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**Department of Energy**  
Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

MAR 05 1998

Mr. Hank Daneman  
P. O. Box 31056  
Santa Fe, NM 87594-1056

Dear Mr. Daneman:

I have received your February 23, 1998, letter (copy enclosed) and am perplexed by assertions you continue to make regarding groundwater monitoring at Los Alamos National Laboratory (LANL). I am most concerned with your assertion that my view is there is "little to worry about because the contaminants do not exceed legal limits." I do not hold this view, nor have I expressed this view to you. I am glad that to date there is no evidence of an imminent threat to a groundwater drinking water supply at or near LANL or of off-site groundwater contamination from LANL approaching drinking water standards. Nonetheless, I clearly stated in my February 18 letter that there exists, in shallow groundwater within LANL, contamination above drinking water standards. Although these shallow groundwater systems are not used for drinking water supplies, and drinking water standards therefore do not apply, I am concerned about any contamination in surface and groundwaters at LANL. Accordingly, a substantial effort of new monitoring well construction is underway, the purpose of which is to understand the extent of current contamination, its movement, and whether drinking water supplies are, or will be, put at risk.

I was glad to see in your letter monitoring data from the Department of Energy (DOE) and the New Mexico Environment Department (NMED). This shows some success in efforts to provide interested public members with data on contaminant levels at LANL. However, my staff informs me that they cannot concur with your listings of 100,000 pCi/l of tritium in Test Well 8 in 1993. Our measurement for that year was 89 pCi/l. (p. VII-33, Environmental Surveillance at Los Alamos during 1993.)

As you are aware, information on groundwater contamination at LANL has been provided at many public forums, the most recent being a public meeting on February 24 at the Sweeney Center in Santa Fe. Previous public meetings where groundwater contamination data was discussed were held May 7, June 17, and December 3, 1997, among others. In addition, data showing radioactive contamination in shallow groundwaters within LANL has been published in numerous LANL Environmental Restoration reports and in annual Environmental Surveillance Reports beginning in the 1970s. Over the past twenty years, there has been a substantial increase in the number of groundwater studies and source control and elimination measures performed at LANL, and a substantial increase in published information describing these efforts and results. While I believe these reports are easily accessible to interested parties, I have asked my staff to prepare, in the near future, a bibliography of LANL groundwater information to



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make locating these reports easier. You assert that it has been difficult to get timely and accurate information from DOE about groundwater quality and plans for improving the monitoring system. I am not aware of any recent requests for information from you regarding groundwater, even though my staff and I have extended repeated invitations to you inviting specific information requests.

You assert that "this disorganized system of monitoring groundwater contamination is deplorable" and "there is no consistency or regularity in the sampling process," and you recommend the "expensive and elaborate Hydrogeologic Workplan be suspended at once and an outside consultant, under the direction of the NMED, be hired to determine where additional monitoring wells need to be located." I cannot agree with your conclusion that monitoring for groundwater contamination at LANL is disorganized or deplorable. LANL has established approximately 188 wells and boreholes through its Environmental Surveillance and Environmental Restoration programs. Wells, boreholes, and natural springs are sampled regularly, often up to four times per year. Data from this sampling is reported in the annual Environmental Surveillance Reports, including a complete set of 1995 data, contrary to your assertion that this data had been omitted (p. 239, Environmental Surveillance at Los Alamos during 1995). Groundwater wells at LANL are located strategically near actual and potential source areas and along groundwater flow pathways. DOE has acknowledged there currently exists an insufficient number of wells at LANL for compliance purposes, and has already begun installing new wells under the Hydrogeologic Workplan you referred to.

Your suggestion for independent oversight of well placement already has been incorporated into our plans. The Hydrogeological Workplan is being implemented under regulatory oversight by NMED, which has made revisions to the plan and performs ongoing oversight as decisions for new wells are made. NMED already has performed a separate analysis recommending well locations closely matching Hydrogeological Workplan locations. Moreover, the Hydrogeological Workplan was developed using a decisionmaking approach endorsed by the Environmental Protection Agency (the Data Quality Objectives Approach) in consultation with an internationally recognized hydrogeologist having no organizational ties to LANL. In addition, the NMED Oversight Bureau and Pueblo representatives have been, and will continue to be, consulted regarding the Hydrogeological Workplan. Input from interested public members and the Northern New Mexico Citizens' Advisory Board is also welcome. Given the degree of independent consultation already gathered on the Hydrogeological Workplan, and the regulatory oversight for its development and implementation, I think it would be quite inappropriate for me to agree to your suggestion to suspend this effort.

