MINUTES
for the
THIRD MEETING
of the
RADIOACTIVE AND HAZARDOUS MATERIALS COMMITTEE
September 10-11, 2009
Ballroom B, Student Union, University of New Mexico
301 Cornell Dr. NE
Albuquerque
and
Fuller Lodge
Community Building
2132 Central Avenue
Los Alamos

Present
Sen. Richard C. Martinez, Chair
Rep. John A. Heaton, Vice Chair
Sen. Vernon D. Asbill (9-10)
Rep. William J. Gray
Sen. Carroll H. Leavell
Rep. Antonio Lujan
Sen. John Pinto (9-10)
Rep. Jim R. Trujillo
Sen. David Ulibarri
Rep. Jeannette O. Wallace (9-11)

Absent
Sen. Stephen H. Fischmann
Rep. Jeff Steinborn

Advisory Members
Sen. Rod Adair (9-10)
Rep. Eliseo Lee Alcon (9-10)
Rep. Thomas A. Anderson
Rep. Donald E. Bratton (9-11)
Sen. Dianna J. Duran (9-11)
Sen. Lynda M. Lovejoy (9-10)
Rep. Nick L. Salazar

Sen. Gay G. Kernan
Rep. Rodolpho "Rudy" S. Martinez
Sen. William H. Payne

(Attendance dates are noted for those members not present for the entire meeting.)

Staff
Gordon Meeks
Mark Harben

Thursday, September 10 — UNM, Albuquerque

The Indian Affairs Committee (IAC) and Radioactive and Hazardous Materials Committee (RHMC) met jointly to hear testimony, consider recommendations from the Joint Subcommittee on Uranium Legacy Management and discuss methods to coordinate state and federal efforts to clean up radioactive waste.

Representative James Roger Madalena, IAC chair, and Senator Martinez, RHMC chair, called the meeting to order at 9:10 a.m. The meeting began with members introducing themselves and both committees approved their previous meetings' minutes.

Dr. Julia E. Fulghum, vice president for research at the University of New Mexico (UNM), welcomed the members, presenters and audience.

Uranium Legacy Impacts: Regional Ground Water, Environment and Health and Navajo Nation Five-Year Plan

Bill Olson, bureau chief at the Department of Environment (NMED), and Jerry Shoeppner, uranium project team leader at the NMED, discussed the department's efforts to clean up and monitor the "Grants Mineral Belt", an area approximately 100 miles long and 20 miles wide in a strip running from the Pueblo of Laguna to Shiprock.

Navajo Nation representatives, updating the status on a project with the federal Environmental Protection Agency (EPA), reported that they have completed a five-year plan for addressing the problems of contamination due to uranium mining. The NMED has contemplated seeking a similar plan for the State of New Mexico.

Contamination detected by the NMED at the Ambrosia Lake area (approximately 25 miles north of Gallup) is made all the more serious by the fact that the contamination sites are interconnected, the department reported. There is little pre-mining ground water data to establish responsibility for the cleanup and serious gaps in data and, because the EPA standards for uranium mining remediation were established in the year 2000, it is difficult to establish responsibility for the pollution.

Points of discussion included:

- availability of reports on sites surveyed by the NMED;
- the natural occurrence of uranium, lack of base data before mining began and lack of regulations on original mining;
- the concentration levels of uranium in water at different mine sites; and
- lists of all companies that operated mines prior to regulations.

Assessment and Reclamation of Abandoned Uranium Mines

Bill Brancard, director of the Mining and Minerals Division of the Energy, Minerals and Natural Resources Department (EMNRD), and Tony Herrell, deputy state director of the Bureau of Land Management (BLM), joined Mr. Olson to review problems dealing with uranium contamination.

Mr. Brancard said that the federal government does not have the ability to fix the mines that industry has abandoned. However, beginning three years ago, the EMNRD built databases from all the mines in the area and visited sites out in the field. The EMNRD is now working with other agencies on ground and surface water contamination and estimates that over 1,500 locations had a "disturbance" related to uranium. Therefore, the department is focusing on locations that were actually mined. One database has been created to track mines that were once active, and another database has been created for everyone else.

