ENTERED

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Sent: Thursday, February 14, 2013 2:32 PM
To: Kieling, John, NMENV
Cc: Robert H Gilkeson, registered geologist
Subject: SNL Hazardous Waste Permit Request for Public Hearing
Attachments: CA Comments for 26 SWMUs for No Further Action.final.doc; CA comments for SNL RCRA Permit.final.doc; A1 December 5, 2008 letter to Chief Bearzi.doc; Citizen Action Comments on SAP.2 May 15 2007.doc

CITIZEN ACTION AND REGISTERED GEOLOGIST ROBERT GILKESON REQUEST FOR NEGOTIATIONS AND PUBLIC HEARING FOR SANDIA NATIONAL LABORATORIES HAZARDOUS WASTE PERMIT February 14, 2013

Citizen Action and Robert Gilkeson respectfully request a public hearing on the Draft Sandia National Laboratories (Sandia) Hazardous Waste Permit. We also request that prior to any notice being made for a public hearing, NMED, the Permittees, the undersigned, and other parties conduct negotiations to attempt to resolve issues related to the draft permit. NMAC 20.4.1.901.A.(4). We believe that NMED and other parties would agree with some of the concerns and objections raised in the following comments and that a revised draft permit could be developed prior to the public hearing.

Citizen Action and Registered Geologist Robert Gilkeson previously requested an additional extension of the comment period on 2/12/2013.
Comments that were submitted by Citizen Action and Mr. Gilkeson in January 17, 2008 are hereby resubmitted. Although the comments may not reference the sections of the permit as currently written, we believe many of the legal and technical issues are the same at present. We also resubmit comments for the 26 SWMUs for No Further Action dated February 8, 2008 and comments for soil vapor gas monitoring.

As additional comment, we are attaching the October 24, 2012 letter to NMED Secretary David Martin and John Kieling regarding the violation of RCRA permitting requirements by the use of the Long Term Monitoring and Maintenance Plan (LTMMP) for a Level 3 modification of the May 26, 2005 Final Order (Curry) for the Mixed Waste Landfill. No statements were made to Citizen Action or the public in the NMED Responses to Public Comments on the Sandia National Laboratories' Mixed Waste Landfill Permit Modification for Corrective Measures August 2, 2005 that the 5 year review period would take place 5 years after an approval of the LTMMP was made.
All comments and communications made by Citizen Action separately or with other persons or NGOs regarding the MWL and the proposed LTMMP are herein included by reference thereto.

1. Cause for Termination of the SNL Permit and Final Order and the LTMMP for the MWL exist due to the permittee's failure to disclose fully all relevant facts and the permittee's misrepresentation of relevant facts.
40 CFR 270.43.

2. Further open burning of toxic wastes at Sandia must not take place.
Contamination of our breathing air is unacceptable and alternatives exist.

3. Numerous sites at Sandia National Laboratories are regulated units because they received hazardous waste after July 26, 1982. Many of those sites are currently listed only as Solid Waste Management Units (SWMUs) and must instead be monitored and closed as regulated units.

4. The Mixed Waste Landfill dump is a "regulated unit" that requires a Closure Plan and Post Closure Permit and those requirements are not being met. Groundwater monitoring for the MWL dump must be that prescribed for a regulated

SNL1207

unit by the Resource Conservation and Recovery Act. The groundwater beneath the dump is contaminated and the dump should be excavated. Plutonium waste is present. Other releases of hazardous wastes have occurred.

5. The Draft Permit fails to include a definition for "regulated units"
that are present at Sandia National Laboratories. Collectively, these units, incorrectly classified as SWMUs, disposed of billions of gallons of contaminated water contaminating Albuquerque's drinking water aquifer. These releases have been inadequately monitored and remediated.

6. The Draft Permit must provide the requirement that the permit shall be reviewed by the NMED Secretary five years after the date of the permit issuance and shall be modified as necessary. 40 CFR 270.50.

7. NMED must enforce now the provision of the May 26, 2005 Final Order that Sandia Provide a five-year review of the feasibility of excavation of the MWL dump and the suitability of the dirt cover. The review is 2 ½ years overdue and NMED does not have legal grounds for its planned delay for another 5 years.

8. The change in the 5 year review requirement for the MWL dump is a change to the May 26, 2005 Final Order. The Final Order must be modified before NMED can delay the 5 year review. Five year reviews are required by law. 40 CFR §270.50.

9. The April 29, 2004 Consent Order is inadequate to be an enforceable document for corrective action at Sandia National Laboratories. The Consent Order must be publicly noticed for modification.

Attachment

October 24, 2012

David Martin, Secretary
New Mexico Environment Department

John Kieling, Chief
New Mexico Environment Department
Hazardous Waste Bureau

Re: Objection to Sandia National Laboratories' (SNL) Mixed Waste Landfill (MWL) Delay of the Five Year Review Required by the May 26,
2005 Final Order (Curry May 2005) and Class 3 Permit Modification for the MWL (NMED August 2005).

Dear Secretary Martin and Chief Kieling:

Citizen Action New Mexico, Concerned Citizens for Nuclear Safety and Registered Geologist Robert Gilkeson respectfully request that the New Mexico Environment Department (NMED) immediately enforce the 2005 Final Order condition #5 requirement that Sandia perform a 5-year review for
1) the feasibility of excavation of the MWL, 2) the effectiveness of the dirt cover for the dump's radioactive and hazardous wastes, 3) update of the fate and transport model for the site with current data, 4) re-evaluation of any likelihood of contaminants reaching groundwater, and 5) detail of all efforts to ensure any future releases or movement of contaminants are detected and addressed well before any effect on groundwater or increased risk to public health or the environment is determined.
1. We object to the use of the Long-Term Monitoring and Maintenance Plan
(LTMMP) to modify and delay the 2005 Final Order requirement that Sandia perform the 5-year review. The LTMMP is not an appropriate vehicle for modification of the 2005 Final Order.
2. The requirement for producing the LTMMP arose from a Level 3 permit modification for corrective measures for the MWL provided for in the

2005 Final Order (Curry). The 2005 Final Order resulted after a multi-year process that included four days of public hearings in December 2004. Modification of the 5-year review requirement requires a level 3 modification of the permit.
3. Condition #5 of the 2005 Final Order stated as follows:
"Sandia shall prepare a report every 5 years, re-evaluating the feasibility of excavation and analyzing the continued effectiveness of the selected remedy.
The report shall include a review of the documents, monitoring reports and any other pertinent data, and anything additional required by NMED.
In each 5-year report, Sandia shall update the fate and transport model for the site with current data, and re-evaluate any likelihood of contaminants reaching groundwater. Additionally, the report shall detail all efforts to ensure any future releases or movement of contaminants are detected and addressed well before any effect on groundwater or increased risk to public health or the environment. Sandia shall make the report and supporting information readily available to the public, before it is approved by NMED. NMED shall provide a process whereby members of the public may comment on the report and its conclusions, and shall respond to those comments in its final approval of the report."

4. By allowing the possibility of a greater than 7-year delay in providing the first 5-year review report to the public, NMED is violating the requirements of the 2005 Final Order and 40 CFR 270.42 Appendix I for permit modifications and public notice and hearing requirements.
5. Nowhere in condition #5 or in the entire 2005 Final Order is there any language that would give legal justification or give the implication that the NMED or DOE/SNL can delay compliance with condition #5, i.e., that the first 5-year review report will not be provided before November 2017, as planned with the LTMMP, and more than 7 years later than the date of May 26, 2010 required by the 2005 Final Order.
6. Sandia failed to comply with the explicit and mandatory language of condition #5 of the 2005 Final Order. The language that says "Sandia shall prepare" places the duty squarely upon Sandia to prepare the 5-year evaluation in a timely fashion, by May 26, 2010. That is mandatory language without provision for delays.
7. The additional extension of 5 years, beyond the 7 years that have already passed since the 2005 Final Order, constitutes a modification of the general permit condition for reporting required in the 2005 Final Order. 270.42 Appendix I A.4.b.
8. The 7 year extension of time to provide the 5-year evaluation report is an impermissible modification of the 2005 Final Order for Corrective Action for the MWL dump. The Modification of Module IV of Sandia's permit was accomplished by the 2005 Final Order. A change to the 2005 Final Order as a part of the SNL Permit requires a permit modification request from Sandia to NMED for modification of the 2005 Final Order. It would then be noticed for the public with opportunity for comment and a possible public hearing upon request. Extension of a final compliance date requires a Class 3 modification. 270.42 Appendix I A. 5.b 9. The DOE/SNL should have at least made a Level 2 modification request for an extension of the time period to provide the 5-year report to the NMED. No such modification request has been made.
10. NMED determined out of thin air and without regulatory basis that the first five-year period will begin upon NMED approval of the LTMMP (Kieling October 2011).
11. On May 9, 2012 Citizen Action made a public records request to NMED for the 5-year review extension as follows:
Provide all documents upon which the New Mexico Environment Department relies for its interpretation that the May 26 2005 Final Order provides for the Sandia National Laboratories (SNL) to perform a 5-year review of the MWL dump after approval of the Long-term Monitoring and Maintenance Plan.
Provide any requests by SNL for that interpretation of paragraph 5, p. 5 of the Final Order.

Provide any letter of approval furnished to SNL for that interpretation.

Provide any notice furnished to the public for that interpretation previous to NMED approval.

12. NMED response to the public records request was to state that there were no documents.

Conclusion

Citizen Action requests that NMED do the following:

1). Immediately enforce the 5-year review requirement of condition #5 of the Final Order; 2). Stay the LTMMP until such time as the 5-year review has been completed and the review has been made available to the public as provided for in Condition #5; 3).Order the LTMMP extension language for the five-year review be withdrawn from the LTMMP, and; 4). NMED strictly enforce Condition #5 at all times in the future.

Sincerely,

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Before the New Mexico Environment Department

February 8, 2008
Citizen Action Comments Re: Sandia National Laboratories (SNL), New Mexico March 2006 Request for Corrective Action Complete No Further Action (NFA) Status
(Class III Permit Modification March 2006)

Citizen Action is opposed, with a few exceptions, to the list of 26 Solid Waste Management Units (SWMUs) proposed for No Further Action (NFA) at Sandia National Laboratories (SNL or Sandia). Citizen Action requests an evidentiary public hearing in this matter because NMED/SNL originally asserted that this is a Class III Permit Modification (March 2006) to the SNL Resource Conservation Recovery Act (RCRA) Part B Permit.[1] Now the above caption is stated as a request for Corrective Action Complete, but the fact remains that the RCRA Part B Permit must be modified to accomplish this action. The Consent Order for the closure of the SWMUs does not meet the requirements of 40 CFR 270.1(c)(7) for an enforceable document. The SWMUs are actually for the most part "regulated units" that must be closed under the requirements of 40 CFR Part 264 Subparts F and G with well monitoring network requirements in place.

The numerous SWMUs at Sandia include locations where billions of gallons of liquid wastes were disposed of into engineered cisterns, seepage ponds, infiltration trenches, drainlines, etc. The SWMUs are toxic chemical and radioactive waste legacy left from the production of nuclear weapons. Sandia wishes to leave the contamination in place above the most productive portion of Albuquerque's precious drinking water aquifer.

Indeed, the groundwater may already be contaminated but is unnoticed because of Sandia's failure to install the reliable networks of monitoring wells that are required by federal law, the laws of New Mexico and Department of Energy Orders.

These SWMUs contain some of the most dangerous contaminants on the planet. There exists no technical basis for the placement of these SWMUs for No Further Action status. In most cases, DOE/SNL can only speculate as to the volume of hazardous wastes, radionuclides and the total volume of liquids that may have been discharged into septic systems, seepage pits. Statistical knowledge of contaminant population is not acceptable to show that a site has been fully characterized with

[1] Citizen Action disagrees that Module IV is a part of the SNL RCRA Part B permit.

respect to Contaminants of Concern (COCs). The vertical and horizontal extent of contamination must be measured with properly installed well monitoring networks at the SWMUs.

The 26 dumps that are currently proposed for No Further Action (NFA) status individually and collectively pose danger to the health of Albuquerque's residents from solvents, metals and radionuclides they will drink, inhale and ingest from the groundwater, air and soil. In order to qualify for NFA status it must be shown that there are no releases. This cannot be demonstrated for the SWMUs at issue.

Many of the SWMUs were designed to dispose of hundreds of thousands of gallons of liquid radioactive and hazardous wastes on a daily basis from Sandia's research laboratories and nuclear reactors.

Many of the unlined, unmonitored SWMUs are described as septic systems with tanks and drain fields. The septic systems carried far more danger than human excrement. A short list of what Sandia plans to leave above Albuquerque's drinking water without groundwater monitoring or remediation are cyanide, hexavalent chromium, arsenic, selenium, cadmium, beryllium, solvents like acetone, toluene, methylene chloride, TCE, PCE, high explosives compounds, dozens of radionuclides like tritium, U-235, U238 and many others radionuclides that are not disclosed, but certainly include isotopes of Plutonium, Americium, Strontium-90, Cesium-137 and others.

During their operating lifetimes, individual SWMUs received discharges of liquid wastes that could annually amount to tens of millions of gallons, but the amounts are most often not provided. Collectively, billions of gallons of toxic radioactive liquid waste has been discharged beneath Sandia without groundwater monitoring networks in place to investigate movement of the contaminants to the groundwater beneath the locations of the SWMUs.

NMED was cognizant in 1997 of the need for groundwater characterization:

"Over 20-30 year periods, the larger discharge rates reported for some of these smaller septic systems appear to be sufficient to drive contaminated liquids to the [ground]water. Additionally, a number of small septic systems are located in canyon or pediment areas where the unsaturated zone is made up chiefly of permeable gravel, sand, and potentially permeable fractured bedrock, and where groundwater is relatively shallow. There is certainly potential in these cases that hazardous constituents such as VOCs and cyanide) can cause ground water to become contaminated to unacceptable levels."
"Therefore, HRMB will not approve NFA status for any septic system without ground-water characterization..."

The volume of liquid discharges and true nature of the contaminants in these SWMUs are not presented. The dismal absence of record keeping for the liquid discharges demands that groundwater well monitoring networks be provided for the SWMUs.

