

NORTHERN NEW MEXICO CITIZENS' ADVISORY BOARD
Draft Recommendation to the Department of Energy
No. 2005-10
Regarding Expansion of Low-Level Radioactive Waste Disposal at Area G
Drafted by the Waste Management Committee

Background

Area G in Technical Area 54 (TA-54) at the Los Alamos National Laboratory (LANL) has been the disposal site for LANL's low-level radioactive waste (LLW) for nearly 50 years, since 1957. Presently just one disposal pit remains open to receive LLW. When that pit is "filled" the western most end of Area G (some 63 acres) will be closed under terms of the Order on Consent with the State of New Mexico. In preparation for submitting a closure plan to the State LANL recently executed a campaign of drilling and core sampling as part of the required characterization of the site. The Order on Consent requires Area G be closed by 2015. It is anticipated that the New Mexico Environment Department (NMED) will select a final remedy (i.e., a closure method) by 2007. It is also anticipated that closure will involve capping the site. In order to provide additional room for continued disposal of LLW from on-going laboratory operations the National Nuclear Security Administration (NNSA) has selected Zone 4 at Area G, TA-54 for expansion with the construction of additional disposal pits and/or trenches. Zone 4 would add another 30 acres of disposal space and approximately 40 – 60 years of disposal capacity for the laboratory.

The expansion of Area G was made public in LANL's 1999 Site-Wide Environmental Impact Statement (SWEIS). Approved under the existing Record of Decision (ROD) for the SWEIS DOE intends to continue burying LLW at Area G in Zone 4. The decision to proceed with the expansion, which was addressed in the SWEIS, came as a surprise to the Northern New Mexico Citizens' Advisory Board (the Board). DOE had not informed the Board nor taken any action toward public involvement or communication specifically associated with expanding Area G. The Board acknowledges the notice in Section S.2.5.1 and S.3.2.1 in the SWEIS. The LLW expansion into Zone 4 of Area G and waste management (WM) policies in general at the laboratory caused the Board to reassess DOE's WM position and to aggressively seek public comment on the matter. Nearly a year in the making the Board held a public Forum on Area G on May 3, 2005 at the Santa Fe Community College. The Forum was well attended. The Forum was filmed by the local press and broadcast at least three times in the weeks following.

Public comment made at the forum provided the Board a comprehensive picture of the public's attitude toward operations at Area G and the proposed expansion. A number of citizens spoke and the panelists provided a superb balance of views and their operational and regulatory perspectives. Following the Forum the Board's Waste Management (WM) Committee assembled the public comment and presentation materials to publish Proceedings of the Forum. The WM Committee also began the process of evaluating the materials, public comment and regulatory perspectives on the future of Area G and the impact of expanding into Zone 4. A number of broad recommendations were made at the Forum. Some are not germane to the Board's mission or our scope. Three recommendations from the public and interest groups serve as the nexus for this recommendation. Those recommendations were for the DOE and LANL to:

- (1) Work toward "zero discharge" of hazardous chemicals (and radionuclides) into the environment;
- (2) Stop burying / disposing of radioactive waste in unlined shafts, pits and trenches; and,

(3) Ensure the public receives advance notice pending major decisions affecting operations at Area G.

Comments and Observations

Following the Forum the WM Committee sought out the technical and scientific basis for the original decision to bury LLW in shafts, pits and trenches that did not have any liners, leachate collection or monitoring systems. The US Environmental Protection Agency (EPA) informed the Board and the public at the Forum that they were the agency of record that originally supported the decision not to require the use of liners at Area G. The WM Committee received some high-level anecdotal information from LANL regarding climate, liner failures, evapo-transpiration at the site, the mechanics of drainage and the geophysical properties of the volcanic tuff at Area G. LANL is still waiting on the analysis of the recent core samplings. The expectation appears to be that the samples will likely support the historic weather and geophysical data and current contaminate transport assumptions that will continue to support not lining the disposal pits at Area G.

The Board is not yet prepared to challenge the underlying present-day assumptions regarding the use of liners at Area G. We do not yet have the data to evaluate. But the Board is prepared to address the many unstated assumptions that lie beneath the entire practice of burying LLW anywhere at LANL.

This Board, chartered by DOE's Office of Environmental Management (EM) has surveyed the WM practices across the entire DOE complex. While each site is very unique and each site's weather, topography and missions are also unique, one thing remains common to them all. That common element is the historical practice of burying certain radioactive waste. This is not just the practice of DOE, but also the routine practice of federal agencies and municipalities across the nation. We bury much of our waste. And sometimes that may be a suitable method. The Board does not believe that it is suitable any longer to bury radioactive waste or waste contaminated with radionuclides or hazardous chemicals. It is time for the Department of Energy and Environmental Management to reset the standard for responsible stewardship. We would make the following general observations.