Of the 259 New Mexico mines in 18 counties that reported uranium production, 137 have no record of any reclamation efforts. Focusing on the mines where no record of reclamation exists, the EMNRD has safeguarded 15 abandoned uranium mines from the early 1990s. It identified a need for maintenance at 21 sites on public land in the year between the summer of 2007 and the summer of 2008. In 2009, the departments got more detail on seven mines in the Poison Canyon area and did site assessment and surveys. With a $150,000 appropriation sponsored by Senator Lovejoy, the departments hope to complete 20 site assessments, leveraging state, federal and tribal grants.

Mr. Herrell said the U.S. Department of the Interior and the BLM have prioritized sites and have entered a $7 million agreement in 2009 to last for five years. The BLM is transferring $325,000 for 2009 and $450,000 for 2010 to do the work.

There have been three periods of BLM activity in the area: one with an inventory of locations in the 1980s; an abandoned mine land inventory from 1990 to 2006; and an abandoned mine site cleanup module from 2006 to the present.

The last time the department received significant funding, however, was in the 1980s, at which time the BLM surveyed 40 sites for remediation and did work on physical hazards on 12 sites. The inventory included meter readings for radioactivity.

The federal BLM funding for New Mexico was $125,000 in 2000 and $675,000 by 2009. Mr. Herrell said that the BLM has a $7 million agreement to work for five years on the issue of uranium legacy. The BLM has transferred $325,000 for 2009 and $450,000 for 2010 for legacy issues and has targeted the $450,000 to Ambrosia Lake cleanup. Back in the year 2000, the funding was only $125,000 for New Mexico uranium legacy.

Questions and discussion ensued regarding:

- the possibility of adding federal stimulus funds to the effort;
- the role of the federal Department of Energy (DOE) in the cleanup;
- how much has been spent for the Homestake Mine cleanup;
- cooperation between multiple federal and state agencies;
- standards for closing mine shafts and prevention of further oxidation and contamination of ground water;
- in situ mining as a preference to open pit mining;
- the position of the Department of Interior's (DOI's) solicitor general to use the federal

Surface Mining Control and Reclamation Act of 1977 (SMCRA) cleanup money;
- the overlap of new mines and legacy mines and opportunity for cleanup to be paid by the DOE rather than the new mines;
- the summary of technical data of abandoned mines;
- the responsibility of owners for getting wells tested; and
- natural background contamination from mineralized zones.

Report of the Joint Subcommittee on Uranium Legacy

Senator Lovejoy and Representative Patricia A. Lundstrom, aided by staff attorney Damian Lara of the Legislative Council Service, reported to the full committees that the Joint Subcommittee on Uranium Legacy came to consensus on short-term recommendations. The co-chairs of the subcommittee gave a brief history of forming the subcommittee, noting that a delegation of legislators from both committees had traveled to Washington, D.C., last spring to talk with the New Mexico congressional delegation about the legacy of uranium mining. The group was acting to get more federal funds for cleaning up contamination from uranium mining in the post-war period up through the 1980s.

The report of the subcommittee included consensus priorities that requested senior New Mexico Senator Jeff Bingaman to:

(1) introduce new federal legislation or amendments to the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) to expand federal authority to reclaim mines that were active, remediate ground water contamination and address the spread of ground water contamination and set aside $1.5 billion for reclamation and remediation caused by past uranium and milling activities;

(2) work with Interior Secretary Ken Salazar to revise limitations on use of funds in SMCRA funds for non-coal mine reclamation;

(3) ensure that any future amendments to SMCRA provide funding flexibility for non-coal mine site reclamation;

(4) support for the federal Hardrock Mining and Reclamation Act of 2009;

(5) seek money for the EPA to coordinate with the DOE, the Nuclear Regulatory Commission (NRC), the DOI and state governments to create a five-year plan for cleanup of uranium mines, mill sites and ground water contamination;

(6) ask the NRC to review cleanup and ground water plans and review the background levels of aquifers affected by uranium mining and milling activities;

(7) seek a National Academy of Sciences study on reclamation of uranium mines and remediation of ground water contamination caused by uranium mining and milling activities; and

(8) amend the federal Radiation Exposure Compensation Act of 1990 to include uranium miners who worked after 1971.