Unfortunately, adequate characterization of the groundwater has not been achieved for most of the 26 SWMUs. The potential for groundwater contamination from the enormous annual liquid discharges stretching over 50 years is required to be monitored by 40 CFR 264.90-.100 (Subpart F) for closure of these facilities because Sandia is seeking a Part B RCRA Permit. The SWMUs show statistically significant evidence of contamination but lack both detection and compliance monitoring programs required under RCRA 40 CFR 264 Subpart F.

Where monitoring wells do exist they are most often very distant from the SWMU that is to be monitored. In one instance, contamination from a SWMU was "watched for"by a monitoring well TJA-6 that was upgradient from SWMU 46!! Monitoring wells must be at the release sites to measure contamination at the various SWMUs. A specific network of monitoring wells is necessary at the location of each SWMU. Monitoring wells can not be claimed for SWMUs that exist at other locations distant from the release. The monitoring wells have to be close to the release for early detection. That is also required by DOE Orders.

The descriptions of the SWMUs are too vague for the public to determine whether the proposed NFAs are safe. Generally, the Fact Sheet fails to present information such as: exact types of Contaminants of Concern (COCs) and their volumes; the locations of drain fields on maps; the depth of septic tanks, seepage pits, piping, and drain systems; the positions of monitoring wells if they exist; drilling methods; type of well construction; depth to ground water; statistical water sampling data; direction of the flow of groundwater at the SWMU locations; volumes of waste water and the wastes discharged. Typical descriptions of the COCs gives no breakdown for the types of "radionuclides" that are at the various SWMUs. Apparently, Sandia has no intention of protecting the public from radionuclide contamination. DOE Order 450.1 is ignored.

Often, the NFA status relies upon the collection of soil and septic samples at the current time from the SWMU sites that have no bearing on the hazardous wastes that were released over five decades of use and which may already have reached groundwater or have plumes on the way. The knowledge of groundwater contamination does not exist because the required well monitoring networks to detect contamination are not in place.

Sandia's claims of "characterization" and "remediation" in compliance with state and federal regulations for many of the 26 SWMUs can be viewed at a minimum as gross public deception.

The information provided in the SNL Fact Sheet is quite deficient. The supporting documentation for the SWMUs should have been provided in electronic format or made physically available in Albuquerque.

Sandia is ignoring the importance of compliance with DOE Orders for protection of the public from radioactive contamination. The DOE seeks authorization from NMED to leave the wastes in place at the various SWMUs. If authorization for NFA status is given by NMED, Sandia will never address the protection of the public from the radionuclides contained at the SWMU sites. NMED should file a complaint with the New Mexico Attorney General, the DOE Inspector General and the US Attorney that DOE is failing to comply with DOE Orders 5400.5, 450.1. Sandia has made the claim that it is incompliance with DOE Orders in other documents for closure requirements under DOE Orders. (Corrective Measures Study for the Mixed Waste Landfill May 21, 2003). No such compliance in fact exists.

There is no regulatory authority under RCRA for the SNL RCRA Draft Permit to now include the SWMUs as a part of the RCRA Draft Permit. Neither do the SWMUs qualify for inclusion in the RCRA Draft Permit. Most of the SWMus were in operation in December 1988 after the September 1988 EPA declaration in the Federal Register that Mixed Waste Landfills would have to comply with Part A and Part B permitting requirements once their State was authorized to regulate mixed waste. The SWMUs received both mixed waste and hazardous waste during the period July 26, 1982 to December 1988 making them "regulated units" under 40 CFR 270.1 and 40 CFR 264.90. On or about July 25, 1990, New Mexico received its authority to regulate mixed waste. SNL never submitted a RCRA Part A application or a Part B application for the SWMUs within the 12 month time period required at the latest by July 25, 1991.

Under the provisions of RCRA, the SWMUs lost or lacked interim status for operation. Owners of land disposal units were required to submit a Part B permit application within one year after the state's radioactive mixed waste authorization or lose interim status. NMED gained status mixed waste authorization on July, 25, 1990. The SWMUs did not submit a Part B application within one year of that date and lost interim status. The SWMUs was required to immediately close by either clean closure, submitting a post-closure plan, or a document in lieu thereof because it did not maintain interim status and lost interim status if it had it at all. None of this was accomplished and the SWMUs remain as illegally operating units to the present time without a closure plan, post-closure plan and in non-compliance with the provisions of 40 CFR 264 Subpart F. The SWMUs are still required to close under the provisions of 40 CFR 270.1.

The SWMUs requires closure, a post-closure plan and a post-closure permit or an enforceable document "in lieu thereof." Post-closure plans must be provided for the SWMUs because they are not clean closed. (40 CFR 264.118, 265.118(e)(1) and (2)). No closure by removal or decontamination has been demonstrated for the SWMUs.

Sandia should furnish the regulatory history of each SWMU. Many of the "SWMUs" were actually "regulated units" as landfills under 40 CFR 270.1 (c) that operated to receive liquid or solid hazardous wastes after July 26, 1982.[2] 40 CFR 260.1 defines a landfill as "a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit."[3]

At least by 1 year after 7/25/90, when NMED obtained HSWA authority, these regulated units were required to be included on a Part B RCRA Permit application. Otherwise these regulated units were required to clean close or submit a post-closure permit or obtain documents in lieu thereof. (40 CFR 270.1 (c)(7)). There is no evidence in the record here that Sandia complied with RCRA permit requirements or that NMED enforced permit or post closure requirements for these SWMUs. Closure of the "SWMUs" under corrective action (40 CFR 264.101) is an evasion of the clean closure or post-closure permit requirement for these regulated units. Long-Term Monitoring and Maintenance requirements are also being evaded by Sandia by reliance upon the SWMU designation of Module IV that was not effective until 1993.

Generally, the decision to close the 26 SWMUs as needing No Further Action (NFAs) is based on risk assessments that are riddled with insufficient data and instead are statistical manipulation of standards of risk. Albuquerque's residents require "residential" standard for the quality of their drinking water. Instead, the 26 SWMUs along with possibly hundreds of other SWMUs closed in the past, threaten air, soil and water with the "industrial" standard. The industrial standard leaves the toxic and radioactive wastes in place in the center of a major metropolis of over 600,000 persons. Toxics like polychlorinated biphenyls (PCBs), cyanide, arsenic, mercury, beryllium, depleted uranium, cadmium, hexavalent chromium (Erin Brokvich), lead, toluene, trichloroethene (TCE), tetrachloroethene (PCE), acetone, benzene and dozens of radionuclides of undisclosed types are present.

The industrial standard leaves everyone, especially children, at higher risks of cancer, disease, and birth defects. Sandia has failed to consider the operation of Executive Order

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[2] The regulated units would include SWMUs: #4 (operation until 1992); #49 (occupied until 1988); #52 (operation until 1992); #91 (operation until 1991); #101 (operation until 1994); #138 (1991); #140 (1991); #147 (1991); #149 (1993); #150 (1980s operation); #154 (1993); #161 (1993); #196 (1989); #233 (1993); #234 (until early 1990s); #1090 (until early 1990s); #1094 (still active- RCRA permit in place?); #1116 (still active).

[3] 40 CFR 260.10 "Disposal means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

"Disposal facility means a facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure. The term disposal facility does not include a corrective action management unit into which remediation wastes are placed."

13045 that requires federal agencies "to identify and assess environmental health risks and safety risks that may disproportionately affect children."

The industrial level proposed for cleanup of the Sandia SWMUs amounts to leaving the wastes in place and allowing the public to bear the costs of disease and family tragedy. The SWMUs are considered in piecemeal fashion without performing a full risk assessment to present and assess overall risks to the public, workers and environment from cumulative operations at the release sites for air, soil and groundwater pathways. The proposed industrial standard of cleanup for many of the SWMUs does not recognize that the sole source drinking water aquifer beneath SNL must provide a residential standard of drinking water. All SWMUs should be remediated to at least the residential standard to protect Albuquerque's drinking water from the cumulative risks of these many areas.

RCRA identifies high levels of contamination measured in the boreholes of SWMUs as "Statistically Significant Evidence of Contamination." 40 CFR §264.98 requires for SWMUs with "statistically significant evidence of contamination" a **Detection Monitoring Program must be put into place** with the following pertinent parts:

> "(2) The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well as the compliance point within a reasonable period of time after completion of sampling. The Regional Administrator will specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground-water samples."
>
> "(g) If the owner or operator determines pursuant to paragraph (f) of this section that there is statistically significant evidence of contamination for chemical parameters or hazardous constituents specified pursuant to paragraph (a) of this section at any monitoring well at the compliance point, he or she must:
>
> (1) Notify the Regional Administrator of this finding in writing within seven days. The notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;"
>
> "(4) Within 90 days, submit to the Regional Administrator an application for a permit modification to establish a compliance monitoring program meeting the requirements of §264.99. The application must include the following information:
>
> (i) An identification of the concentration of any appendix IX constituent detected in the ground water at each monitoring well at the compliance point;
>
> (ii) Any proposed changes to the ground-water monitoring system at the facility necessary to meet the requirements of §264.99;"

1. **SWMU 4 -- LWDS Surface Impoundments/Liquid Disposal System** consisted of 3 SWMUs that operated from 1963 to 1992 receiving 12,000,000 gallons of radioactive effluent that also contained 17 RCRA listed metals and PCBs, and 9 Volatile Organic Compounds (VOCs) and 7 Semi-volatile Organic Compounds (SVOCs). Coolant water was discharged from the SERF reactor. Coolant water discharges have a history of being contaminated by hexavalent chromium which was present at SWMU 4. PCBs were identified in the southwest corner of Impoundment 2. Especially high values for Beryllium were measured (4.9 mg/kg). The wastes from 1963 to 1967 were pumped to a drainfield, but that is not identified on Figure 3. The drainfield collapsed and wastes were then sent to surface impoundments which are SWMU 4. SWMU 4 disposal site operated illegally by receiving known RCRA listed hazardous waste without obtaining a RCRA permit. A post-closure permit is necessary. The surface impoundments operated from 1967 to 1992. These impoundments required RCRA permits. A single monitoring well LWDS-MW2 was installed in 1992 ~150 ft from the center of the impoundments, but no discussion of the direction of groundwater travel, well construction, development information or monitoring data for SWMU 4 is provided in the December 2007 Fact Sheet/Statement of Basis (SNL March 2006 Request for Corrective Action Complete (No Further Action) Status. The monitoring well does not meet the requirements for point of compliance a described in recent letters from James Bearzi, Chief of NMED Hazardous Waste Bureau. The well has a stainless-steel well screen that is no doubt corroded and not capable of detection of contamination at present. No monitoring wells are at the release site for contamination at SWMU 52. A specific network of monitoring wells is necessary at the location of SWMU 52. Monitoring wells can not be claimed for SWMU 52 that exist at other location distant from the release. The monitoring wells have to be close to the release for early detection. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 4 with at least one upgradient and three down gradient wells. Human and ecological risks are not acceptable to release this SWMU for NFA status.
2. **SWMU 5, LWDS Drainfield** The drainfield is also known as Tank 3. It operated from 1962-1967 and collapsed. It contains VOCs, SVOCs, RCRA metals and radionuclides. SWMU 5 has not been properly investigated for contamination as it must be because SNL is applying for a RCRA permit. A monitoring well TAV-MW6 exists within the boundaries of SWMU 5. The construction of the MW6 is not provided and no data is presented for the well. The MW6 cannot be found in Figure 4.6 Site Map showing Drainfield Monitoring Well. The flow direction of groundwater is not provided. An earlier well, LWDS-MW1 installed in 1992, supposedly shows evidence of releases from the site. The Trichloroethene (TCE) was above the EPA Maximum Contaminant Level (MCL) in water samples collected from well LWDS-MW1. MW1 is also not identified as to its location in the Fact Sheet. Cobalt-60 and Cesium-137 were found in drainfield sampling.
3. **SWMU 46, Old Acid Waste Line Outfall** was an outfall discharge point covering 2.5 acres that connected to several buildings that dumped wastewater into three 700 ft long unlined, earthen ditches. There is no reason for SWMU 46 to be qualified for No

Further Action status at this time. The site has not been properly studied for the remedy decision.

The years of operation of SWMU 46 were from 1948 through late 1974. The location is on the northern rim of the Tijeras Arroyo. The depth to groundwater at this location is critical but not stated. The amounts of discharge during the entire period of operation is not provided. In the 1960s, an estimated **130,000 gallons per day** were discharged into the ditches including VOCs, SVOCs, RCRA metals and radionuclides. The actual amount of discharge of liquid waste should be calculated. 130,000 gallons per day discharge for one year is **48,000,000 gallons per year**. How many years did this continue? What total volume of contaminated waste water was disposed of? What quantity of contaminants were released?

The current condition of the ditches is not sufficiently described nor are they characterized for the wastes in each ditch. The types and amounts of RCRA wastes within the 3 ditches have only been sparsely sampled. Only soil-vapor sampling at two Vapor Wells has been conducted and groundwater monitoring is required due to the significant evidence of contamination present at SWMU 46. There is a claim of a monitoring well TJA-6 but that well cannot be located for SWMU 46 on Figure 5. Direction of groundwater flow is not indicated either. The single groundwater monitoring well, TJA-6 is claimed for SWMU 46, but no information about the construction details, depth of the well or sampling data is provided in the fact sheet. **TJA-6 is greater than 500 ft from SWMU 46** and thus not at the point of compliance for SWMU 46. No data for VOCs is presented from TJA-6. The well is upgradient to the direction of the flow of groundwater because it lies to the south of SWMU 46. Groundwater flow direction is not provided on Figure 18. RCRA requires one upgradient and three downgradient monitoring wells at the point of compliance for SWMU 46. Nor are the locations of where the septic tanks were or the location of the drain fields or the direction for the flow of groundwater is provided on Figure 5. TJA-6 is claimed to be part of the Tijeras Arroyo Groundwater (TAG) monitoring, however the location and details of the TAG well monitoring network is not provided on Figure 5. Nor is there any indication that the TAG network is at the point of compliance for SWMU 46.