Regarding your recommendation that "reporting on all monitoring and surveillance activities (including those of the adjacent Pueblos) should be assigned to the NMED," I feel very strongly that the Pueblos surrounding LANL should not be constrained by a requirement to report their data through NMED. I very much respect the independent nature of the Pueblos and the importance of the government-to government relationship between them and DOE. Therefore, I will continue to support the principle that the Pueblo environment departments gather and report their environmental data as they see fit and without the constraint you suggest. Likewise, it is appropriate for DOE to continue reporting its surveillance data with independent oversight by the NMED Oversight Bureau, the Agency for Toxic Substances and Disease Registry, Pueblos surrounding

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LANL, and community groups such as the Community Radiation Monitoring Group, who represent an independent check to DOE's own surveillance programs.

Regarding your recommendation that NMED have authority to shut down any LANL activity found to be adding to the current groundwater contamination, the NMED Ground Water Quality Bureau already has authority, and regularly exercises this authority, to restrict activities discharging liquids to the ground. Typically, if a concern over potential impacts to groundwater arises, a permit and a discharge plan specifying discharge standards are established. All discharges at LANL are reported to the NMED Ground Water Quality Bureau. Discharges deemed to pose a potential threat are regulated under permits with NMED. In addition, operational outfalls at LANL require permits from the Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES). This system requires monitoring and ongoing reporting and sets standards for discharges, including some standards for radiological discharges. There is much more information to be shared on this subject, including substantial reductions in the number of discharge locations and discharge volumes and improvements in the quality of discharged effluent.

I recognize the subject of groundwater beneath LANL is complex and can lead to difficulties in communication. I am frustrated that efforts to convey information to you on this subject have led to misrepresentations and recommendations that do not reflect the whole set of information available to you. I can only conclude that we have much work to do to make this information more user friendly.

Regarding your suggestion that the Citizens' Advisory Board address this issue, I concur that groundwater is within the scope of the Board's purview and stand ready to work with the Board to discuss this matter as it sees fit.

Sincerely,

  
G. Thomas Todd  
Area Manager

LAAME:3MJ-013

Enclosure

cc:

See page 4

Hank Daneman

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cc w/enclosure:

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MAR 1998  
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February 23, 1998

To: G. Thomas Todd, Area Manager, DOE/LANL

From: Hank Daneman, Chair, NNM CAB

Re: Radioactive Chemical Contamination of the Northern New Mexico Groundwater Supply

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On May 13, 1997, the ER committee and the CAB expressed grave concern over the high levels of certain radioactive chemicals found in subterranean (perched) water accumulations under the canyons surrounding the Los Alamos National Laboratories and recommended the hiring of an independent team to characterize the site. The objective was to determine the best sampling locations and source of worst levels of radioactive chemical contamination. This information is needed by the CAB to intelligently provide the recommendations on cleanup priorities requested of us. To put our concerns more bluntly:

The permanent contamination of the water supply of Northern New Mexico would be a catastrophe most seriously affecting the health and economic future of ourselves and our neighbors. The prompt cleanup of the source of such potential contamination is of higher priority than additional studies or the cleanup of trivial (but easy) contaminated sites. Calling attention to these needs is part of our responsibility to ourselves and to the public and is a salient part of the CAB mission.

The response from the DOE via the DFO was unacceptable. This fact was conveyed to you, the public, the Secretary and our Governor in various communications. Your recent reply of February 18, 1998 is very welcome and could lead to constructive action. It suggests that:

- No groundwater contamination measurements exceed legal limits,
- Certain data (LA Canyon) will be released promptly, and,
- You would like some positive feedback from us.

There are some misunderstandings in the above which need to be cleared up before we can agree on the most appropriate action.

#### CONTAMINATION:

While radioactive contaminants have been found in ground-water wells located in Canada del Buey, Los Alamos, Mortandad, Pajarito and Pueblo Canyons, I have selected the MCO wells in Mortandad Canyon as examples because they appear to have the highest concentrations of Strontium 90 and Tritium. It should also be noted that samples in the vicinity of Test Well 8 in Mortandad Canyon (which is a mile downstream of the outfall of LANL's radioactive liquid waste treatment plant at TA-50) has been monitored with still higher values of Tritium. This exceeded 1,000,000 pCi/L in the mid-1970's.<sup>1</sup> The known sources of this Tritium are test explosions, waste dumps and the day-to-day operations at LANL. For example, "in 1974

alone, over 38,000 curies of Tritium were released to the environment surrounding the lab.”<sup>2</sup>

The following table is extracted from data provided by the NMED Oversight Bureau and DOE.