The co-chairs noted that the only bone of contention among committee members concerned a recommendation that New Mexico help to fund a field conference at New Mexico Tech this coming spring, since the state is so short on funding. Therefore, that consensus point was dropped. The report of the subcommittee then was written to include only points that were passed by vote. After approval by the IAC and the RHMC, the subcommittee planned to seek endorsement of the recommendations by both the governor and tribal leaders across the state.

After much discussion, during which some subcommittee members denied that consensus had been reached, Senator Leavell of the RHMC moved and Representative Heaton of the RHMC seconded a motion to strike numbers 4 and 6 of the points and both committees approved. A motion to approve the subcommittee's recommendations failed the RHMC but passed the IAC. Ultimately, members of the IAC and the RHMC voted unanimously to support the motion of Senator Asbill and second of Senator Ulibarri to request the New Mexico Legislative Council to approve a second joint committee meeting and one more subcommittee meeting. Staff was requested to redraft the letters to Senator Bingaman, Secretary of the Interior Ken Salazar and Secretary of the DOE Dr. Steven Chu to reflect the deletion and to clarify that seven rather than 10 meetings were held on uranium legacy management in New Mexico. The redrafted letters would be reconsidered by the subcommittee at its next meeting if approved by the New Mexico Legislative Council to meet and by the full committees whether or not they are approved for another joint meeting.

Multi-Agency Five-Year Plan to Address the Uranium Legacy in New Mexico

Staff from Region 6 of the EPA addressed the committee over a working lunch. Sam Coleman, director of the Superfund Division, said that the current Region 6 plan encompassed cleanup of the San Mateo Basin as a priority. He said the agency is collecting input from the state, tribes and other states to see what parties need to be included in creating a five-year plan such as that agreed to by the EPA with the Navajo Nation. He expects to release a five-year plan in spring 2010, but noted that the plan is only "a starting point". The EPA is working with the EMNRD's Mining and Minerals Division and the NMED's Water and Waste Management Division in the early planning stages.

Mr. Coleman suggested that organizations and governments should decide upon the scope of work and agreed to send the draft scope of work to the subcommittee.

It is likely that, with the support of each of the committees, the EPA would move more quickly to establish a firm plan of action.

Discussion points included:

- the cost of providing water to Navajo communities with contaminated wells;
- specific problems on the Navajo Nation where water is being supplied and excessive

charges are made by trading post operators;
- public meetings on the Navajo Nation;
- when the subcommittee was appointed;
- the lack of baseline data;
- the need for a five-year plan for New Mexico to clean up abandoned mines;
- the scope of work of federal agencies to be submitted to the subcommittee;
- cost of cleanup and time required; and
- unknown sources of ground water contamination.

Long-Term Legacy Management and Containment of Ground Water Contamination

Ray Pleiness, director of site operations at the Office of Legacy Management (OLM) at the DOE, explained to the committee that the state and DOE do not have a cooperative agreement for site maintenance. The OLM's support to the NMED is in data sharing, nitrate sampling beyond basic requirements and sampling in general. The OLM has invited NMED participation, including joint sampling and visiting of sites.

To assuage the NMED's concerns about ground water, the OLM will install a shallow monitor, Mr. Pleiness said. On questions from committee members, Mr. Pleiness said that the DOE has the authority to fix sites and has responsibility for mill sites to protect ground water.

To address the lack of communication among different levels of government and different departments within the federal, state and tribal governments, a memorial is being drafted to coordinate all legacy management agencies.

Discussion points included:
- the difference between federal NRC standards and New Mexico standards for contaminants in ground water;
- the status of leaking tailings impoundment;
- the lack of baseline information;
- inconsistent standards among government agencies;
- the differences between contamination sources and tailings versus mines;
- wind-born contaminants; and
- the need to establish an understanding of background levels.