The contaminants identified contained mercury compounds, cyanide, 17 VOCs including high levels of Trichlorethene (TCE) in soil gas 115 ft below ground surface, SVOCs, PCBs, RCRA metals, and radionuclides. No RCRA background well with 3 downgradient monitoring wells are in place as required. Abbreviation VCA is used but not in the Table of Abbreviations. September 1994 soil samples were for a storm run-off ditch and did not address the acid waste line discharges. TCE levels from soil vapor sampling at 30 ft depth in 1998 were at 55 ppb by volume. According to another NMED report, Henry's Law predicts a concentration of TCE contamination in groundwater of > 100 ppb, more than 20 times higher than the Maximum Contaminant Level (MCL) for drinking water standards. Soil Vapor sampling from April 2001 through March 2002 showed enormous concentration levels of TCE at levels up to 46,000 ppbv at a depth of 115 ft. These high values are alarming and require serious investigation of contamination in groundwater. At LANL for MDA H measurement of TCE at 2.6 ppb, NMED

demanded a remedy of complete encapsulation. One wonders how NMED can even dream of releasing this SWMU for NFA status with this level of TCE contamination and no groundwater monitoring network in place. This is significant evidence of contamination of the groundwater. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 46 with at least one upgradient and three down gradient wells. This is especially critical given the enormous amount of liquid discharge on a daily basis that was present at SWMU 46. Cancer risks for residential land-use are unacceptable. Human health and ecological risks are not acceptable to release this SWMU for NFA status. A RCRA Compliance Groundwater monitoring program is required for SWMU 46, which lacks investigation of contamination at the groundwater, as defined in the Consent Order.

4. **SWMU 49, Building 9820 Drains, Lurance Canyon** contains RCRA constituents including VOCs, SVOCs, metals, hexavalent chromium, cyanide, High Explosive (HE) residues and radionuclides. There is inadequate characterization of SWMU 49 and it should not be provided NFA status. Potential surface contamination from explosives testing was not included as part of the assessment activities as it should be. The volumes of discharges from a former trailer used as a darkroom and Bldg. 9820 are not described for the period of operation (also undescribed) of the site. Although the site was supposedly selected for groundwater monitoring. Monitoring well CYN-MW5 is remotely located over 1350 ft from SWMU 49. There is no compliance with the requirement for well monitoring at the RCRA point of compliance. Flow direction of the groundwater is not indicated so one can not determine that MW5 was placed correctly. No background monitoring well is present. Even though the monitoring well is too distant from SWMU 49, CYN-MW5 detected **hexavalent chromium** at a level that exceeded the approved regulatory background concentration level. All Barium and one hexavalent chromium concentration exceeded NMED background values. This was statistically significant evidence of contamination and monitoring wells should have been placed at the site of SWMU 49 for detection monitoring at the point of compliance. Contrary to DOE/SNL's assertion, SWMU 49 has not been characterized or remediated in accordance with state and/or federal regulations. The required monitoring has not been performed and there has been no remediation whatsoever.

5. **SWMU 52, Liquid Waste Disposal System (LWDS) Holding Tanks** consists of holding tanks, piping (SWMU 52), a drainfield (SWMU 5) and two surface impoundments (SWMU 4). The tanks were designed to receive liquid wastes from the Sandia Engineering Reactor Facility (SERF) main reactor, experimental facilities, and support facilities. From 1963 until 1971, the system received approximately 19,000,000 gallons of waste water contaminated with approximately 35 curies of radionuclides. Non-radionuclide discharges to the surface impoundments continued until 1992. Contaminants include radionuclides, organic solvents, heavy metals and PCBs. No monitoring wells are at the release site for contamination at SWMU 52. A specific network of monitoring wells is necessary at the location of SWMU 52. Monitoring wells can not be claimed for SWMU 52 that exist at other location distant from the release. The monitoring wells have to be close to the release for early

detection. The volume of wastes discharged by the LWDS during the years 1971 until 1992 is not described. The total years of operation for the LWDS is not described in the Fact Sheet. The actual sources of the discharges are not described neither for the tanks or the surface impoundment. The tanks, drainfield, and surface impoundment received radioactive and RCRA wastes including mercury, VOCs and SVOCs, without logs to record nature, amounts, frequency and activity measurements. The age and ASME qualifications and condition of the tanks is not provided. Surface impoundments operating to receive waste after July 26, 1982 were required to have a RCRA Part B permit. SWMU 52 must be closed as a landfill under 40 CFR 264 Subpart N along with the tanks and collapsed drainfield which constitute landfills.

Eight RCRA listed metals (arsenic, barium, beryllium, cadmium, total chromium, copper, nickel and vanadium) exceeded background values. No statement is provided as to the margin of exceedance. Three VOCs and two SVOCs were detected in soil samples. The amounts detected are not provided. TCE has been detected at the site at concentrations from 12 to 16 ppb along with other organic contaminants, but the extent of the vertical contamination cannot be known unless monitoring wells are installed at the location. Tritium and Thorium-232 exceed background levels. All this is significant evidence of contamination requiring groundwater compliance monitoring under 40 CFR 90-.100. No groundwater wells are in place as required. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 52 with at least one upgradient and three down gradient wells. The assertions that the site has been characterized and remediated are fatuous. Cancer risks for residential land-use are unacceptable. Human and ecological risks are not acceptable to release this SWMU 52 for NFA status. SWMU must be characterized and have groundwater monitoring at the dumpsite.

6. **<u>SWMU 68, Old Burn Site</u>** The 6.5 acre site is poorly described for the numbers of tests that were performed, the volume and types of wastes produced, and the amounts of contaminated water disposed of at the site over 14 years of operation from 1965 to 1978. Although some remediation activities have been conducted for radiological constituents, the RCRA Facility Investigation confirmatory sampling methods and results are not presented with respect to how sampling was accomplished, where it was performed, and depth of sampling. There were pool fire tests conducted at this site. Water remaining after the burns was drained to the southwest of the facility. Beryllium, depleted uranium, thorium and magnesium was present in some of the weapons tested. Four soil samples taken in 1989 (Table A-1 p. A3) show the presence of Pu-238, Pu-239 and Am-241, Sr-90, K-40, Cs-137, Ba, Pb, As and Be. Removal for lead was performed but the possible presence of transuranics left at the site is not discussed. The site is above the acceptable risk value for residential use. The groundwater pathway for contamination was not considered. Groundwater depth is estimated to be 123 ft bgs. An appropriate network of monitoring wells must be installed at SWMU 68. Wind, surface run-off, food chain uptake and transformation/degradation with ingestion, inhalation and dermal-direct gamma exposure are all possible. No data exists on the food chain uptake although numerous

contaminants are cited for bioaccumulation at VII.2.1. Only modeling has been performed without collection of field data and the HQs for plants exceeded unity for arsenic, barium, thallium and vanadium. A HI of 56 was modeled for the deer mouse. At VII.3.5 it is stated that "Many uncertainties are associated with the characterization of ecological risks at SWMU 68." The uncertainties include assumptions and the use of maximum measured concentrations to evaluate exposure and risk. All this contradicts the statement by SNL that risks are expected to be low for this site.

The coverage for RCRA contaminants beneath the site is less than persuasive given that six VOCs and five SVOCs were detected but without data respecting the levels and the depth of contamination. Jet petroleum-4 fuel was used for burn tests. Is a plume of jet fuel present in the regional aquifer from spills or dumping excess fuel? The fact that excess cancer risks are unacceptable for residential use requires that the details from investigation be more fully presented to the public. Although "predictions" of risk to the deer mouse are considered there is no field data presented for either plants or animals for actual exposure. This site should be more fully characterized including a network of groundwater monitoring for possible RCRA contamination that may exist beneath the site due to continuous volumes of water being released during testing events.

7. **SWMU 91, Lead Firing Site** conducted testing from 1962 through the late 1980s releasing a large mass of lead as part of the testing. This 20 acre site disposed of wastes into 1) the Test Trench Disposal Area 2) the Southern Burial Area and 30 the Northern Burial Area. This 20 acre site amounts to multiple landfills operating to receive waste after July 26, 1982 that was required to have a RCRA Part B permit. SWMU 91 must be closed as a landfill under 40 CFR 264 Subpart N as a landfill. Numerous burial sites exist within the 20 acre dump. Groundwater monitoring is required as part of that closure. The number of tests performed involving the masses and types of material are not provided. The mass of differing materials used in the tests needs to be quantified.

The lead, arsenic, beryllium, cadmium, selenium, silver, barium and chromium were detected "above background values." It must be presented how far above background values all of the RCRA metals were detected. No subsurface testing has been performed below a depth of 5 ft although contamination with RCRA metals and radionuclides such as U-235, U-238 Cs-137, Thorium-232 have been detected in these samples. Contamination must be investigated at depths greater than 5 ft as tests were conducted in a trench 6 to 8 ft deep. Testing and monitoring at greater depths is required under RCRA to determine if groundwater contamination is present. The travel of the fine particulates of RCRA metals and radionuclides into the air pathway should be, but is not considered. Figure 10 does not provide the proximity to lands that are offsite of SNL. Figure 10 shows no sampling locations at the site of SWMU 91. Testing of the offsite lands to the west and south should be required due to the proximity of this site and the lengthy period of explosive operations that volatilized numerous RCRA metals and radionuclides and may have resulted in off-facility deposits. The ecological risks stated for SWMU 91 are not based on factual field data from plants and animals. The proximity of five other

SWMUs should be examined as to the potential for enhanced migration of contaminants and cumulative risk from all the five SWMUs. Cumulative risks from the five SWMUs in close proximity need to be considered. Cancer risks for residential land-use are unacceptable and need to be quantified for all the contaminants identified and remaining at the site. SNL is contaminating water to be used for residential purposes at an industrial level of contamination at SWMU

8. **SWMU 101, Building 9926 Explosive Contaminated Sumps and Drains** in the Coyote Test Field area had 3 seepage pits and a dry well that operated from 1967 to 1991. This is a RCRA regulated unit without monitoring wells. The volume of liquid discharges to the sumps and drains from Building 9926 and the explosive room in Building 9926A need to be described by volume of liquid wastes or the amount of the contaminants. Distance to groundwater is not described for the location. "Seepage pits" are present. The nearest groundwater monitoring well is ~0.7 mi southwest of the site. But the direction of the flow of groundwater "is believed to be" generally to the west northwest in the vicinity of this site. The dump received RCRA contaminants illegally without a RCRA permit. SWMU 101 must have network of monitoring wells put in place because releases have been identified that include VOCs, SVOCs, cyanide, chromium and selenium. Methanol, TCE, toluene, acetone and isopropyl alcohol, hydrochloric, nitric and sulfuric acid along with high explosive compounds were handled. Operational records were not available. High levels of PCE was identified in soil gas. Tritium is above background levels although the amount is not described. U-235 and U-238 are above background levels. Groundwater monitoring has not been performed to further characterize the possible movement of this contaminant. The depth of soil samples has been shallow to no more than 26 ft. Testing has been at a sparse number of locations. The information presented for soil sampling only says what was tested for- not the levels that were found. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 101 with at least one upgradient and three down gradient wells. Significant evidence of contamination is present for PCE. Estimates of the risks at SWMU 101 cannot be properly estimated given the lack of RCRA required well monitoring. The ecological risks stated for SWMU 101 are not based on factual field data from plants and animals. Human and ecological risks are not acceptable to release this SWMU for NFA status because there is insufficient data to characterize the site.
9. **SWMU 116, Building 9990 Septic System** in the Coyote Test Field does not identify the use of Bldg. 9990 and the volume of waste water and quantities of contaminants that discharged. Bldg. 9990 operated from 1971 to ~1994 and discharged RCRA metals, hexavalent chromium, cyanide, PCBs, High Explosive compounds, VOCs, SVOCs and radionuclides to a septic tank and seepage pits. SWMU 116 has a groundwater monitoring well CTF-MW1 that is 500 ft from SWMU 116. CTF-MW1 is too far for the point of compliance for a monitoring well. Although the monitoring well is 500 ft from the SWMU to the south samples show that selenium was detected in seven of eight groundwater samples above background levels. No background well is present for SWMU 116. No flow direction is indicated on the Fig. 13 to determine if CTF-MW1 is downgradient from SWMU 116. No RCRA well

monitoring network of 1 upgradient and 3 down gradient is in place despite the significant evidence of contamination, especially given that selenium could be entering the groundwater beneath the SWMU. The claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network to characterize the contamination in the groundwater at SWMU116. Human and ecological risks are not acceptable to release this SWMU for NFA status.

10. **SWMU 138, Building 6630 Septic System.** SWMU 138 received RCRA metals, High Explosive compounds, VOCs, SVOCs and radionuclides from its construction in 1959 until ~1991. The SWMU has not been adequately characterized for NFA status. Since it received hazardous waste after July 26, 1982 a RCRA permit was required but not obtained for SWMU 138. SWMU 138 is required to close with a post-closure permit. The aqueous discharges from Bldg. 6630 are not described for volume or types of waste constituents. Septic Tank sampling detected PCBs. Soil sampling was only conducted to a depth of 16.5 ft. The soil samples detected three VOCs, three SVOCs three RCRA metals above approved background levels. Although "statistically significant evidence of contamination was detected at SWMU 138, no groundwater monitoring has been conducted for the site although compliance monitoring is required under RCRA. The claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network to characterize the contamination in the groundwater at SWMU 138. Human and ecological risks are not acceptable to release this SWMU for NFA status.
11. **SWMU 140, Building 9965 Septic System, Septic Tanks, and Drainfields** The abandoned drain systems and seepage pit and drywell are not described as to depth. The volume of discharges to the areas are not described. The drain systems and seepage pit and drywell received RCRA hazardous waste without obtaining a permit. No well monitoring has been provided as should be because significant evidence of contamination exists at the site. Four VOCs, cyanide, three RCRA metals and U-235 and U-238 were detected in soil samples. Septic tank sampling identified VOCs (TCE), pesticides, cyanide, oil and grease. Well monitoring with upgradient and downgradient monitoring wells are needed at both the locations of the seepage pit and the drywell. The two sites are separated by approximately 125 ft. The data to evaluate risk is not present. The five assessment investigations do not provide the necessary knowledge to characterize nature and extent at the site for potential or existing contamination of the groundwater.
12. **SWMU 147, Building**

RCRA metals, VOCs, HE were received by this site from 1959 to the late 1980s during the period that a permit was required to operate. Three drainfields were present. There are no monitoring wells present. The amount of liquid discharge is not provided. The long period of use indicates that substantial contamination was received for liquid waste and could have entered the groundwater at this location. Collecting septic samples at this time has no bearing on the wastes that were released over several decades of use. The depth to the groundwater is not stated. The sampling was done at shallow levels. Most of the data is over a decade old and does not include necessary groundwater monitoring data.

The claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network to characterize the contamination in the groundwater at SWMU 147. Human and ecological risks are not acceptable to release this SWMU for NFA status.

13. <u>SWMU 149, Building 9930 Septic System</u>
operated from 1961 to ~1993. Discharge volumes are not provided. This was a RCRA regulated unit and needs to close under post-closure requirements. Contaminants of Concern are VOCs, SVOC,s, High Explosive compounds, RCRA metals, hexavalent chromium, cyanide and radionuclides. Tritium was detected above background values. Most data collected is from 1994. A groundwater monitoring well CTF-MW3 is installed more than 300 ft away from SWMU 149 as shown by Figure 18. MW3 is not at the RCRA point of compliance. MW3 detected five VOCs, RCRA metal selenium, cyanide. The levels of detection for the five VOCs are not provided. The data necessary to evaluate risk for SWMU 149 is not provided. Compliance monitoring is necessary because contaminants were detected and the well is 300ft away. It is unknown if well MW3 is downgradient of SWMU 149. Even if downgradient, the distance of the monitoring well MW3 from SWMU 149 is too great. No basis exists for providing NFA status.

14. **<u>SWMU 150, Building 9939/9939A Septic System, Septic Tanks and Drainfields</u>**
operated from 1974 to the early 1990s. Discharge volumes for liquid waste are not provided if the Fact Sheet. A Work Plan for Bldg. 9939A stated that estimated effluent discharge rates ranged from 20 to 400 gallons per day. Assuming a 5 day-per-week, 50 week-per-year operation, the total amount of effluent discharged from the facility would have ranged from 80,000 to 1,600,000 gallons. (Responses to Comments January 1997, p. 12) This was a RCRA regulated unit and needs to close under post-closure requirements. No monitoring wells exist at the site. Depth to groundwater is not provided for the location. Contaminants of Concern are RCRA metals, PCBs VOCs, SVOCs, and radionuclides. Four VOCs were detected in soil samples, but no data is provided for the detection levels. "A deep sample was not collected from the seepage pit. (The maximum sample depth was only 8 ft) or the drainfield (the maximum sampling depth was only 4 ft." (Responses to Comments January 1997, p. 13). Ground water monitor wells need to be installed at this site. The nearest groundwater monitoring well, CTF-MW2 is approximately 1,950 ft northwest of the site. (Risk Assessment Report for DSS SWMU 150, p. 2-1). The data for SWMU is over a decade old. Monitoring well data needs to be provided before closure of SWMU 150. A septic leachate plume considered to exist was not investigated for its extent. No information is provided for the radionuclides detected.

The claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network to characterize the contamination in the groundwater at SWMU 150.

15. **<u>SWMU 154, Building 9960 Septic System, Septic Tanks and Drainfields</u>**
SWMU 154 is located in the Coyote Test Field and operated between 1965 and ~1993. SWMU is a regulated unit and requires a post-closure permit. This was a drain system for high level explosives waste that included approximately six seepage pits. A March 1,

2006 NMED notice RE: Fee Assessment and Notice of Approval states that a new seepage pit was discovered next to SWMU 154 showing high concentrations of high explosive compounds especially 2, 4, 6 trinitrotoluene. It is not clear what the outcome of this matter was. Was the new SWMU named as required and a fee for review assessed?

The liquid discharges included RCRA metals, hexavalent chromium, cyanide,High Explosive (HE) compounds, VOCs, SVOCs, and radionuclides. The volumes of liquid discharges are not provided. A groundwater monitoring well CTF-MW2, installed in 2001, is more than 250 ft from the center of SWMU, over 400 ft from the septic system and does not meet RCRA point of compliance requirements. The borehole for the well was drilled to 190 ft bgs (below ground surface) but the borehole caved in up to 135 ft bgs. Groundwater rose to 44 ft bgs after the well was installed. One does not know if there was a perched water zone present to explain the rise in groundwater or if the depth to groundwater is very shallow at this location. The well was not repaired or replaced, no details are given about the original construction or the reliability of sampling from the well. The direction of the flow of groundwater is not provided. The data from this monitoring well is too questionable to form any basis for risk assessment.

It is concluded by Sandia that "For both the industrial and residential land-use scenario, the total HIs and estimated cancer risks are not acceptable (Table 16)." But then comes Sandia's statistical juggling act and lo and behold SWMU 154 becomes safe for industrial usage, but still not for residential usage. There is no basis for providing NFA status to SWMU 154. The appropriate groundwater investigation must be provided with 1 upgradient and minimum of 3 downgradient monitoring well network.

16. <u>SWMU 161, Building 6636 Septic System</u>
Received RCRA metals, hexavalent chromium, cyanide, VOCs, SVOCs and radionuclides from 1971 to ~1993. The septic system is a regulated unit. The volumes of liquid discharges are not provided. Depth of the septic tanks and the drainfields is not provided. Eight RCRA metals were detected in septic sludge. VOCs, and cyanide were detected in soil samples from 1994. Data for SWMU 161 is more than a decade old. No monitoring well network exists for SWMU 161 to determine if releases to groundwater occurred. Depth to groundwater is not provided.

There is no basis for providing NFA status to SWMU 161. An appropriate groundwater investigation must be provided with at least 1 upgradient and 3 downgradient monitoring well network.

17. **<u>SWMU 196, Building 6597 Cistern</u>**
This 25 ft diameter concrete-walled tank has only an unlned earthen bottom 22 ft bgs. The Cistern operated from 1978 to 1989 and received waste from the PROTO 1 facility that tested radiation effects on weapons and instruments. It also received waste as an emergency catch basin from a series of other underground storage tanks. No records of discharges were maintained. Contaminants include total petroleum hydrocarbons (TPH), VOCs, SVOCs, RCRA metals and radionuclides. Data from soil sampling shows that TPH was found at high levels of 60,500 mg/kg. U-235, U-238 and tritium were detected

above background values from the bottom of the Cistern. Five VOCs were detected. A larger drill rig was used to collect samples from 300 ft bgs and 20 ft west of the Cistern. Nine VOCs such as Tetrachloroethene (TCE), Toluene, Xylene, Methylene Chloride and six SVOCs were detected at that depth. The distance to groundwater is not provided. There is a release of contamination from the Cistern that requires groundwater monitoring wells to be placed at the site. No groundwater monitoring currently exists for the Cistern despite the TPH, VOCs and SVOCs found at a great depth below the Cistern. Backfill of the Cistern does nothing to stop the plume of contaminants that are headed for the groundwater. There is no basis for providing NFA status to SWMU 196. This is a chemically and radioactively contaminated site with the potential to contaminate the groundwater and with no monitoring in place. An appropriate groundwater investigation must be provided with at least 1 upgradient and 3 downgradient monitoring well network. Sandia provides no information as to what radionuclides were found at the 300 ft depth.

No NFA Status should be provided for SWMU 196. The SWMU needs to be remediated under post-closure mechanisms as a regulated unit.

18. <u>SWMU 223, Storm Drain System Outfall</u> Citizen Action does not oppose this NFA.

19. <u>SWMU 224, Storm Drain System Outfall</u> Citizen Action does not oppose this NFA.

20. **<u>AOC 1090 Characterization</u>** is not sufficient for this SWMU. Contaminants detected include VOCs, SVOCs, RCRA metals, barium, cyanide, U-235. The SWMU has no groundwater monitoring well. The amounts of discharges are not set forth. The SWMU operated from 1959 to the early 1990s and was thus a regulated unit that must be closed with long-term monitoring in place. This SWMU is not sufficiently characterized for NFA status and the description of operations requires groundwater monitoring.

21. **<u>AOC 1094 Live Fire Range East Septic System Lurance Canyon</u>** This system began discharges in 1983 and is still active. It is illegally operating without a RCRA permit. The COCs include RCRA metals, hexavalent chromium, cyanide, HE compounds VOCs, SVOCs, PCBs, and radionuclides. By what rationale is SNL and NMED proposing to close this operating landfill without groundwater monitoring being conducted? This SWMU is not sufficiently characterized for NFA status and the description of operations requires groundwater monitoring.

22. **<u>AOC 1095 Building 9938 Seepage Pit (Coyote Test Field)</u>** The seepage pit operated from 1971 to possibly August 2005. Operational history is not provided as are the amounts of discharges. No monitoring well is present. COCs are RCRA metals, hexavalent chromium, cyanide, HE compounds VOCs, SVOCs, PCBs, and radionuclides. This SWMU is not sufficiently characterized for NFA status and the description of operations requires groundwater monitoring.

23. **<u>AOC 1114 Building 9978 Drywell</u>** is still an active facility receiving discharges from a sink in Bldg. 9978. This is currently used as a shop and storage facility to support the ER field project operations. No RCRA groundwater monitoring is apparent for operation from 1971 and the amount and type of discharges have not been provided by the Fact Sheet. The operational history for COCs includes RCRA

metals, hexavalent chromium, cyanide, HE compounds VOCs, SVOCs, PCBs, and radionuclides. This SWMU is not sufficiently characterized for NFA status and the description of operations requires groundwater monitoring.

24. **AOC 1115 Former Offices Septic System** served the headquarters for the Solar Tower Complex. The site operated from approximately 1976 to 1979. Citizen Action does not challenge this NFA.
25. **AOC 1116 Building 9981A Seepage Pit** was constructed in 1981 and is currently active to receive cooling water from occasional tests conducted in Bldg. 9981A. COCs are RCRA metals, hexavalent chromium, cyanide, HE compounds VOCs, SVOCs, PCBs, and radionuclides. This facility is operating illegally without a RCRA Part B permit. It cannot be closed as a SWMU. It requires an operating permit, a closure plan, post-closure permit and a long-term groundwater monitoring network.
26. **AOC 1117 Building 9982 Drywell, Solar Tower Complex** is an abandoned drywell 4 ft in diameter and 11 ft deep. The condition of the drywell is not described to know if the well is even covered. COCs are RCRA metals, hexavalent chromium, cyanide, HE compounds VOCs, SVOCs, PCBs, and radionuclides. The drywell was constructed in 1980 and ceased receiving liquid wastes by August 1999. The drywell is thus a regulated unit that must close with groundwater monitoring. The SWMU is one of five shallow groundwater DSS sites that had 2-butanone soil sample concentrations above the 10 microgram/kg VOC trigger level specified in the DSS SAP. This SWMU is a regulated unit and does not qualify for NFA status. The description and history of operations and contamination requires groundwater monitoring for the COCs.

Respectfully submitted,

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This letter is to request that: 1) NMED **deny** and order withdrawal of the Draft Resource Conservation and Recovery Act (RCRA) RCRA Part B Permit for Sandia National Laboratories (SNL) (Draft Permit). 2) A Public Meeting must be provided under RCRA by SNL/DOE prior to reissuance of the Draft Permit. 3) During the pendency of public consideration of the Draft Permit, NMED should order withdrawal of the Level 3 Permit Modification for Module IV (Permit Modification) and the September 2007 SNL MWL Long-Term Monitoring and Maintenance Plan. 4) NMED should require SNL to provide the public with an informational presentation and negotiations period regarding the Draft Permit. 5) NMED should grant a further extension to the comment period, past January 17, 2008, for the Draft Permit.

Some, but not all of the reasons for this request are as follow:

Citizen Action, a public interest organization, is very interested in SNL because it is a key facility in the Department of Energy (DOE) nuclear weapons complex, and it generates and stores extremely large amounts of hazardous and radioactive wastes. Those wastes pose great threats to public health and the environment, and a stringent permit is essential to the safe operation of SNL and the protection of the public and the environment. Moreover, DOE plans for the future nuclear weapons complex provide for new and expanded SNL missions, including neutron tube production involving large amounts of tritium and releases of tritium gas. It is essential that the SNL permit has adequate safeguards for, and limitations on, the types and amounts of wastes that are generated and stored and that disposal units be prohibited. SNL has deposited large amounts of hazardous and mixed radioactive waste at various unit locations at SNL that need to be included in the Draft Permit. Water, air and soil are threatened by the lack of a comprehensive RCRA permit at SNL. The current SNL RCRA permit dates back to 1992 and is incomplete and many facilities at SNL are operating illegally without a permit.

SNL operations have created a "substantial adverse environmental impact," as defined in HWA. Hazardous and toxic, as well as radioactive, contamination has been transported, both on-site and off-site, through air, surface water and to ground water.
SNL poses an "imminent and substantial endangerment" to human health and the environment due to operations for which it has unidentified, uncharacterized RCRA generation storage, treatment and disposal waste operations, many of which are conducted without being on a RCRA Part B permit. Yet, the public has not had the opportunity to participate in negotiations between NMED and SNL. NMED and SNL have refused to provide public records to the Citizen Action and the public under both the

Public Records Act, i.e., TechLaw Reports, and numerous Freedom of Information Act requests to SNL. Citizen Action finds that an "imminent and substantial endangerment" exists from SNL operations, from the fact that:
Contaminants have been found in ground water, including PCBs, PCE, TCE, chromium and nickel at times exceeding state and federal drinking water standards;
Sandia has failed to establish monitoring for groundwater, soil and air as required by DOE Orders, the Resource Conservation and Recovery Act (RCRA) and standard industry practice. Numerous issues exist regarding the permitting process that are denying the public procedural rights under RCRA and New Mexico state law.

1. The administrative record for the Draft Permit is not complete and has not been identified as to all documents within the Administrative Record upon which SNL relies. Upon inspection of the administrative record at NMED offices on January 15, 2008, documents listed in the nearly 200 page administrative record index were not obtainable. Some examples are: An April 3,1987 Notice of Violation from NMED; A 6/12/85 "generator" document for the TTF; the 2006 file for the SNL facility; SNL/DOE has not provided the SNL documents electronically as has been done for LANL's RCRA Draft Permit. SNL Draft Permit Figures 1-2 and 6-1 are not electronically provided, but could have been. SNL Draft Permit Figures 16-2, 3, 4, and 5 for the Corrective Action Management Unit are not in the electronic record. The documents in Administrative Record Index that SNL/DOE relies upon for each of the units proposed for the SNL Draft Permit have not been designated. Citizen Action is appreciative of the fine assistance of Pam Allen, NMED Librarian, under difficult circumstances of storage and retrieval (use of ladder and lifting heavy boxes) and believes that DOE/SNL must lessen the load by providing appropriate assembly of documents as is performed for the LANL administrative record.
2. The public should not be subject to the multiple, simultaneous ongoing procedures of:
    a. the issuance of a SNL Draft RCRA Part B,
    b. a Class 3 Permit Modification for the earlier 1993 Module IV RCRA Part B permit to eliminate Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) currently contained in the Draft RCRA Part B, and
    c. the Long Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill that would possibly be part of, or affected by, the Draft Permit and the Class 3 Permit Modification.
3. Citizen Action objects to the public being put through this bizarre procedural labyrinth. These multiple processes create public confusion, defeat meaningful public participation for the various proposals and are procedurally improper. These multiple processes create inability for the public and Citizen Action to timely and fully review the various proposals. Additionally, a full review of the Draft Permit implicates and requires review of the interrelations of the Consent Order (April 29, 2004), the Permit Modification, the LTMMP, and pending items such as the Chemical Waste Landfill permit, the Notice of Disapproval for the MWL Soil Cover and various other orders of NMED for changes to the well monitoring network at the MWL that are not reflected in the LTMMP.

