there a time guaranteed by LANL? Please specify how RO equipment will improve the facility's performance.

Response:
The reverse osmosis (RO) is intended to remove water soluble (dissolved) constituents. The RO equipment has been installed, tested and went "hot" on April 7, 1999. The RO system will not be used "full time" until a pathway for the RO reject water is in place. Currently the RO reject stream is temporarily stored in Clarifier No. 1 (25,000 gallons) or WM-90 (100,000 gallons) at TA-50. Testing of the RO system has nearly exhausted this storage capacity for the RO reject water and will limit the use of the RO system until the Electrodialysis Reversal (EDR) and the Mechanical Evaporator are installed.

As part of their Ground Water Discharge Plan Application, LANL has submitted a project schedule (enclosed) for installation and start up of the proposed mechanical evaporator. The estimated ready-to-run date for the mechanical evaporator is February 28, 2000. It is, however, the Laboratory's goal to complete the project by December 22, 1999, if no appreciable delays are encountered.

Ultimately the RO reject stream will be fed into the EDR unit. The EDR will be used to concentrate the RO reject water prior to the Mechanical Evaporator. The EDR product water is routed back to the TA-50 headworks or back to the clarifier for reprocessing. The EDR concentrate is then routed to the mechanical evaporator. The distillate from the mechanical evaporator is sent to the effluent tanks for testing and discharged through NPDES outfall 051 or future re-use under the RLWTF's Zero Liquid Discharge Project. The evaporator bottoms, or solids, will be shipped to an off-site contractor for solidification and disposal or they will be solidified at TA-50 and disposed of at TA-54. See enclosed flow diagram (Figure 2.0).

2. What is the current and planned status of retrofitting ultrafiltration equipment.
   - When will ultrafiltration equipment be in the "production" line, at a time guaranteed by LANL?
   - To what extent will nitrate/nitrite, tritium and other water soluble constituents (please describe other constituents, as appropriate) be eliminated or greatly reduced?
   - Please specify how ultrafiltration equipment will improve the facility's performance.

Response:
The Tubular Ultrafiltration (TUF) equipment has been installed, tested and went "hot" on April 7, 1999. The TUF will continue to be used full-time and will remain the RWLTF's primary treatment unit until the RO can be used "full time". The TUF is not expected to be effective at reducing water soluble (dissolved) constituents, but it is very effective at removing particulate material. Until the RO system is in operation "full time" dissolved constituents will be present to some degree in the effluent.

The laboratory is currently using upstream controls (e.g., waste minimization, product substitution, and containerization) to reduce sources of nitrogenous wastes into the RLWTF. For example, the TA-55 Room 60 Process acid stream, which contains highly concentrated nitrogenous wastes, will be temporarily stored until the Nitric Acid Recovery System (NARS) is operational in June, 1999. These controls have resulted in significant reductions of nitrate/nitrite in the waste stream coming into the RWLTF and subsequently discharged in the effluent.

The laboratory plans to divert all tritiated water to TA-53 for treatment sometime in the near future (approximately 6 mos). The laboratory plans to install a solar evaporator to treat all tritiated waste (reactor and accelerator produced). The solar evaporator will replace the evaporation ponds at TA-53.

3. What is the general status of the RLWTF's Groundwater Discharge Plan?
   - Will measures to remediate existing contamination be incorporated into the Groundwater Discharge Plan?

Response:
The Ground Water Quality Bureau is reviewing LANL's responses to their requests for additional information to determine if the application is complete. The Environment Department Secretary will decide if a public hearing will be held to discuss DP-1132.

DP-1132 requires that if after two years of monitoring a series of wells in Mortandad Canyon, the groundwater quality does not meet WQCC standards, LANL will be required to submit a Groundwater Corrective Action Plan for NMED approval.

4. How does LANL guarantee that zero accelerator-produced tritium never enters the facility?

Response:
The Chemical Science and Technology Division, CST-13, has implemented a Waste Acceptance Criteria for the RLWTF that prohibits any waste generator from disposing of accelerator-produced tritium at the RLWTF. A Waste Profile Form (WPF) must be completed by each generator of waste prior to the acceptance of that waste stream at the RLWTF. The Radioactive and Industrial Wastewater Science group of CST-13 must approve the WPF before transfer to the Radioactive Liquid Waste Collection System. When the characteristics of a waste stream change, the waste generator must notify CST-13 and submit a new WPF for approval. In addition, the RLWTF Waste Acceptance Criteria places an upper-limit on the concentration of reactor-produced tritium allowed for treatment. The concentration of reactor-produced tritium allowed is 20,000 pCi/L.

5. Articles in the media indicated that LANL was considering instituting zero discharges for the RLWTF through the creation of a closed loop system.
   - What is the status of this concept?

Response:
The incentives for eliminating outfall 051, the regulatory and technical issues involved, and recommended steps to accomplish this goal are presented in a report published by LANL in 1998. The report, LA-13452-MS, 1998, is enclosed as an attachment to these responses. Many of the recommended steps have been completed or initiated. The biological process for nitrate removal, outlined in the report, has been replaced with the EDR and Mechanical Evaporator system. The installation of the EDR and the Mechanical Evaporator, to treat the RO reject water, is expected to result in a high quality RLWTF effluent capable of being recycled back to waste generators for re-use or use as cooling water supply.

Attachments

1) TA-50 RLWTF Interim Treatment Process
2) TA-50 RLWTF Final Treatment Process
3) Detailed Project Schedule
4) Radiation Liquid Waste Collection System
5) Sources of Liquid Waste to TA-50
6) LA-13452-MS Elimination of Liquid Discharge to the Environment for the TA-50 Radioactive Treatment Facility