Reclamation and Remediation Standards of Uranium Mill Sites

Keith McConnell, deputy director of the Division of Waste Management and Environmental Protection at the NRC, discussed the roles and responsibilities for "Title I" sites in New Mexico: the EPA is in charge of cleanup and disposal; the DOE is in charge of remediation of sites to the EPA standards; the DOE is in charge of remediating properties in the vicinity; and the NRC is in charge of evaluating and stating concerns to the DOE. The goal is to return the sites to a background level or a maximum contaminant level. Title I sites in New Mexico include Shiprock, where there is active ground water remediation in two areas, and Ambrosia Lake.

Title II sites were determined by agreement with the State of New Mexico in 1974. These include milling activities up through 2002 at Ambrosia Lake. Superfund sites are at Homestake and Church Rock. The Title II sites include ARCO at Bluewater, the Homestake mine in Grants, Ambrosia Lake, Church Rock, L Bar and HRI in Crownpoint. Of these, Homestake and Ambrosia Lake are being decommissioned. The decommissioning sites were the result of a facilitated meeting.

Senator Lovejoy mentioned that the subcommittee met with Commissioner of Public Lands Patrick Lyons on establishing "alternate concentration" limits. These are established at varying levels depending on the site. She noted that the NRC standards sometimes are different from those established by the EPA or the DOE. Mr. McConnell said that it is not unusual for state standards to be stricter than the federally established standards, as is the case in New Mexico. Discussion ensued on how the NRC establishes the standard "background" of radiation at a site. The NRC has allowed certain sites simply to raise that "background" level rather than establishing "alternate" standards.

Discussion points included:

- who is in charge;
- reiteration of the elements in the motions from the morning presentations; and
- the distance of mines to mill sites.

Homestake Site — Status Update

Al Cox and George Hoffman of Homestake Mining Company spoke to the committee on the status of the mine. The Homestake mine, operated from 1956 to 1990 in Milan near Grants, generated 22 million tons of mill tailings over its 30 years of operation, of which only the pilings remain, now stored in two huge piles. One pile covers 200 acres and is 100 feet high. The other covers only 40 acres at 25 feet tall. The mine was declared a Superfund site and is now under assessment by the Agency for Toxic Substances and Disease Registry (ATSDR), a federal public health agency that is part of the U.S. Department of Health and Human Services.

The presenters gave a summary of the report released on June 26, 2009. Among the findings were:

(1) the uranium, selenium and molybdenum concentrates found in private wells near the Homestake site in the 1970s to 1990s were, in some cases, up to 100 times greater than those over the past three years;

(2) while some persons took advantage of using alternate water from the City of Milan between 1985 and 1995, others may have continue using their well water and may have been exposed to the contaminants;

(3) the ATSDR did not sample soil or vegetables to know to what extent they were affected by the contaminants;

(4) residents of the area may have use contaminated ground water for irrigation and watering livestock, and residents meeting with ATSDR in 2005 did not report any adverse health effects in the livestock; and

(5) water tested between 2005 and 2007 had levels of uranium and selenium concentrates above the minimum (MCL) but below the standards setting a risk of adverse health effects.

Testimony before the committees included the information that the EPA lowered its standard of 5,000 parts per billion of uranium allowed per million to only 30 contaminant parts per billion in the year 2000. The standard means that many areas that were approved in previous years are not considered safe now. It was also reported that contamination from the mine is not, as is usually believed, spreading underground, and legislators were challenged to report any information that it is spreading.

Homestake reported that the NMED has not approved its permits for more mining for the past 32 months and the statement was met with disbelief. Asked why the permit has not yet been approved, Homestake said it did not know. Mr. Olson said the NMED formerly had an issue on the size of the pond and of "radiation migration". Now a public meeting for the public and tribal leaders is set for November 2009 for approval of a restart of the mine.

Representative Lundstrom requested a written response to her question of why the Homestake mine still has not been approved.

So far, estimates are that $100 million will have been spent by the year 2017 for remediation. The report also mentioned that Homestake's obligation to take remedial action to clean the ground water expires in 2015. Even after the mine's obligation to remediate the ground water in 2015, uranium and selenium levels will still be above safe standards for drinking water.

The mine has capped the large tailings pile with a radon barrier and erosion-protection cover on its sides and an interim soil cover on its top. After the tailings are flushed, the small tailings pile will also be capped by an interim soil cover. When the ground water restoration is complete, a final radon barrier will be constructed.