4. Citizen Action received no notice of any public meeting that was convened by the DOE/SNL before the submission of the current Draft Permit to NMED as is required by RCRA regulations.
5. The SNL RCRA Permit is an enormous document totaling 588 pages without the references attached and available for review on the internet as has been provided for the LANL RCRA permit. The Administrative Record Index alone is nearly 200 pages but does not separately identify the records upon which SNL/DOE rely for the Permit. In addition to the draft permit are the many hundreds of pages of the Fact Sheet/Statement of Basis for the Class 3 Permit Modification, the LTMMP, all of which need to be reviewed in relationship to the Draft Permit, in relation to each other and in relation to the Consent Order (April 2004). There is conflicting language with respect to the Consent Order contained in the other documents, as explained below. Tens of thousands of pages exist as part of the reference material related to the Draft Permit and the Class 3 Modification and the LTMMP.
6. The administrative record for the Draft Permit is not complete for review by the public. The Draft Permit that is currently pending would modify the original, existing RCRA Part B permit that was issued in 1993. <u>The 1993 RCRA permit has not been posted on the NMED or SNL websites</u> to see the document as it currently exists and compare it to the subsequent modifications including the one that is now proposed. The public has no way of comparing the Draft Permit to the 1993 Module IV "permit." Citizen Action and the public are further prevented from review of the 1993 Permit Modification and revisions in relation to the LTMMP.
7. Since our earlier request for a time extension of the Draft Permit, SNL issued a request for a Level 3 Permit Modification for Module IV (Permit Modification) to the SNL RCRA Part B permit (Draft Permit). The Draft Permit is not even in any finalized form at this point for consideration as a permit because changes will obviously be required if the 1993 Module IV is modified. The 1993 Module IV also needs to be posted on the website to consider for the Level 3 Permit Modification for Module IV. Public confusion is created by the question of how a permit can be modified when the permit is still in a draft form.
8. All the above complicates public review of the Draft Permit itself. The proposed Permit Modification would grant Corrective Action Complete ("CAC" or No Further Action, "NFA") status to 26 dangerous waste locations at SNL that have generated hazardous, radioactive, mixed waste and solid waste that would be left in place. None of the 26 locations should be granted NFA status because the monitoring required by RCRA provided for in 40 CFR 264.101 Subpart F (264.90-.100) for SWMUs where releases have occurred has not been performed. A total review of all the locations at SNL that comprise the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) have not been provided as required by RCRA in the Draft Permit. Ongoing permit modification for the 26 SWMU and AOC locations prior while the Draft Permit currently under review is confusing and inappropriate.
9. The Draft Permit has not received approval from the New Mexico Environment Department (NMED) and is currently pending public review, comment and public hearings. What is simultaneously being proposed is a Class 3 Permit Modification of the 1993 Module IV portion of the RCRA Part B permit that is not in reliable final form for review.

10. Both the Draft Permit and the Class 3 Permit Modification fail to clarify for the public in the public notices or the Fact Sheet/Statement of Basis that the proposed modification of the 1993 permit also, at some unstated point in time, would require a modification of the Draft Permit to reflect the changes made to the 1993 Module IV. A modification would be necessary, for example, for Table 6-2 (No Further Action sites) or other sections in the Draft Permit. Then the public would have to review the issuance of a rewritten Draft Permit to reflect and incorporate the changes made from the modification of the 1993 Module IV. The 1993 RCRA Part B permit (also referred to as the RCRA Hazardous Waste Facility Permit (NM5890110518-1)) or any subsequent revisions that may exist are not, but should be posted on the NMED website so that the public can review the existing 1993 RCRA Part B Permit in relationship to what is now proposed for either the Draft Permit or the Modification to Module IV of the 1993 RCRA Part B Permit.
11. The public currently reviewing the Draft Permit for some time now has been led to believe that the list of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) in Table 6-2 (Draft Permit) would be subject to continuing corrective action under the Consent Order (Draft Permit 6.1.6.1) - as well they should be given the dangerous hazardous, radioactive and mixed wastes SNL intends to abandon without adequate groundwater monitoring and based on unreliable data that is often more than a decade old.
12. The SNL Draft Permit should cite the regulatory permit requirements that are required to be included in the permit under RCRA. Comparing the Los Alamos National Laboratory Draft Hazardous Waste Permit with the SNL Draft Permit is instructive for demonstrating how few issues the SNL Draft Permit addresses that need to be addressed. An entire discussion, which is beyond Citizen Action's current capabilities without an extension of time, should be made for comparison of provisions and additions to the SNL Draft Permit.
13. Post-Closure provisions need to be provided for all units, including not only permitted units, at SNL in the event clean closure cannot be achieved. A clear prohibition on land disposal should be provided. Waste characterization for compliance with RCRA air provisions should be provided especially for characterization of hazardous wastes managed in containers and tanks for volatile organic compound concentrations. Provisions for receiving hazardous wastes from Off-facility locations do not seem to limit where the hazardous wastes can be received and stored at SNL.
14. The Permit should identify any interim status units at SNL and the effect of the permit on such units.
15. The duration of the permit for ten years needs to be set forward.
16. Reporting of Planned Changes to the Facility needs to be required under 40 CFR 270.30(1)(1).
17. New or modified permits must be provided for so that the Permittee may not treat or store hazardous wastes at a new permitted unit or in a modified portion of an existing permitted unit except as provided for in 40 CFR 270.42 and until there is compliance with 40 CFR 270.30(1)(2)(i)and (ii).
18. Information Repository shall require the Permittee to post all existing and future documents for the SNL Facility into a searchable electronic reading room.

19. SNL did not accomplish the requirements or the 1993 Module IV for Section R to evaluate hydrogeologic conditions, see R.b.1) sections a) through f). No detailed program is developed at the SNL facility for hydrogeologic conditions. SNL has not accomplished a detailed "program to characterize particulate and gaseous contaminants released into the atmosphere." (R.d.4). SNL has not accomplished a detailed "program to characterize the nature, rate and extent of releases of reactive gases from the units" for subsurface gas. (R.d.5).
20. NMED and SNL are not referencing in the Permit Modification that changing the Table A.1 would also cause the later exclusion of units from the Draft Permit listed at Table 6-2. The Draft Permit provides no notice to the public of this. Additionally, it is not clearly stated in the Fact Sheet/Statement of Basis to a public reviewer if the modification is to be for the original 1993 Module IV to the RCRA operating Permit or whether the modification is to be for the Draft Permit when issued.
21. The public should not have to simultaneously consider the Draft Permit, the Permit Modification and the LTMMP. Currently, the public is being offered an incomplete and conflicting picture for what is being proposed at SNL. The Draft Permit should be ordered withdrawn, and later go forward for review after public presentation and negotiations to revamp the Draft Permit. Both the LTMMP and the Permit Modification should be withdrawn. At a later time, the Draft Permit can then be modified for NFAs.
22. The LTMMP is by its own admission out of sequence. The LTMMP should not be reissued until the timeline for its issuance has been met according to the procedures established in the Final Order (Secretary Curry 2005). Citizen Action would favor this course of action. Otherwise, the Draft Permit should be held in abeyance until there is public opportunity for review and comment and hearings on the modification to the 1993 Module IV. Then AFTER it is clear as to how the modified Module IV permit reads, the Draft Permit should reissue. The Draft Permit would then include the No Further Action sites, any other modifications and then be put out for review.
23. The public has an inadequate Draft Permit before it. The public will once again be subject to an additional review of an additional modification request. The Draft Permit is clearly not a document ready for full presentation for public review. Section 2.20.2 of the Draft Permit regarding Closure states, "The Closure Plan in Permit Attachment 15 as written is inadequate and must be revised. The Permittees shall submit a detailed closure plan for each Permitted Unit, incorporating all the requirements identified in this Permit Part, within 90 days after the effective date of this Permit; the submittal shall be in the form of a Class 3 Permit modification request." The public is entitled to review a closure plan for the units in the Draft Permit as well as review the closure plan for all SWMUs that can be identified at SNL.
24. Closure Performance Standards must include 40 CFR 264.10 through 40 CFR 264.16, 264.178, 264.197, 264.228, 264.310, 40 CFR Part 264 Subparts F (264.90-.100), G, I, J, K, N and X and 40 CFR 270.32(b). If the Facility cannot achieve clean closure standards under those parts, the Facility shall submit a Post-Closure Plan according to 40 CFR 264.117. An entire section needs to be added into the Draft Permit providing for Post-Closure Care, Post-Closure Care Plan of the Facility with provisions for amendment by means of permit modification.

25. Conflict Language (1.5) section is unacceptable because it allows the provisions of the Draft Permit to differ from the provisions in the Permit Attachments. The Draft Permit and the Attachments must all be presented as true and correct especially since the bulk of the details lie in the Attachments. The document issued for public review should not have internal conflict and should not require the public to ferret out such conflict. The Draft Permit admits possible conflict between the parts of the Draft Permit and attachments. That is an additional reason for denial. If there is existing conflict between the Draft Permit and the attachments, the duty of NMED is to set forth the nature of those conflicts and resolve them before issuance of the Draft Permit. The effect of inaccuracies in the permit application and attachments should be that "Any inaccuracies found in the Draft Permit Application and its Attachments may be grounds for the termination, revocation and re-issuance, or modification of the permit in accordance with 40 CFR 270.41-.43 to be incorporated by reference and for enforcement action."
26. The Draft Permit adds a provision to the Draft Permit in Section 6 that is not present in the Consent Order, Section III.W.1. That provision would effectively remove the application of the Consent Order from the Permit: "5) For the purpose of complying with the requirements of this Permit for the Mixed Waste Landfill." This constitutes a <u>modification of the Consent Order without any notice to the public</u> that such a modification is being made to the Consent Order. This violates the Consent Order section III.W.5 Preservation of Procedural Rights for the public that provides for public participation, including public notice and comment, administrative hearings, and judicial appeals, when a modification is being made. (*See,* Consent Order 3.J.1). <u>The permit must incorporate the Consent Order</u> as a part of the Permit and the provision 5) above must be removed from the Draft Permit. In any event, the requirements of 40 CFR 264.90-.100 must be required for closure of the MWL and all SWMUs at SNL.
27. Under the definition for "Permit," the acronym "HWMR" is not listed in the definitions or in the list of Acronyms. The Draft Permit definitions are incomplete, in contradiction with other definitions contained within the Consent Order and the definitions contained within RCRA. For example, "groundwater" is missing from the definitions in the Draft Permit. "Groundwater" is defined in the Consent Order appropriately. "Uppermost aquifer" and "aquifer" are important within the RCRA groundwater monitoring requirements but are missing from the Draft Permit and need to be included. Needed definitions for the Draft Permit would also include at a minimum, "corrective action," "regulated unit," "release," "point of compliance," "action level," and others. The definition for "hazardous waste" must be the statutory definition set forth by RCRA section 1004(5). The definitions (1.6) allow the introduction of ambiguity by allowing dictionary definitions for terms not defined in HWA, RCRA, pursuant regulations, or the Draft Permit. All definitions should be set forth now upon which the Permit will rely. Section 1.7 should provide the full names of the various units instead of acronyms.
28. Definitions contained in the Draft Permit are not in keeping with the requirements for a RCRA permit. For example, neither the definitions of the terms "Permit," "Permitted Unit" refer to RCRA requirements. These definitions constitute modifications of definitions contained in the 1993 Module IV of the RCRA permit.

Under that document, "Permit means the conditions embodied in these special conditions pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA." Citizen Action objects to the use of SNL's non-RCRA definition for "permitted unit" that excludes the numerous other locations at SNL that must be identified and included in the RCRA Draft Permit as a generator, treatment, storage or disposal unit at SNL. SNL cannot define their way out of the applicability of RCRA requirements to avoid the necessary of inclusion of units that are regulated units, operable units, interim status units, or SWMUs.

29. **Under RCRA Section 3004(u), "corrective action is required for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage or disposal facility seeking a permit under this subchapter, regardless of the time at which waste was placed in such unit."** (See, USEPA Reissued Module IV of RCRA Permit (1993), DOE/EH-413-044r (revised September 2002, p.2, and citing RCRA Section 3004 (u), p.4). Regulatory uncertainty exists for the full inventory of hazardous waste sites at SNL. All waste areas at SNL including all SWMUs and regulated units need to be set forth and addressed by the Draft Permit. All SWMUs need to be set forth for Corrective Action under 40 CFR 264.101. SWMUs at SNL have failed to provide the required characterization and monitoring required by 40 CFR 264.101 that include 264.90-.100. Such SWMUs would include, but not be limited to the Mixed Waste Landfill. The Draft Permit should be denied because it does not identify all the areas at SNL that have released RCRA hazardous and mixed radioactive/hazardous wastes as a result of generation, treatment, storage and disposal.
30. The maps required under 40 CFR 270.14 are not provided with sufficient detail to locate all tanks, bunkers, solid waste management units, known past solid or hazardous waste treatment, storage and disposal areas or units regardless of whether they were active on November 19, 1980; surrounding land uses (residential, commercial, agricultural, recreational; and the location of all production and groundwater monitoring wells.
31. In the Consent Order at Section III.W.1., it is stated that "operating units" at the Facility must be addressed for new releases of hazardous wastes, closure and post-closure requirements of Subpart G, including long-term monitoring. The Draft Permit, at 6.0, now contrives to limit the Consent Order requirements to only "permitted units."
32. The Draft Permit ignores many waste units that have hazardous wastes by limiting the Draft Permit to include only "permitted units" that are limited to the Hazardous Waste Management Unit (HWMU), the Thermal Treatment Unit (TTU), the Auxiliary Hot Cell Unit (AHCU), the Radioactive and Mixed Waste Management Unit (RMWMU), the Manzano Storage Bunkers (MSB – comprising five storage units), and the Corrective Management Unit (CAMU). <u>The status of numerous other Solid Waste Management Units (SWMUs), the Yardholes, and Areas of Concern (AOC) are ignored and would allow SNL to abandon and leave discarded wastes in place for these numerous facilities without requiring closure plans, post-closure care, post-closure permits or long term monitoring plans for the wastes buried at these locations</u>. The standards for closure and post-closure care of numerous hazardous waste units at SNL are not met as required by the Hazardous Waste Management Act.