The Los Alamos Site Office (LASO) has procured authority to expand Area G under the auspices of the existing SWEIS and its Record of Decision (ROD). Noting the closure of some 63 acres in the main of Area G today, the SWEIS postulates that there will be no increase in the environmental impact from current and ongoing disposal operations and supports DOE's preferred alternative for expanding to another 30 acres in Zone 4 of Area G. The Board would observe that environmental impacts from 48 years of waste disposal are not yet known with sufficient certainty or clarity to make the case for a finding of no significant impact (FONSI). And the Board would assert that simply because the Record of Decision (ROD) for the SWEIS authorizes the expansion and provides "NEPA coverage" is not necessarily satisfactory justification for proceeding with the expansion. Just because one can do something, does not necessarily mean that one should do it.

Modeling performed for the outdated Performance Assessment (PA) measures time in hundreds and thousands of years. The modeling is necessarily dependent on raw data (some that are incomplete; some that are assumptions; and, some of which is still being generated), and a set of parametric statistical assumptions regarding a variety of other things such as weather, rainfall and snowfall, evaporation, and transpiration. The update for the Performance Assessment is not yet complete. Testimony at the Area G Forum and well-documented anecdotal evidence

suggests that the quality of disposal practices of the last two or three decades are substantially better than the admittedly poorer practices used prior to the rise of environmental consciousness in the late 1960's and early 1970's. The Board observes that the National Environmental Policy Act became law only in 1970, with the Resource Conservation and Recovery Act (RCRA) following later. Testimony at the Forum affirmed that the actual state of knowledge regarding the earliest materials disposed at Area G is poor. The Board is uncomfortable knowing that the oldest materials disposed of in Area G are possibly the most contaminated, least likely to be adequately packaged or containerized and at the same time, lie closest to migration pathways to the regional aquifer. These old wastes sit at the bottom of the pits, trenches and shafts – at the bottom with no liners or protective barriers and with admittedly very poor records regarding construction at depth or the subsurface conditions on which these wastes now sit buried in perpetuity. The SWEIS frequently uses the term “expected” in its description of potential impacts from expanding Area G. The Board observes in the SWEIS the use of the phrases “it is expected that,” “are not expected to,” and “expected to.” These expectations appear shortsighted and lack the robust wide-ranging analysis necessary to affirm the validity of the assertions.

Buried and hidden within the assumptions of the years, the centuries and millennia are other considerations, deeper foundational assumptions that have not been taken into account. These include:

(1) That the government of the United States (and that of the State of New Mexico) will survive another 500 or 1000 years. The Board observes historically that no democracy in world history has survived for more than 250 or 300 years. It is presumptuous to claim control over the integrity of active or passive monitoring systems beyond their technical life cycle. And it is even more presumptuous to assert control today over events and impacts in time periods of historical dimensions. In 1000 years we simply do not know who will own this land or live here. The only model we have that is reliable is that of the native peoples of the Pueblos of Northern New Mexico. They have been here for 800 to 1300 years. And their history and culture tell this Board that bequeathing them thousands of cubic yards of radioactive waste is simply immoral.

(2) Historically, technology has replaced outmoded means and methods once thought “state-of-the-art.” This includes nuclear weapons as a means of international containment. Time will not stand still. But the wastes buried in Area G are expected to lie harmless and dormant in perpetuity. This simply cannot be affirmed. The US Department of Energy was once known as the Energy Research and Development Agency (ERDA). Before that it was another federal agency. DOE dates from only the 1970's. No one can affirm with any confidence that 250 or 500 or 1000 years from now, anything we know today as organized government will retain control over the property we call Los Alamos National Laboratory (LANL). It would seem that the amortized cost of perpetual control would far exceed the cost of intelligent and responsible alternatives and newer technologies.

(3) Using the span of centuries underlying the time-line assumptions in the PA the Board notes that weather patters and climate changes cannot be predicted with any greater certainty than can geologic events such as volcanic action, earthquakes, or mantle shifts. Yet the Pajarito Mesa is being modeled as static at best. Catastrophic geologic events in the future could easily expose all the waste buried in Area G, cap or no cap. And while the SWEIS asserts that “The geology in the area is also expected to contribute to the minimal transport of contaminants to either the surface or groundwater bodies in the area,” the Board is not convinced that natural geologic processes, earth crust and earth plate tectonics, or other natural disasters may not render the burial at Mesita del Buey totally moot.