Discussion points included:

- flushing to reduce contaminants;
- a lack of baseline data for water quality or water chemistry;
- scientific data on ground water quality monitoring of hundreds of wells and logs demonstrate that the aquifer northeast of Homestake mine is not being contaminated by the facility;
- that New Mexico is terrible for business as indicated by the time it takes to get a permit (two and one-half years) for a pond to clean up the tailings (22 million tons);
- the amount of money brought into the state by the uranium industry;
- a comparison of Homestake cleanup to other uranium mining and milling site cleanups;

- New Mexico's radiation standards;
- permit delays based on community objections;
- the role of the U.S. Army Corps of Engineers remedial systems evaluation program as a consultant to the EPA;
- why the EPA has not approved the Homestake permit for cleanup (potential sizing, radon migration, requests for public hearings, differences in standards, tribal consultation process and discrepancies between the EPA and the NRC);
- a request to the NMED for written explanation;
- corporate bylaws of Homestake;
- the cost of cleanup so far: $100,000,000 and $47,000,000 more anticipated by 2017;
- reverse osmosis and evaporation as techniques for pond cleanup; and
- potential court action.

Environmental and Technical Capabilities

Carol Brewer, environmental program manager with the U.S. Army Corps of Engineers, and Mr. Herrell talked about their recent work on water resources, addressing planning, study and design of non-coal mines. The two agencies have $20 million authorized now and will ask for $7 million more for 2010.

Representative Madalena asked the U.S. Army Corps of Engineers to do a study on tribal contract lands (638 contracts). Ms. Brewer said they are working directly with the tribes.

Linda Weiss, U.S. Geological Survey, gave a short promotional presentation of the capabilities of her agency.

Mt. Taylor Current Developments — Status Update

Nancy Rose, forest supervisor at the Cibola National Forest and Grasslands, United States Forest Service, made a brief presentation. Ms. Rose reported that Murex Energy wanted to dig 21 "exploration" holes on the mountain. Since the mountain contains sacred sites, the exploration holes were not dug. The United States Forest Service also rejected one application from La Jara Mesa, three others in preliminary discussions and nine others that said they are likely to go forward.

The United States Forest Service will begin the NEPA process for uranium in the year 2011. At that time, all the builder proposals will be combined into one environmental impact statement. A decision is expected next spring.

Discussion points addressed water requirements for proposed mines.

Uranium Legacy Impacts on Health of Residents

Dr. Johnnye Lewis, principal investigator of the Navajo Nation Uranium Assessment and head of the Dine Network for Environmental Health Project (DiNEH), and Steve Dearwent, branch chief of the ATSDR at the U.S. Department of Health and Human Services, reviewed their work with 20 chapters from the Eastern Navajo Agency. Among the questions the study

conducted recently asked were what level of exposure to uranium causes physical damage and to what extent.

The studies have indicated a high rate of kidney disease among Navajos in that area with significant uranium exposure. The study showed that 30% of Navajos had access to regulated water, compared with only 0.6% of the United States as a whole. This number translates to 12% of the nationwide count of Native American people. Some prevalence of kidney disease may be attributed to a genetic sensitivity to uranium, Dr. Lewis said, but exposure to all metals can destroy kidneys. People who are healthy can resist some level of exposure, but if a person has diabetes, the exposure can accelerate the diabetes.

Dr. Lewis' study included three generations of 300 people exposed to uranium. The population manifested hypertension, kidney disease, diabetes and a high percentage of other autoimmune diseases, all of which increased as the number of mines in a chapter increased. Some 19% to 25% of the respondents were unaware that they were living near a uranium mine.

Dr. Dearwent said his study, the Church Rock Uranium Monitoring Project and Uranium Assessment and Kidney Health Project, assesses the health effects of hazardous substances in the environment. He noted that "exposure routes" for uranium include both inhalation and ingestion and produce kidney disease, lung cancer, developmental delays, DNA damage and endocrine disruption. His study asked about exposure levels in the population and what activities contributed to the exposure, and the study found that living near waste and living in contaminated buildings as well as relying on contaminated water had effects.