Additional facilities that may be producing RCRA waste would include at a minimum all facilities that are shown as operating in the SNL SWEIS (1999) and the Final Supplement Analysis for the SWEIS (2006). SNL has approximately 670 buildings in the 5 technical areas and the structures in the Coyote Test Field. The status of all facilities at SNL must be set forward as to which of these facilities generate, transport, store or dispose of RCRA hazardous or mixed hazardous wastes for inclusion on the draft permit. It is not credible that only 11 locations out of approximately 670 buildings located at SNL are the only areas involving RCRA wastes. All SNL facilities described in Table 2.2-1 of Final Supplement Analysis for the SWEIS (2006) must be included in the RCRA permit. To mention a few: the Advanced Manufacturing Processes Lab (AMPL) (TA-1), Explosive Components Facility (ECF) (TA-II), Integrated Materials Research Laboratory (IMRL) (TA-II), Microelectronics Development Laboratory (MDL) TA-II), Neutron Generator Production Facility (NGPF) (TA-I), Centrifuge Complex (TA-III), and all other facilities that produce, store or treat RCRA wastes. Section 1.7 must include language that includes closure and post-closure care at these numerous other areas.

33. Section 1.5.3 fails to address the effects of airplane crashes or terrorist attacks at SNL for numerous facilities, including, but not limited to Bldg. 6715 that contains explosive, reactive and incompatible wastes.
34. Section 1.5.4 (Drainage Control Features) claims that figures for drainage features exist for each unit-specific attachment. None of the figures contain information related to the direction of the flow of surface groundwater for the specific units.
35. Section 1.21 for Corrective Action required pursuant to 40 CFR 264.101 Subpart F is inadequate as it stands. It must set forth language that would include the provisions of 40 CFR 264.90-.100 for all the areas that can be brought under corrective action.
36. SNL has no competent RCRA well monitoring network for the SNL facility for SWMUs at many units and has not characterized the hydrology beneath the facility or the individuals SWMUs. A review of the history of characterization of SWMUs at SNL reveals that SWMUs that had releases at SNL have not had to meet RCRA requirements for corrective action and remain as a threat to public health and the environment without the current ability to detect the movement of contaminants from the waste sites.
37. **Numerous SWMUs that are currently proposed for No Further Action (NFA) status pose danger to the groundwater from solvents, metals and radionuclides and lack detection monitoring programs required under RCRA 40 CFR 264 Subpart F that are required because SNL is seeking a RCRA facility permit. Examples:**
    a. <u>SWMU 4 -- LWDS Surface Impoundments/Liquid Disposal System</u> consisted of 3 SWMUs that operated from 1963 to 1992 receiving <u>12,000,000 gallons of radioactive effluent</u> that also contained 17 RCRA listed metals and PCBs, and 9 Volatile Organic Compounds (VOCs) and 7 Semi-volatile Organic Compounds (SVOCs). This disposal site operated illegally without obtaining a RCRA permit. A single monitoring well LWDS-MW2 was installed in 1992, but no well construction, development information or monitoring data for SWMU 4 is provided in the December 2007 Fact Sheet/Statement of Basis (SNL March 2006 Request for Corrective Action Complete (No Further

Action) Status. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 4 with at least one upgradient and three down gradient wells. Cancer risks are too high to allow residential usage. Human and ecological risks are not acceptable to release this SWMU for NFA status.

b. SWMU 46, Old Acid Waste Line Outfall was an outfall discharge point that connected to several buildings that dumped wastewater into three 700 ft long ditches. The contaminants contained mercury compounds, 17 VOCs including high levels of Trichlorethene (TCE) in soil gas 115 ft below ground surface, SVOCs, PCBs, RCRA metals, and radionuclides. No groundwater wells are in place as required. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 46 with at least one upgradient and three down gradient wells. Cancer risks for residential land-use are unacceptable. Human and ecological risks are not acceptable to release this SWMU for NFA status.

c. SWMU 52, LWDS Holding Tanks consists of holding tanks, piping (SWMU 52), a drainfield (SWMU 5) and two surface impoundments (SWMU 4). The age and ASME qualifications of the tanks is not provided. The tanks and drainfield received radioactive and RCRA wastes including mercury, VOCs and SVOCs, without logs to record amounts, frequency and activity measurements. The assertions that the site has been characterized and remediated are ridiculous. No groundwater wells are in place as required. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 52 with at least one upgradient and three down gradient wells. Cancer risks for residential land-use are unacceptable. Human and ecological risks are not acceptable to release this SWMU for NFA status.

d. SWMU 101, Builing 9926 Explosive Contaminated Sumps and Drains in the Coyote Test Field area had 3 seepage pits and a dry well that operated from 1967-1991. The dump discharged RCRA contaminants illegally without a RCRA permit. VOCs, SVOCs, cyanide, chromium are present. No groundwater wells are in place as required. A monitoring network compliant with the requirements of 40 CFR 264.90-.100 is required to be installed at SWMU 101 with at least one upgradient and three down gradient wells. Estimates of the risks at SWMU 101 cannot be properly estimated given the lack of RCRA required well monitoring. Human and ecological risks are not acceptable to release this SWMU for NFA status.

e. SWMU 116, Nonradiological COCs has a groundwater monitoring well CTF-MW1 that is 500 ft from SWMU 116. However, the monitoring well is 500 ft from the SWMU to the south and shows selenium above background levels. No flow direction is indicated on the Fig. 13 and no RCRA well monitoring network is in place despite the significant evidence of contamination, especially given that selenium could be entering the groundwater beneath the SWMU. The claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network. Human and ecological risks are not acceptable to release this SWMU for NFA status.

38. The levels proposed for cleanup of facility sites are inadequate and taken in a piecemeal fashion and a full risk assessment should be performed to present and assess overall risks to the public, workers and environment from cumulative operations for hazardous waste and mixed waste at SNL for air, soil and groundwater pathways.
39. The Draft Permit (Section 9.8) proposes to accept hazardous wastes from Off-Site facilities. Citizen Action is concerned that the Draft Permit would allow large amounts of off-site waste to come to SNL from numerous facilities. A list of off-site facilities from which hazardous waste will be accepted should be provided. No amounts are set forth for the types, amounts or disposal pathways of the wastes that will be accepted from other facilities. No risk assessment is made for potential releases of these offsite wastes during transport to and from SNL or for the potential releases of the wastes during storage at SNL.
40. Citizen Action objects to the continued use of the Thermal Treatment Unit (TTU) for open air burning of explosives and explosives contaminated waste without pollution controls near the major metropolis of Albuquerque, the lack of any reliable air monitoring systems at that location, and the lack of notification to the public as to when the wastes will be burned. The facility threatens human health and the environment by its emissions during burn operations thus fails to meet the applicable requirements of 40 CFR 264 Subpart X. (*See,*40 CFR 264.600 et seq.).

    For the reasons cited in these TTU comments, we oppose the open burning and lack of identification characterization of the RCRA wastes present at the Sled Track Complex (TA-III) which must receive corrective action and monitoring. An April 9, 1987 Memorandum to Tom Clark (USEAP) from AT Kearney states "There are a number of outdoor test sites at the facility where explosive and impact testing is conducted. Residue from these experiments typically includes schrapnel, lead, beryllium, and depleted uranium; other metals and radioactive materials may also be present."

    The regulatory history of the TTU is unclear and not set forward in the Draft Permit. There is some question that the TTU cannot properly be included as part of the Draft Permit because it was not part of earlier Part B applications that required modification to include it. The 1985 Part B Application for a RCRA permit at p.1-1 section 1.2 states: "The waste explosives 'thermal treatment facility' listed in the Part A Application is not addressed in the Part B Application because final regulations have not been promulgated for facilities of this nature. (Focht, 1984). An amendment to the Part B Application will be submitted to EID for this facility when regulations are in place." There is no indication we could identify in the administrative record that such a modification was later submitted for the TTU. An August 16, 1986 EPA Transmittal of Preliminary Assessment Summary, p.2 states that the TTF is not regulated by RCRA. An August 1986 DOE CEARP Phase 3 Technological Assessment Plan, p. 23-24 for SWMU 7 TTF states that DOE intends to put the TTF on the Part B. However, there is an April 9, 1987 Interim Status Closure Plan for the TTF at SNL.

Investigation of groundwater must be performed at the TTU site under 40 CFR 264.90-.100 for corrective action under 264.101 that provides where the "Owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit." The corrective action provisions of 40 CFR 264.90-.100 must be included in the Draft Permit for TTU as well as the other units to be permitted at SNL.

The TTU should be denied a permit and should undergo closure. The current Closure scheme of Attachment 15 is not appropriate for the TTU. The closure methods for the TTU are based on the assumptions set forth in section 15.3. Assumption 5 states: "Releases of hazardous or mixed waste and/or hazardous waste constituents to the environment did not occur." This condition can not be met for the TTU which emits RCRA hazardous wastes to the open air either through burning or evaporation. Section 4.7.3 describes eight situations that present the potential for release of hazardous waste or constituents from the TTU. Among those are included: run-off from precipitation, evaporation of liquid wastes, emission of particulates and gaseous combustion products during treatment and particulate emission following treatment. There is also potential for the deposition and migration of the wastes to air, soil and groundwater and uptake through the food chain and air pathway for incidental ingestion, dermal contact and inhalation. Routine environmental monitoring at the TTU is not conducted. There is potential for explosions from the reactive wastes treated in the TTU.

"The burn pad lid shall remain closed as much as possible except during loading and combustion to minimize evaporation of volatile waste." The closure of the burn pad does nothing apparently to prevent the release of contaminants during loading and burning.

SWMU 111 was used for disposal to the subsurface for liquid wastes from operations involving explosives wastes that contained RCRA contaminants from Bldg. 6715 and the TTU. Although boreholes were drilled, no monitoring for the groundwater was established for the silver contamination that was present as significant evidence of contamination. (See, section 4.3.6 WMWU and Evidence for Migration of Silver into the Subsurface.) The sump at SWMU 111 was not properly addressed by the NMED and should not have been allowed to be in the category of No Further Action. The TTU and Bldg. 6715 site must be characterized again because of past and possibly ongoing releases and the request to be permitted. (See, 40 CFR 264.101 above).

The characterization of the types of explosives for combustion, "explosives contaminated wastes" are not described as to whether other RCRA wastes are present and being burned. Acetone, and other solvents that are known RCRA hazardous waste are intended for the TTU but not described by types and quantities. Mercury and barium are commonly used in high explosives. Depleted uranium and other toxic metals may be present may be present in fragments, powders and residues that are

burned and enter the atmosphere. Combustion byproducts are not described although Dioxin-furans may be present in the air emissions or ash released from the TTU.

The TTU is a system that will be burning explosives and contaminated wastes. The language of Section 8.2 for treatment of reactive wastes is unclear, appearing to both deny and approve treatment of the same reactive wastes. Providing a list of EPA Hazardous Waste numbers without associating those numbers with the actual named constituents is of little value to the public. The number of burn events that will be conducted on an annual basis are not presented. The duration of burn events up to 3 days does not identify the potential release of contaminants for up to a 3-day period.

No environmental or human health risk assessment is provided in the 1999 SNL Site-Wide Environmental Impact Statement for the burning of these wastes. The direct air pathway for transport is not adequately characterized. Re-suspension of contaminants is not the only pathway. No evaluation is made for off-site contamination. The habitat at the site is already damaged by emissions from operations that will continue to limit food chain uptake. The operations have created a dead zone. No characterization of the wastes that are being released to the environment by the TTU and Bldg. 6715 are set forth in any meaningful manner. The Draft Permit states a risk assessment was performed but gives no document citation and that study is not provided as a web posting making the administrative record incomplete. The human population and especially children that may be sensitive to the uptake of waste burning and the by products is not analyzed. "Above ground tissues" are the term used to apparently describe everything living.

The SNL SWEIS Table 5.4.2-1 indicates the Facility Capacity Annual is 7,300 lb rather than 1,200 gallons in Draft Permit Table 4-1. The amounts of liquid wastes and solid wastes being burned should be fully characterized as to types and amounts. Controls for reactive wastes are poorly described. Quantities of incinerator ashes and other wastes and their method to be disposed of are not described. Recovery systems for vapors and compliance with RCRA air regulations are not described. Air emissions from the TTU and Bldg. 6715 are not described.

As an owner/operator of the TTU that treats, stores and disposes of hazardous waste, the TTU is required to, but fails to satisfy the requirements of 40 CFR 264 Subpart X specifically requirements for 40 CFR 264.601. No RCRA monitoring wells have been installed at the TTU for releases and detection of contaminants that may be in the soil or groundwater. No data has been collected from boreholes, groundwater monitoring wells or measurements made for the saturated and unsaturated zone at the TTU. The hydrologic setting beneath the TTU and Bldg. 6715 is not characterized. No monitoring, analysis, inspection, response, reporting and corrective action in compliance with 264.101 has been performed at the TTU and Bldg. 6715 as required by 264.602. TTU does not meet the environmental performance standards to protect human health and the environment of 40 CFR 264.601(a)-(c) and 264.602 that also requires application of 264.101 for groundwater, soil surface or air. The TTU has released quantities of silver and other contaminants that constitute significant

evidence of contamination for which detection monitoring is required under 264.90-.100. Routine environmental monitoring of the TTU and Bldg. 6715 is not conducted.

Draft Permit Figure 1-2 regarding groundwater and other pertinent details for the TTU is not available for review in the permit, so that the Administrative Record is not complete for review. The public should not have to make a special trip to review Figure 1-2. Figure 4-4 for TTU Layout and Drainage Control Features fails to indicate the direction of the flow for groundwater at the TTU.