(4) Finally, the local climate patterns that today seem high and dry may in 250 or 1000 years once again may be very wet. The assumption that evaporation and transpiration will always be able to mitigate the rains and snow is fatally flawed. Combine this likelihood with unknown and unpredictable geologic activity and the shifting patterns of land use and human presence simply makes expansion of Area G untenable. What today seems like an impenetrable 800 feet of protective cover over our aquifer may simply cease to exist. What we measure today in centimeters per year through migration pathways may one day skyrocket to feet per day. The water we depend on, replenished through recharge and recycle, is too precious to risk simply because “we think” contaminants cannot reach it under current conditions. There is no reason to believe that current conditions will remain static; but every reason to acknowledge that conditions will most likely change. We don’t know when and we don’t know how, but we do know that conditions will change.

The Board recognizes the challenge presented by this recommendation. But the Board is obliged to listen to the public and advise the DOE. The Waste Management Committee held a historic forum on a topic of long-term interest to many segments of our community. The Board has also weighed the broader impacts that we have observed around the entire DOE complex. This recommendation is not about installing liners or leachate collection systems or drafting new plans for long-term monitoring and surveillance. This recommendation is about stewardship of the land and our obligation to the future generations that will live here.

Recommendation(s)

No. 1 The NNM CAB recommends that Area G not be expanded. Rather, the NNM CAB recommends that DOE and LANL immediately pursue alternatives for the receipt and disposal of LLW at Area G and seek public input before a final decision is made. The Board further recommends that before a final closure plan of the current acreage is submitted to the New Mexico Environment Department (NMED), that a comprehensive long-term Performance Assessment (PA) be commissioned and accomplished by an independent Board of nationally recognized experts in the fields of climatology, tectonic geology, geomorphology, and human and government history and sociology. The Board recommends that this PA thoroughly address the impacts, risks and reasonable probabilities associated with the dynamics of trends in human history, historic national and international shifts in government, and long-term climatological and geological changes.

No. 2 The NNM CAB recommends that the US DOE and LANL address the challenge to permanently and irrevocably cease and desist from disposing of radiologically contaminated and hazardous wastes by means of underground burial at Area G. We do not propose that DOE and LANL install liners in the pits, trenches or shafts at Area G. We propose instead and recommend that the goal be that no more pits, trenches or shafts be dug or constructed at LANL and that no more radiologically contaminated wastes or hazardous wastes are buried at LANL.

No. 3 The NNM CAB recommends that the US DOE and LANL bring to bear the best science available to shift costs from constructing burial sites, running disposal operations or planning future remediation to creating lasting solutions for reducing and eliminating the production of contaminated wastes. The NNM CAB recommends that DOE turn the notion of environmental management (EM) from a system that “gets rid” of waste into a creative program of

environmental stewardship that minimizes or eliminates the production of such wastes and creates the technologies that can neutralize the hazards in the wastes that must be produced.

Intent

The purpose of these recommendations is to propose waste management goals for LANL and for DOE – not to stop or interfere with LANL’s operations. We believe that DOE and LANL management can balance the achievement of these goals with safe operations of the laboratory and achievement of its mission.

In addition, the intent of these recommendations is to encourage the DOE to set as a goal, for implementation as soon as possible, to stop burying radioactive wastes and invest instead in developing waste management, waste reduction, waste recycling and hazardous and radioactive waste purification technologies that will support to broader goal of true “zero discharge” from LANL.

The potential spin-off technologies that could be developed offer the opportunity for genuine “world-class science” to be employed in solving very down-to-earth waste disposal and management problems for the entire nation. The range of labor skills envisioned for such an endeavor offer LANL and DOE the opportunity for broad economic development in northern New Mexico. This growth could occur across a wide spectrum from entry-level, traditional “blue collar” labor, up to highly skilled waste management and operating technologists in a sustainable industry devoted to genuine environmental stewardship as a national priority.

Effect

The desired effect of this recommendation is to get the DOE to shift away from using 19th century burial tactics and move toward new and bolder 21st century technologies that can effectively and permanently deal with the hazards in the waste generated at LANL. The Board observes that if the National Aeronautics and Space Administration (NASA) can recycle both contaminated air and human urine in a spacecraft into fresh air and drinkable water then certainly we have the skills and technological know-how to create new technologies that can make LANL generated wastes non-toxic, non-hazardous and radiologically inert.