Legislators discussed:

- whether the level of a single exposure was as significant a contributor to illness as the amount of exposure over a lifetime;
- autoimmune disease as a genetic disorder instead of an environmental disorder;
- the difficulty of sorting out the presence of uranium on the surface of the earth from mined uranium ores;
- the immobility of natural uranium material compared to tailings and mined material;
- the problem with expanding findings from a specific population to a broader population or of excluding a particular population;
- the frequency and magnitude of changes in uranium standards;
- which autoimmune diseases are being researched;
- the lack of medical records study;
- scientific validity in general of the study presented;
- reliance of the study on self-reporting as opposed to statistical comparison of randomly selected individuals compared to a control group;
- the lack of whole body counts;
- the relationship between heavy metals exposure and hypertension; and
- the potential effects of arsenic and cadmium in fatty deposits where they are not usually found rather than from uranium exposure.

Recess

The meeting recessed at 6:15 p.m.

Friday, September 11 — Fuller Lodge, Los Alamos

Welcome

The RHMC was called to order at 9:15 a.m. by Senator Martinez, chair.

Welcome to Los Alamos

Mike Wheeler, chair of the Los Alamos County Council, welcomed the committee to Los Alamos. He said that Los Alamos County has hosted and supported Los Alamos National Laboratory (LANL) for a long time, but is its own entity, operating separately from LANL. He said the cleanup of radioactive and hazardous materials are necessary and are pushing forward.

Roger Snyder, DOE, also welcomed the committee. He said that LANL has been instrumental in keeping the United States safe, and he mentioned the anniversary for the September 11, 2001 terrorist attack.

The committee members introduced themselves.

LANL Environmental Management Program

Ron Curry, secretary of environment, introduced members of the department. He provided background regarding Los Alamos, LANL and his personal connection to them. Secretary Curry said that Dr. Ines Triay is in the Obama administration working on environmental cleanup for the DOE on the federal level, but she is connected to the Los Alamos area and will be a great ally in the federal government.

Secretary Curry discussed the consent order, which was signed in 2005, and mentioned the milestones established in that order. He said the department believes it is a good document and the future success is likely. One of the biggest challenges is the chromium contamination in the Mortandad Canyon, with the sources coming from the head of Sandia Canyon. Another area important to the department is Area G, LANL's radioactive disposal facility. Area G is really a legacy facility, so it is not an approved site for disposal, and it must be cleaned up by 2015. Secretary Curry explained the penalties associated with not meeting the milestones mandated in the consent order make the process more complex for the contractors and the state itself. He mentioned the effects of radioactive contamination in Los Alamos on the Buckman project, and said that the department is committed to move the program forward as planned. Secretary Curry discussed the program called RACER, which goes through all the data files about the cleanup and makes them available to the public.

Michael Graham, associate director for environmental programs for LANL, thanked the committee for allowing him to speak. He said he is relatively new, joining LANL in November 2008, and told the committee about his background. Dr. Graham said he is responsible for the $2 billion LANL cleanup of the Manhattan Project and Cold War waste through 2015, along

with management of LANL waste from ongoing operations. He explained his priorities, including worker safety, protecting the public and environment, compliance with laws, efficient and effective operations and transparency of the operations. According to Dr. Graham, under his management, LANL has completed the High Activity Drum Campaign; completed shipments of 16 remote-handled transuranic canisters to the Waste Isolation Pilot Plant (WIPP); tripled the transuranic repackaging rate at Technical Area 54; and completed a record number of shipments to WIPP. There has also been a completion of remediation of 10,000 cubic yards at Material Disposal Area Y; removal of approximately 1,100 cubic yards of PCB contaminated soils at the DP site; and completion of 20 ground water monitoring wells.