Figure 1-8 does not identify the location of the TTU within Tech Area III nor does it fully identify surrounding land uses such as Isleta Pueblo and the Mesa del Sol residential development. Figure 4-3 fails to identify road access and public roads in relation to the TTU. Figure 4-5 fails to identify TTU Evacuation Route and Emergency Access Information in relation to public roads and facilities.

Building 6715 is a generator of hazardous wastes that are ignitable, reactive and incompatible and creates solid and liquid wastes that are transferred to the TTU. Bldg. 6715 is required to have a RCRA permit as a generator of hazardous wastes and must be included in the Draft Permit. As an owner/operator of the Building 6715 that is a generator of hazardous waste, the Building 6715 is required to, but fails to satisfy the requirements of 40 CFR 264.90 (2) that include the requirements of 40 CFR 264.90-.100. No complete inventory and characterization of the RCRA wastes present at Bldg. 6715 is given. In addition, mixed hazardous wastes may be present in both solid and liquid wastes but are not described. A collection tank to the south of Bldg. 6715 is not adequately described as to the treatment or disposal for its wastewater. The transport of RCRA hazardous wastes and the manifest system for the storage and transport of RCRA wastes to and from Bldg.6715 are not adequately described. The potential for accidents, risk assessment and necessary emergency planning procedures for Bldg 6715 are not present. There is no plan to minimize the possibility of, and the hazards from a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. The plan must explain specifically how to treat, store and dispose of the hazardous remediation waste in question, and must be implemented immediately whenever a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

41. **The number of tank systems that contain RCRA waste at SNL must be set forth by the RCRA permit.** SNL plans to continue using RCRA non-compliant tanks and ancillary service lines and equipment. The Draft Permit must provide information about each tank. Apparently, all of the functioning tanks are not listed in the Draft Permit. **DOE must stipulate the ASME design life and age for each of the tanks at SNL along with the anticipated years of future operational use.** Many of the tanks date back many decades, long beyond their design life. Additional tanks may lack "certification stamps." Compliance or non-compliance with RCRA secondary

containment requirement in tank vaults must be set forward. Tanks that have corroded in the ground with releases must be described as landfills and are subject to corrective action.

42. The Auxiliary Hot Cell Unit (AHCU) does not have Figure 1-2 available for the location of the unit as stated in section 6.0. The administrative record is incomplete and the permit should be denied. The length of time that the facility has been in operation and the characterization and volume of the mixed hazardous wastes that are managed must be described. The period of storage for containers must be described. Whether the facility is handling off-site waste should be described. Whether the AHCU is a generator of hazardous and mixed hazardous waste should be described. The destination for where the AHCU mixed and hazardous waste is to be treated or disposed of should be described.

    Mixed waste items or containers that are handled remotely are from time to time being put under a "temporary tent like room" in Bldg 6597 erected north of the hot cell to accommodate the containerized mixed waste items. The frequency of the erection and the duration of the temporary tent-like room are not sufficiently set forth.

    Real time air pathway located at the vents from Bldg. 6597 should be provided for monitoring. The controls for air emissions venting out of the Bldg. 6597 are insufficient to determine if filter systems are functioning properly. Gases that are not trapped by filtration should be described. The activities conducted in the temporary structure should be conducted in a dedicated engineered structure that is fully permitted for air emissions. The potential for leakage or existing spills present from containers in the temporary area is not sufficiently described nor are operations for cleanup or emergency situations.

    The storage silos are not accurately described. There are total of 8 of these "silos" that are actually 15 ft deep subsurface wells or sumps that are for storage of liquid wastes. There is no provision for a real time RCRA leak detection system to monitor for releases from the storage sumps. There is no indication as to whether leaks have occurred in the past and whether monitoring for the movement of contaminants beneath the ACHU has taken place.

    Container storage in the High Bay south and west of the hot cell appear to have no leak detection. The length of time for the storage of the containers is not set forth. The floor should provide for double containment and real time leak detection. Provisions must be set forth to describe venting for the emissions. Provisions for handling damaged containers should be provided. The procedures for detecting liquid wastes should be provided.

    Risk assessment for explosive hazards that can occur at the AHCU and the potential for the release of hazardous wastes should be described.

43. The Manzano Storage Bunkers (MSB) does not have adequate leak detection or air monitoring for volatile liquids that are leaking from containers into the tubs. The regulatory history, the complete number of bunkers, length of time that the MSB has

been in operation should be provided along with the types of wastes, releases, the volumes handled and the periods of storage of the various wastes and the manifest system for tracking the inventory of wastes. Air pathway monitoring should be provided at the MSB. Radioactive waste should be stored in bunkers that are separate from where mixed hazardous wastes are stored. The sparse scheduled inspections for discrete containers at MSB does not provide a reliable method for prevention of contamination of the environment. The bunkers are open to the air pathway. The existence of ignitable wastes and storage of water reactive wastes provides opportunity for fires and explosive reactions. The presence of different types of wastes within the same bunker does not provide for safe segregation of waste types that could be accomplished by the use of separate bunkers. Use of separate areas is not adequate to provide safe segregation because there are five separate bunkers. The potential for fires and explosions and releases to the atmosphere of hazardous wastes is not described. Automatic fire suppression systems should be, but are not provided for the bunkers containing the reactive, explosive wastes. Once daily inspection of liquid wastes that could cause fire or explosions is unacceptable where those wastes could be monitored by leak detection systems. The response time for the KAFB fire department is inadequate to provide protection of the public health and environment. The description for limitation of storage of the MSB RCRA wastes should be provided. The information for 7.6.3.2 Access to Communication or Alarm Systems is not provided as to what alarm systems exist at the MSB in Permit Attachment 2. The Alarm systems must be described for the 5 MSB bunkers as to what the alarms will provide alerts- explosions, fire, radiation, volatile chemicals releases, etc.

Figure 1-2 for the MSB complex shows that no RCRA monitoring wells are present at the point of compliance for the MWB boundary. The nearest monitoring wells are over 1400 ft distant from the MSB. No RCRA upgradient monitoring well exists.

A seismic fault, the Tijeras fault is shown on Figure 1-2 to run directly through the center of MSB Bunker number 37045 and along the edges of 37034 and 37118 within a 1000 ft of the Tijeras fault. The seismic risks associated with the storage of hazardous and mixed hazardous wastes at the MSB are not evaluated.

44. Citizen Action objects to the treatment, management and storage of hazardous wastes at the HWMU, RMWMU, AHCU, and MSB and other SNL facilities without proper characterization and presentation of the types and amounts of the wastes to be present. Providing a list of EPA Hazardous Waste numbers without associating those numbers with the actual named constituents is of little value to the public. The types and quantities of wastes for each unit need to be described along with the controls that will be used to limit emissions. Section 9.2 9.3 containing information about "typical hazardous and mixed wastes" being generated, stored and treated is insufficient for characterization of the wastes. There is a lack of any reliable air monitoring systems at these locations. Recovery systems for vapors and compliance with RCRA air regulations are not described. Treatment systems for the wastes at each location are not adequately described. Whether on-site or off-site wastes from other facilities will be transported to, treated, managed or stored at or from these and other locations at SNL must be provided.

45. Citizen Action believes that the Yardholes must be included in the Draft Permit. In or about November 2002, Citizen Action New Mexico learned about experiments simulating nuclear meltdowns that involved oxide nuclear reactor fuels that had been shipped in canisters to Sandia National Laboratories (SNL or Sandia) during the mid-1980s "from reactors around the world." (Citizen Action Press Release November 18, 2002). An unknown number of these canisters were disposed of in the Mixed Waste Landfill at SNL. Citizen Action requested the New Mexico Environment Department (NMED) to demand a full accounting of the oxide reactor fuels from Sandia to further characterize the contents of the landfill.
http://www.radfreenm.org/pages/press.htm#3

Citizen Action obtained information from another FOIA request that the waste from numerous experiments with the reactor fuels had been disposed of in various areas known as "Yardholes"at SNL. http://www.radfreenm.org/pages/nr/041504.html The yardholes were over 30 primitive holes dug in the ground; some were lined and some were unlined. One of the yardholes was a water filled hole under the Hot Cell Facility monorail at SNL and contained a spent fuel element from the Savannah River Site. SNL has kept secret from the public the types and amounts of the contents of the various yardholes. The yardholes contain nuclear materials and/or hazardous wastes that should be disposed of or regulated under the Resources Conservation and Recovery Act (RCRA), the Atomic Energy Act, Nuclear Regulatory Commission (NRC) regulations, or Department of Energy (DOE) Orders.

A "SNL Site Team Report on Spent Fuel," October 1993 ("Yardholes report"), assessed vulnerabilities of the DOE storage of irradiated reactor fuel and other irradiated nuclear materials (RINM). The 1993 Yardholes report stated: "The vulnerability identified was the lack of approved Safety Analysis Reports." The report identified the existence of the Yardholes at the location of the Sandia Pulse Reactors (19 yardholes) and the Hot Cell Facility (13 yardholes under the HCF Monorail) associated with the Annular Core Research Reactor (ACCR).

The Yardholes report, Appendix 1 C. Sandia Pulsed Reactor Facility states:

p.1 – "**None of the reactor irradiated materials discussed below are classified**." (Emphasis supplied).

p. 3 – "… [A] status book is kept updated with the most current information including the date the storage activity took place, the name of the experiment, the dose rate along with the survey date and the hole involved.

p. 4 - Contamination: It is assumed that small amounts of contamination are present inside some of the holes due to the process of irradiation with the ACRR central cavity. Every experiment package removed from s storage hole is treated as potentially contaminated upon removal until surveyed and released by the Health Physics Technician."

p. 4 – "One item of concern is the issue of classifying the Yardholes and the NOVA [North Vault] as nuclear facilities."

p. 7 - "The other concern is the ultimate recovery and disposition of these nuclear materials, All of the materials are currently stored on site since there is no approved

method of disposal.....There are various concerns associated with the long term storage of any radioactive material, specifically leachability of material, decay rates and potential corrosion of the containment packages due to environmental conditions."

The Yardholes report, Appendix 1 D. Hot Cell Facility, p. 2, identifies "hazardous materials such as cadmium, silver, lead, metallic sodium, etc." These materials may constitute hazardous or mixed hazardous waste under RCRA.

The Yardholes report, Appendix 5 Tiger Team Findings, identified additional concerns:

"1. A/CF-04: Need for an air monitoring program to meet 40 CFR 61, Subpart H. Hot Cell Facility and ACRR are mentioned."

"2. RAD/CF-01: Need for a program to monitor continuous and batch discharges of liquid and radiological effluents. Tech Area V is mentioned."

"3. AX.02-01: Monitoring and disposal of hazardous and radioactive effluents. Hot Cell stack monitor is mentioned. Hot Cell, ACRR and SPR are mentioned."

Other Tiger Team concerns involved: storage of fissile material, safety analyses for fissile material storage, posting of fissile material storage limits, emergency response procedures, criticality alarms, need for a review process responsive to safety needs and need for effective procedures for radiation protection.

On the basis of information about the yardholes that Citizen Action provided to the New Mexico Environment Department (NMED), in or about March 2006, NMED began an inquiry into the yardholes at Sandia National Laboratories. http://www.radfreenm.org/pages/nr/121305.html NMED must now take action with respect to the yardholes and include them in the Draft Permit. The concerns of NMED documented the storage of metal-bearing materials potentially regulated as hazardous or mixed waste under the Resources Conservation and Recovery Act (RCRA). The 1993 Yardholes report, according to NMED, listed "Metals that include cadmium, lithium, silver and sodium; other potentially reactive materials in storage in the below grade storage facilities were also documented."

Rather than provide any information to the NMED, SNL sent a June 9, 2006 letter of reply that asserted that the materials were excluded from review under RCRA as source, special nuclear or by-product material as defined by the Atomic Energy Act. As discussed below, the assertion that the wastes do not contain RCRA wastes are contradicted by Sandia documents.

Without information about the yardhole wastes the public remains as vulnerable as it was in 1993. The public does not know:

- what types of wastes are present in over 30 yardholes;
- the volume of those wastes;
- the containers for the wastes;
- the pathways for disposition of the wastes;
- how much of the wastes remain;
- whether the wastes are being added on an ongoing basis to the yardholes;

- whether new yardholes are being created;
- what releases of yardhole wastes there may have been to the environment.

Sandia's continued secrecy about the yardholes' wastes only serves Sandia to prevent public action for protection of the public health and safety interest and the environment. SNL must furnish the public and regulatory agencies full information in the Draft Permit regarding protection of the public health and environment from the dangerous nature of the wastes, the lack of monitoring for releases from the wastes, the potential for catastrophic criticality releases of fission materials, the leakage of the wastes to the groundwater, soil and air. The Tiger Team assessment found no air monitoring program or liquid effluent monitoring for the wastes at the HCF, ACRR and SPR.

46. Issues related to the MWL and Chemical Waste Landfill (CWL) must be resolved prior to the consideration of the Draft Permit.
    a. Citizen comments for the CWL post-closure permit have not received response. The well monitoring network for the CWL has problems of corroded well screens that prevent detection of contaminants beneath the CWL.
    b. Citizen Comments for the Soil Vapor Sampling and Analysis Plan for the MWL have not received response.
    c. Issues related to the 11/2006 Notice of Disapproval for the MWL soil cover have not been resolved.
47. The Draft Permit references inclusion of the Long Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill (MWL) that is a required part of the Draft Permit. The Draft Permit is being issued before issues surrounding the LTMMP are resolved.
    a. The LTMMP states that its issuance is "accelerated." The LTMMP is improperly out of sequence with the 2005 Final Order of the NMED Secretary and the Corrective Measures Implementation Plan that requires approval prior to the issuance of the LTMMP. <u>A permit modification must first be obtained by Sandia because the submission sequence is out of order.</u> (*See*, Consent Order, section III.J.1 Procedures for Modifying any Provision of the Consent Order; III.M.1 "All workplans and schedules ...become enforceable requirements of this Consent Order..."; III.W.5. Preservation of Procedural Rights – "including but not limited to, opportunities for public participation, including public notice and comment, administrative hearings, and judicial appeals..."). The public has not received its right to review and comment and receive a public hearing for the LTMMP which should come previously to any issuance of the Draft Permit.
    b. The LTMMP is being presented out of sequence with the requirements of the Resource Conservation and Recovery Act (RCRA), the NMED Final Order (2005) and the Corrective Measures Implementation Plan and Corrective Measures Implementation Report. The LTMMP is required to be submitted within 180 days *after* the NMED approval of the CMI Report. The CMI Report cannot issue until after the Corrective Measures Implementation Plan is approved. The CMI Plan cannot issue until after the soil cover construction is complete. The soil cover construction cannot be completed until after the

Notice of Disapproval for the soil cover due to inadequate soil gas monitoring is no longer in place. The issuance of the Sandia LTMMP prior to the completion of the soil cover also requires a public hearing as a modification of the Module IV of HSWA Permit.

c. The LTMMP is incomplete. The public is being asked to review the Draft Permit and sign off on a blank check for monitoring when it has no idea other than an incomplete and conflicted draft for what the LTMMP well monitoring network will be.