WELL	DATE	H3	Sr90	Gross $\beta$
Test Well 8	end of 1993	100,000 <sup>1</sup>		
MCO-5 <sup>3</sup>	6/23/94	22,138	38.12	141.57
MCO-4B	3/5/96	18,279	108.9	
MCO-5	8/9/96	22,545	121.9	
MCO-6	8/6/97	24,396	83.2	
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EPA Primary Drinking Water Limits <sup>4</sup>		20,000	8	
DOE Drinking Water - DCG		80,000	40	40
DOE DCG for Public Dose		2 Million	1,000	1,000

Note that samples were to be taken annually but the data available to the public suggests that 1995 was omitted and that there is no consistency or regularity in the sampling process. The concentrations of radioactive chemicals appears to be increasing. The levels are clearly in excess of EPA Primary Drinking Water Standards. I don't know what you mean when you say that there are no groundwater contamination measurements which exceed "legal limits". It would seem to any reasonably concerned person that year after year increases in Strontium 90 and Tritium well above EPA limits are sufficiently alarming as to lead to more frequent taking of samples and the installation of additional test wells to clearly locate the flow path of these dangerous chemicals.

#### SOURCES:

The source of the contamination in the Mortandad Canyon is now assumed to be the sewage effluent (outfall) pipe from Waste Management Site at Technical Area 50. Radioactive liquid waste from most technical areas is piped to this site for treatment. The personnel at this site have responsibility for treating and disposing of most industrial liquid waste received from laboratory technical areas, for developing improved methods of solid waste treatment, *and for containing the radioactive materials removed by treatment.*

<sup>1</sup> All values are pCi/L (pico Curies per Liter) except for gross  $\beta$ .

## DESTINATION:

It had been assumed that the soils under the various canyons were impervious to percolation. This may be true for volcanic tuff but not all canyon soils are impermeable. According to your experts, the alluvium is quite permeable and ground water collects at various depths until it reaches a less permeable base (such as volcanic tuff). This results in a pool of perched water. "The potential for migration of this perched water to the main aquifer is not yet fully understood by investigators."<sup>5</sup>

The flow path of the contaminated liquid is, first, from the TA-50 outfall into the Mortandad Canyon. This liquid seeps underground and continues flowing laterally in an easterly, downcanyon direction toward the Rio Grande at a velocity of from 7 ft/day to 60 ft/day. Studies of the composition of this underground water supply have shown that it is recharged by partially treated effluent from the outfall pipe at TA-50 with a lag time of about one year.

The City of Santa Fe acquires drinking water from the Buckman wells adjacent to the Rio Grande and is planning to draw water from the river itself. An obvious question is whether the contamination under the Mortandad Canyon (and other contaminated canyons) will ever reach the Rio Grande and, if so, when these contaminants might then be detected in our water supply.

By one route or another, this contaminated water is eventually getting into the water table. It is not forever suspended in underground pools perched above the water table. At the current rate, how long will it take for this quantity to be detected in drinking water, somewhere, and will New Mexicans have to pump and purify it as is done in other locations adjacent to DOE sites?

## RELEASE OF DATA:

The Agreement-in-Principle between the DOE and the NMED is an impediment to the release of data to the public. The lag time has been about 1.5 years. While the labs conducting the analyses can complete their work in a matter of days, the results are held up awaiting checking by the DOE for QC or for other reasons. In some cases, the verification and release of data showing split samples to have essentially the same values is delayed by a year or more.

The release of information to the press by LANL's public relations employees has minimized the amount of contamination leading the public to believe that there is no appreciable hazard.

## SURVEILLANCE AND MONITORING:

Groundwater monitoring and related activities are controlled by their respective budgets. The amounts requested were \$8.6M for Tiger Team activities FY92 to FY 02, Indirect Budget,

FY95, \$1.5M and Direct Budget FY96, \$8.4M. Recently, monies have been granted to neighboring tribes for surveillance and monitoring. The funds now allocated annually to the tribes are:

San Ildefonso	\$277,000.00
Santa Clara	400,220.00
Cochiti	462,000.00
Jemez	371,000.00
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Total	\$1,510,220.00

These grants include other observations such as air quality and the protection of "traditional/cultural resources" in addition to water quality. It is not known how the tribes' data on groundwater contamination will get into the overall database and thus be useful in locating the sources of radiological contamination. We have not been able to obtain information from the Pueblos on their monitoring plans as they have only recently hired consultants to define those plans.