Dr. Graham told the committee about the LANL Recovery Act progress and scope, stating that $212 million was released to LANL on July 22 with four main projects, including: demolition of Cold War era buildings (two projects); installation of ground water monitoring wells; and cleanup of LANL's first landfill, operated from 1944 to 1948. According to Dr. Graham, these projects created and saved 100 jobs in the first month, along with awarding a $100 million master task order agreement for remedial actions and demolition for small businesses, three of which were northern New Mexico businesses (Portage, ARSEC and LATA). The LANL Recovery Act progress also includes a direct push soil sampling completion at the landfill; conclusion of the first phase of demolition readiness; and the issuance of a request for proposals for the $100 million for waste disposal master task order agreement. The LANL Recovery Act project has outreach as well. There is a public meeting on August 18 and an operating web site, along with briefings of local governments, business networking and a job fair. He discussed the accomplishments under the consent order as well, saying that 201 deliverables and supporting documents were submitted year-to-date.

Committee discussion and questions addressed:

- why permits for Homestake's cleanup are taking so long to be issued;
- cleanup on tribal lands;
- the Buckman project and the citizen advisory board;
- packaging of waste;
- the number of monitoring wells and if there are adequate numbers;
- disposal of demolition materials;
- labor shifts and assignment of personnel;
- the negative public image that results from slowness of environmental cleanup;
- the status of shipments to WIPP;
- sediment in canyons or the Rio Grande;
- elements of the consent order;
- a request for inventory of all sites (1,400) that need cleanup and a matrix of their accounting status; and
- the relationship between the various agencies that have a role in overseeing the sites.

LANL Renewable Energy Research and Development

Terry Wallace, principal associate director of science, technology and engineering for LANL, said that ensuring that America has a reliable, affordable and clean energy supply is

critical to national security. He continued to say that meeting this challenge in the face of growing global energy demand and climate change will require dramatic advances in science, technology and engineering. LANL is a central player in this scenario, according to Dr. Wallace, and Los Alamos will provide science, technology and engineering leadership for highly innovative solution to meet the nation's energy needs.

Dr. Wallace discussed the energy security challenge, stressing the importance of energy to American society and its economy (the U.S. uses one-fifth of the world's energy). He said that the U.S. imports 70% of its oil products today and the country's energy supply is susceptible to price volatility and global politics. Renewable energy is pivotal to ensure the United States' secure access to energy in the years ahead. Dr. Wallace discussed nuclear, wind and solar energy sources, saying that Los Alamos has a role to play in developing these sources in New Mexico. He said that LANL is looking at advanced systems to provide energy for transportation and the energy grid as well. The resources at LANL are extensive, such as computer modeling systems, research facilities and general expertise. Dr. Wallace said there are three principal elements to the Los Alamos energy security programs, including: sustainable nuclear energy; materials and concepts for clean energy; and mitigating impacts of global energy demand growth.

The committee discussed:

- the five megawatt, self-moderating nuclear reactor invented at LANL;
- the potential for technology transfer as affected by the difference between applied research and fundamental research;
- implementation of renewable energy potentials;
- the new energy paradigm of individual homes generating energy with a grid backup rather than the current reliance on grid distributed energy;
- limitations of transmission capacity; and
- technology advances for solar and wind efficiency and storage as limiting factors.

Working Lunch
Solid Waste Management in New Mexico

Marla Shoats, lobbyist for Waste Connections, Inc., thanked the committee for having the panel provide a presentation. She introduced the panelists and members of the audience affiliated in the waste management industry. Ms. Shoats discussed the previous legislative session and various proposed legislation that dealt with waste management. She said that solid waste management is one of the most heavily regulated industries in the country. New Mexico passed regulation laws for solid waste management in 1990.

Mark Turnbough, Ph.D., environmental consultant, discussed his background and job description. He explained siting compliances, including areas that cannot be used such as: areas greater than 500 acres; flood plains, wetlands and watercourses; areas 100 feet to the water table; subsurface mines; areas within 200 feet of a fault line; an active alluvial fan; areas with threatened or endangered species; and seismic impact zones or unstable areas. Dr. Turnbough mentioned environmental setbacks regarding the location of landfills. He said a concerted effort is made to protect the integrity of historical and archaeological sites, which is especially relevant in New Mexico. There has also been a strong push to define vulnerable area assessments, which would include: economically stressed households; a population of 50 people or more within any square mile; and an area of three or more regulated facilities. Dr. Turnbough examined the rule of having a site in an area that is at least 100 feet from the water table, which greatly limits where these sites can be because so much land in New Mexico does not have the necessary distance from the water table. Dr. Turnbough also told the committee that 60% of the land in New Mexico is in a seismic impact zone.