References:

1. NNM CAB, Proceedings Area G Forum, 2005.
2. US DOE, Site-Wide Environmental Impact Statement for the Continued Operations of the Los Alamos National Laboratory, Los Alamos, New Mexico (DOE/EIS-0238).
3. D. B. Rogers and B. M. Gallaher, The Unsaturated Hydraulic Characteristics of the Bandelier Tuff, Los Alamos National Laboratory, Report LA-12968-MS (September 1995).
4. R. A. Freeze and J. A. Cherry, Groundwater, Prentice Hall, Englewood Cliff, NJ (1979).

Approved by the Northern New Mexico Citizens’ Advisory Board on September 28, 2005.

Addendum: Final Minority Report:

**Northern New Mexico Citizens’ Advisory Board
Waste Management Committee
Recommendation 2005-10**

Expansion of Low-Level Radioactive Waste Disposal at Area G

Minority Report

Background

At the Northern New Mexico Citizens Advisory Board (NNMCAB) meeting on September 28, 2005, Recommendation 2005-10 to the Department of Energy was introduced and discussed in detail. Several members of the NNMCAB expressed serious concerns with the initial draft of the recommendation primarily because the draft recommendation covered too many topics, were too broad and, were often contradictory.

It was also pointed out that the initial recommendation could easily be interpreted to mean that the NNMCAB was in favor of ceasing all waste generating operations at all DOE facilities and all underground disposal operations such as those ongoing at WIPP and NTS, which I believe makes us more vulnerable to malicious or accidental releases of radioactivity to the environment and the consequent impact on the public.

An additional concern that was raised was that the draft recommendations were advising DOE on what not to do with radioactive wastes without offering any recommended alternatives other than “*apply best science*”. This approach appeared to be in direct contradiction of the charter of the NNMCAB, which is to identify problems, ask DOE for responses (solutions) to those problems, and ensure full public knowledge and participation in the resolution of those problems; but not recommend solutions directly.

As a result of the discussions, an ad-hoc committee was formed to revise the recommendation. The revised recommendation was presented later in the meeting and approved by the NNMCAB members with one dissenting vote. Since the vote was not unanimous for approval, the NNMCAB bylaws require that a minority report be included with the recommendation. This is the minority report.

Comments and Observations

I dissented against the recommendation because I believe that it does not express the concerns of the NNMCAB strongly and clearly enough. The recommendation as approved did not explicitly state the primary reason why LANL should get out of the radioactive (and hazardous) waste landfill business, which is that LANL is up gradient of the water supply for well over one-half of the population of New Mexico plus numerous more Texans and Mexicans. This is reason alone NOT to dispose of any radioactive or hazardous wastes underground (with or without liners) at LANL, or at Los Alamos or Santa Fe (or any other city or site that sits on the Rio Grande aquifer for that matter). As long as wastes remain buried in locales where releases will impact surface or groundwater, the risk also remains that such impacts will occur. This forecast is driven by laws such as gravity that override any human created laws or regulations. More importantly, it is long overdue that DOE should establish a goal (with specific dates) of closing all remaining on-site landfills, such as Area G, at all of their facilities. On site landfills for industrial wastes in no longer accepted and rarely practiced at manufacturing facilities or private R&D facilities in this country - this includes entities that use radioactive materials, such as pharmaceutical companies, source manufacturers, etc. If those facilities are able to send their wastes off-site to a public or commercial landfill, so too should DOE.

In addition, I am concerned that this recommendation sets some very challenging and worthwhile goals, such as the closure of Area G and the zero discharge goals, but does not either require or suggest that DOE develop and provide a plan and schedule for achieving those goals. Without an accompanying plan and schedule for achieving that goal including specific performance objectives for each FY and an overall deadline, a goal alone is not sufficient and will likely never be achieved.

A final concern specific to Recommendation No. 3 is that part of it that recommends that DOE and LANL to shift costs from planning future remediation. Effectively, the NNMCAB appears to be endorsing the concept of delaying the remediation of the older, less secure landfills, which are recognized by all stakeholders as having a higher risk of uncontrolled releases than Area G, in favor of concentrating on current waste generation issues. This recommendation can also be interpreted that the NNMCAB believes that compliance with the Consent Order and cleaning up past contamination is less important than eliminating any future waste generation. I am concerned that

this recommendation was written in such a manner that it could even be interpreted in this manner, which is certainly not my intent or, I believe, the intent of the NNM CAB.

Christopher M. Timm, PE
Member