There are three separate entities sampling and monitoring groundwater surrounding LANL; the tribes, the DOE and the NMED. All of this data is under the control of the DOE. There was a program to store water quality data in a computer. Some millions of dollars were, reportedly, spent on rationalizing the data base but, notwithstanding, trend information on the underground spread of radioactive chemicals in Northern New Mexico is unavailable (and unlikely to be available) from the original data base. Has this historical data been permanently lost?

This disorganized system of monitoring groundwater contamination is deplorable. Based on the information available to the CAB, it seems obvious that, if the citizens of Northern New Mexico are to be protected from a permanently contaminated water supply, control of sampling and data acquisition must be reassigned away from your group at the DOE.

#### CITIZENS ADVISORY BOARD RECOMMENDATIONS:

On May 20, 1997, the CAB recommended "... the establishment of a formal program of surveillance, monitoring, laboratory analysis, trend analysis and reporting to result in information adequate for the purpose of prioritizing environmental remediation projects." This was amended to include a recommendation that an independent consulting team review the site characterization to insure the optimum location of test wells. It is not known that the existing wells or those which are included in the latest Hydrogeological Workplan would be located so as to detect the sources and destination of the worst contaminants.

The cost of the outside, independent site characterization was estimated to be less than \$30,000 - about the same as a similar project now undertaken for Rocky Flats and requested by the Rocky Flats Citizens Advisory Board. There are many wells included in the

Hydrogeological Workplan, *each* to cost approximately \$330,000.00.

The experience of the ER Committee of the CAB and my own observations are that it has been very difficult to get timely and accurate information from the DOE about ground water quality and plans for improving the monitoring system. At first, we were told by one of the authors that we would not likely receive a copy of the Hydrogeological Plan. Later, this denial was retracted. Letters to the NMED requesting the most recent data on MCO-5 well measurements went unanswered for many months. A letter from the NMED of October 27, 1997 on the subject of MCO-5 well measurements referred to an earlier letter they sent to the DOE. This showed that the measurements of 1996 were "NA". Not to be denied, we later obtained this data from another source.

### CONCLUSION:

I now come to your proposal of February 18<sup>th</sup> claiming that there is little to worry about because the contaminants do not exceed legal limits, that certain data will now be released promptly and that you would like some constructive feedback from me. It seems obvious that the DOE at LANL failed to give sufficient attention to the potential for contamination of our water supply. Based on this observation, the only constructive suggestion I can make is to return full responsibility for protecting our water supply to the people of the State of New Mexico via the New Mexico Environmental Division - Oversight Bureau.

1. The DOE in Washington, DC should review the CAB recommendation 97-3 of May 20, 1997 and prepare a plan to turn the entire surveillance and monitoring program (including budget) over to the New Mexico Environmental Division.
2. The expensive and elaborate Hydrogeological Plan should be suspended at once and an outside consultant under direction of the NMED should be hired to determine where additional monitoring wells need to be located.
3. The responsibility for reporting on all monitoring and surveillance activities (including those of the adjacent Pueblos) should be assigned to the NMED.
4. The NMED must have the unconditional authority to shut down any LANL activity found to be adding to the current groundwater contamination.

As someone licensed to practice Quality Assurance, I can assure you that the DOE practice of self-auditing is tantamount to no audit at all. The DOE must be separated from the task of auditing the results of its own Waste Management activity at LANL. Time and again, over the past 50 years, it has been revealed that LANL has been careless about the handling of hazardous materials and that the DOE has been unable to effectively use the \$500M it spent over the past six years to clean up the worst of the mess.<sup>6</sup>

As to what you can do, personally? It has been amply demonstrated, here in New Mexico and throughout the country that independent Citizens Advisory Boards can and will provide

valuable recommendations to the DOE. I suggest you restore our independent and diverse Citizens Advisory Board and, in the future, accept their criticism and recommendations in a positive manner.

#### REFERENCES

1. Groundwater Protection Management Program Plan, pg B-32, Jan 31, 1996
2. Environmental Surveillance Documents - LANL Annual Reports
3. Groundwater Oversight at LANL and Surrounding Areas - Dec 1996, Dale, et.al.
4. Environmental Surveillance and Compliance at Los Alamos during 1996, Table 5-22, pg 184
5. Ibid, ref #1, pg B-29
6. DOE Inspector General's report IG-0421.