Mark Miller, National Solid Wastes Management Association, New Mexico chair, provided a summary of his background to the committee. He discussed permitting processes for solid waste management and the costs involved (as well as construction and operations). Mr. Miller informed the committee about New Mexico's Solid Waste Act and the role the NMED plays in permitting. According to Mr. Miller, permitting can cost from $500,000 to $1 million and can take up to two years to obtain. Regarding operating costs, Mr. Miller said that those can total $10.00 to $30.00 per ton, while cell construction can equal $100,000 to $200,000 (or $4.00 to $8.00 per ton). He discussed different solid waste facility systems, including: an impermeable double liner system; leachate collection removal systems; heat-welded double liner seams; and composite liner systems. Ground water monitoring wells are required and cost $10,000 to $100,000 per well, and annual ground water and methane monitoring are in place for each well at $10,000 per well. Closure and post-closure operations are conducted to have revegetation, thus making the land open space.

I. Keith Gordon, Gordon Environmental, Inc., gave a brief synopsis of his background and qualifications. He said that there is a national trend of reducing the number of landfills at a dramatic rate (from over 8,000 to around 2,000 landfills in the last 20 years). New Mexico has followed this trend, but at slower rate. According to Mr. Gordon, New Mexicans generate over two million tons of solid waste per year, which is five pounds per person a day; approximately 12.4% is recycled, putting the state behind the national curve. Currently, New Mexico has 36

landfills of various forms, including 20 permitted landfills and 11 registered landfills (small, non-lined landfills serving small communities). Within the next five years, there will be 25 landfills in New Mexico. According to Mr. Gordon, privately operated landfills are the largest in the state and take the most waste, but have permits for only 10 years instead of 20, even though privately owned landfills have better track records for safety compared to public ones. He commented on the South Central Solid Waste Authority Transfer Station in Las Cruces, which is an award-winning system. Mr. Gordon said there are 13 permitted transfer stations and over 100 registered collection centers in the state.

Ms. Shoats said the fact that private landfills can only receive a 10-year permit is limiting. She said there is need for discussion to get 20-year permits.

Discussion points included:

- the difference between public and private landfills;
- the anti-business bias of the NMED and state government;
- a two-year period for permitting;
- the number of landfills in the state (20);
- permit fees ($10,000) and dependency of the NMED on them and proposed increase supported by the industry in exchange for a 20-year permit period;
- municipal and county support for the Solid Waste Act changes to increase the permit period;
- cost analysis of regulatory policies;
- the life expectancy of current technology;
- that tires are the most durable component in landfills;
- molecular weight of the liner membranes and life span of liners (300 to 500 years);
- methane from landfills;
- liability for failure;
- the Lea County landfill dispute with the NMED waste acceptance issues;
- disposition of last years's bills to amend the Solid Waste Act;
- tipping fees; and
- comments on the quality of the Los Alamos landfill.

Environmental Education Initiative

Cedric Page, Ph.D., executive director of UNM-Los Alamos (LA), said that the UNM-LA is committed to serve the communities of northern New Mexico, especially within the environmental realm.

Kate Massengale, Ph.D., dean of instruction at UNM-LA, thanked the committee for presenting this topic. She said that UNM-LA transfers (200 UNM-LA students transfer to UNM's main campus each year) are extremely successful when they go to the UNM main campus. According to Dr. Massengale, 75% of the transfer students get As or Bs in math, science and english and 95% earned Cs or higher. She said that UNM-LA wants to update the environmental science program, which was established recently to allow students to finish a bachelor's degree in environmental science in Los Alamos.

Discussion points included:

- field experience students can acquire with participating organizations;
- working with northern New Mexico communities;
- student support;
- support by the committee for a memorial to the federal government asking for funding support for the environmental education program at UNM-LA;
- online class curriculum for degree fulfillment;
- the lack of core faculty; and
- the accommodation of military students.

The committee adjourned at 2:02 p.m.