48. The LTMMP admits that it is an incomplete document and lacks significant details about the well monitoring network for the MWL. In fact, the LTMMP does not, but must provide for the RCRA well monitoring network required by 40 CFR 264.101 and 40 CFR 264.90-.100 at the MWL. Orders currently issued by the NMED for changes to the well monitoring network at the MWL are not included in the LTMMP or identified in the Draft Permit. The public should not have the burden of reviewing partial plans that are not representative of what SNL will finally present as a Draft Part B Permit. Additionally, the LTMMP states conflicting positions with respect to the authority of the Consent Order for applicability to long term maintenance and monitoring.
49. The LTMMP is incomplete and issued on an out of sequence "accelerated basis" that will requires a modification of either the Draft Permit, the 1993 Module IV, the Class 3 Modification to Module IV (2005) and/or the Corrective Measures Implementation Plan and the NMED 2005 Final Order. The LTMMP is being submitted before the NMED has approved construction of the soil cover (now subject to a Notice of Disapproval), final approval of the Corrective Measures Implementation Plan, and Corrective Measures Implementation Report.
50. The LTMMP states (1.3): "Although the Consent order (NMED April 2004) governs the remedy selection process for the MWL, it does not contain any requirements related to long-term monitoring, other than requirements for monitoring well replacement." ... "The Class 3 Permit Modification provides the framework for the LTMMP..." This is incorrect inasmuch as it pretends to be the only framework applicable to long-term monitoring requirements. As per 63 FR 56710 et seq., the well monitoring requirements of RCRA in 40 CFR 264 Subpart F are also applicable to the LTMMP. Those requirements need to be reflected in both the legal and regulatory requirements of section 1.3 of the LTMMP and in the Draft Permit. That is not the situation and appropriate language recognizing RCRA long term monitoring and maintenance network requirements need to be in place for the LTMMP and the Draft Permit. The full requirements of 40 CFR 264 Subparts F and G should be expressly stated as being applicable to all units at SNL that received hazardous waste regardless as to the time when such wastes were received whether the areas were permitted or not. (*See,* 40 CFR 270.1 and 40 CFR 264.90)
51. The LTMMP leaves a regulatory vacuum for long-term monitoring at the MWL and instead should address and add the specific long-term monitoring requirements of RCRA as provided for in 40 CFR 264 Subparts F and G. The LTMMP (1.3) states the Consent Order lacks long-term groundwater monitoring requirements. But then, the LTMMP at D-5 claims that the Consent Order "transferred regulatory authority for groundwater sampling at the MWL from the HSWA module to the Consent

Order." No citation to the Consent Order is provided to support this statement. No citation is made to the HSWA Module to show what specific groundwater monitoring requirements for SWMUs were removed from the HSWA module to the Consent Order. Nor is it mentioned whether public notice was given for that transfer that constituted a modification to the HSWA permit. The LTMMP states (1.3): "Although the Consent order (NMED April 2004) governs the remedy selection process for the MWL, it does not contain any requirements related to long-term monitoring, other than requirements for monitoring well replacement." ... In fact, The Consent Order addresses the "implementation of the controls, including long-term monitoring, for any SWMU [that would include the MWL] on the Permit's Corrective Action Complete with Controls list, which is described in Section III.W.3.b." That section (III.W.3.b) states that "...where controls are identified for a SWMU, only those controls (e.g., institutional controls, engineered barriers, long-term monitoring and operation and maintenance) are enforceable under the Permit." The Consent Order (Section III.A) states that it "fulfills the requirements for corrective action ... and their implementing regulations at 40 CFR Part 264, Subpart F." Subpart F applies to long term monitoring requirements.

52. The LTMMP at section 3.5 -- Groundwater Monitoring – purports to have a groundwater monitoring network "proposed" to be in place for long term monitoring that includes six wells (existing wells MWL-MW5, MWL-MW6 and proposed wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9). In fact, none of the "proposed" wells are capable of monitoring the strata required to be monitored by either the Consent Order or RCRA requirements as set forth in 40 CFR 264 Subpart F. The replacement wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9 were ordered under the Consent Order. None of these replacement wells monitor the "groundwater" as defined by the Consent Order. "Groundwater means interstitial water which occurs in saturated earth material and which is capable of entering a well in sufficient amounts to be utilized as a water supply." The groundwater monitoring requirement is not met by the current proposal to only monitor the fine grained sediments at the MWL with the replacement wells. While Citizen Action agrees that monitoring needs to be conducted at the water table for early detection of contamination, the Ancestral Rio Grande (ARG) strata needs to be monitored to comply with the Consent Order and Subpart F. The MW6, although it is at the ARG strata, is too far away from the MWL fence line to meet the RCRA Point of Compliance requirement. Provisions for monitoring the "uppermost most aquifer" and "aquifer" as defined by 40 CFR 260.10 need to be conducted for the 40 CFR 264.92 "underlying waste management area," at the point of compliance (264.95), and a 264.98 detection monitoring program must monitor for indicator parameters Tritium and PCE at the hot spots beneath the MWL. Mobility, persistence, and stability for indicator parameters must be monitored in the unsaturated zone beneath the waste management area. Instead the monitoring conducted is far away from these areas at the MWL.
53. The Mixed Waste Landfill is being inserted into the Draft Permit which is a RCRA Part B application under Corrective Action. The MWL is a SWMU and a regulated unit under 40 CFR 270.1, and lost interim status. The closure and long-term monitoring of the MWL must address Subpart F and G and the provisions of 40 CFR

264.101 that include 40 CFR 264.90-.100 because the MWL is a SWMU at SNL facility seeking a RCRA permit.

54. **Mistakes in "Permit Part 6: Corrective Action"**

RCRA requires the Sandia facility permit to perform corrective action as follows in pertinent part from 40 CFR §264.101:

> §264.101 (a) The owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit.

Therefore, §264.101 requires the following changes (in bold italics) to the statements in Section 6.0 1) through 5) on page 56 of the draft permit to identify that the facility permit shall implement the Corrective Action Program of §264.100 and the monitoring requirements of §§264.90 through 264.101:

> 1) New releases of hazardous waste or hazardous waste constituents from Permitted Units, ***Regulated Units and any SWMU*** at the Facility ***require compliance with §§264.90 through 264.101 for the Permitted Units, Regulated Units, and any SWMU at the Facility.***
> 2) The closure and post closure care requirements of 40 C.F.R. Part 264, Subpart G, as they ***require compliance with §§264.90 through 264.101 for the Permitted Units, Regulated Units, and any SWMU at the Facility;***
> 3) Implementation of the controls, including long-term monitoring ***in accord with the requirements of §§264.90 through 264.101,*** for any Solid Waste Management Unit (SWMU) on this Permit's list of SWMUs for which the Department has issued a determination of "Corrective Action Complete With Controls";
> 4) Releases of hazardous wastes or hazardous constituents ***at any SWMU, Permitted Unit or Regulated Unit*** that occur after the date on which the Consent Order terminates; and ***require compliance with §§264.90 through 264.101 for the Permitted Units, Regulated Units, and any SWMU at the Facility***
> 5) For the purpose of complying with the requirements of this Permit for the Mixed Waste Landfill (MWL) ***which is recognized by RCRA as a Regulated Unit and therefore, must comply with the requirements of §§264.91 through 264.100 in lieu of §264.101 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer" (§264.90).***

Mistakes in "Permit Part 6.7. CORRECTIVE MEASURES FOR THE MWL (SWMU 76)"

The draft permit fails to recognize that the MWL is a "regulated unit" under RCRA because of the disposal of hazardous wastes after July 26, 1982, and therefore, the MWL "must comply with the requirements of §§264.91 through 264.100 in lieu of §264.101 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer" (§264.90).

In addition, the claim of NMED that the MWL is a SWMU still requires compliance with the requirements of §§264.91 through 264.101.

Unfortunately, the requirements of §§264.91 through 264.101 have never been met at any time with the monitoring well network installed at the MWL for purposes of detecting, characterizing and responding to releases to the uppermost aquifer or to releases to the water table of the regional zone of saturation below the MWL. This failure is documented in historical documents that are summarized below.

Earlier Reports by EPA, DOE and NMED recognized that monitoring wells were not at the correct locations.

- DOE/SNL and NMED knew in May 1991 from the DOE Tiger Team Assessment of SNL ((p. 3-59) that

> "The number and placement of wells at the mixed waste landfill is not sufficient to characterize the effect of the mixed waste landfill on groundwater."

- In June 1991, the DOE Technical Review: Compliance Activities Workplan for the Mixed Waste Landfill, Sandia National Laboratory (Kenneth Rea, Environmental Restoration Technical Support Office) stated under Comments:

> "19/1/1 It is stated that 'three additional wells were installed, two downgradient and one upgradient…' It would be appropriate to mention here that data from these wells indicated that this network has in fact only one downgradient well and no wells that are definitely upgradient.". (Emphasis supplied).

- The SNL Annual Ground-Water Monitoring Report (March 1992 for Calendar Year 1991) states:

> p.7- "The ground-water surface elevation data were evaluated to determine whether the monitoring well network meets the requirements of being comprised of at least one upgradient and three downgradient wells, as specified in 40 CFR 265-93 (f). This requirement cannot be demonstrated at this time" [emphasis supplied].

- The SNL March 1993 Mixed Waste Landfill Phase 2 RCRA Facility Investigation Work Plan, states, (p. 2-31, para 2.2.5.2) (AR005409):

"Although regional potentiometric maps indicate that the hydraulic gradient at the MWL is toward the west and northwest (Figure 2-16), current water level data for the four MWL monitor wells suggest that the hydraulic gradient is toward the **southwest**, approximately 40 degrees counterclockwise to the regional gradient" [emphasis supplied].

- EPA Comment 11 contained in The Final Mixed Waste Landfill RFI Work Plan Summary Report (September 6, 1994) stated,

> "**Based on the southwest gradient flow of groundwater, the MWL monitoring wells are located crossgradient instead of downgradient from the MWL; therefore, contaminants emanating from the MWL may not be detected in the monitoring wells.**"

- September 14, 1998, 1:12 Santa Fe MWL (AR 010980-82) handwritten notes of Will [Moats] and Benito [Garcia] discussing an NOD and closure standards (AR 010981):

> "Will- Detection system is inadequate.
>
> "Benito- Why? Write that in there
>
> "Will- they only have 1 well down gradient…"

These above statements were a matter of public record and these above statements address the monitoring well network through year 1998 that consisted of wells BW1, MW1, MW2, MW3 and MW4.

- **What is the proof of NMED now that none of the above statements were correct and remain accurate to the present time for the existing monitoring well network?**

Crossgradient locations of wells BW1, MW1 and MW2. The water level data are proof that the direction of groundwater flow at the water table has always been to the southwest and that wells BW1, MW1, and MW2 were installed at locations that are crossgradient to the direction of flow. The crossgradient locations do not meet the requirements of RCRA for monitoring background water quality (§264.97), for detection monitoring (§264.98), and for detection monitoring wells immediately along the western and southern boundaries of the MWL at the point of compliance (§264.95).

Mud-rotary drilling method for wells BW1, MW1, and MW3. The mud-rotary drilling method invaded the screened intervals of wells BW1, MW1, and MW3 with a combination of bentonite clay and organic additives that have well known properties to establish a new mineralogy in the screened intervals that prevent the collection of reliable and representative water samples for many of the contaminants that are known releases from the hazardous wastes buried in the MWL. The NMED released a report on November 6, 2006 entitled "Evaluation of the Representativeness and Reliability of Ground Water Monitoring Well Data" (the *Moats Evaluation*) that makes the unsubstantiated claim that the three mud-rotary wells produce reliable and representative water samples.

The Needed Review of the *Moats Evaluation*. In March 2007 Citizen Action and the Albuquerque-Bernalillo County Groundwater Protection Advisory Board (GPAB) made a

request to EPA Region 6 for the EPA Kerr Lab to review the *Moats Evaluation.* This request was appropriate because the Kerr Lab reviewed a similar report to assess the monitoring wells at the Los Alamos National Laboratory (LANL). The *Moats Evaluation* was modeled after the LANL *Well Screen Analysis Report* (WSAR) and NMED claimed the *Moats Evaluation* was superior to the WSAR, but the subsequent revisions of the WSAR that are approved by NMED do not recognize or incorporate the *Moats Evaluation.*

- **If the *Moats Evaluation* is superior, then why hasn't NMED required the superior evaluation scheme to be used in the revisions of the LANL WSAR?**

Registered Geologist Robert Gilkeson disagrees and finds that neither the LANL WSAR nor the *Moats Evaluation* identify if any well produces reliable and representative water samples. This was also the finding of the EPA Kerr Lab for the LANL WSAR. The National Academy of Sciences (NAS) also found that the WSAR showed a lack of basic scientific knowledge and the evidence relied upon was not statistically valid (*Groundwater Protection Practices at LANL*-- NAS 2007 Final Report, p.60).

The NMED is on record at a meeting of the GPAB on 12/14/2006 that it did not oppose the request for the *Moats Evaluation* to be reviewed by the EPA Kerr Lab. Furthermore, in a July 17, 2007 letter to Citizen Action NMED, Mr. Bearzi, Chief of the NMED Hazardous Waste Bureau, welcomes the review by EPA of the *Moats Evaluation.* Nevertheless, this review has not occurred because NMED has not asked EPA Region 6 to authorize the EPA Kerr Lab to perform the review.

- **Why has NMED failed to honor the request of Citizen Action and the GPAB for the needed review of the *Moats Evaluation* by the EPA Kerr Lab?**

Mistake in the location of well MW6. RCRA (40 CFR 264.98(a)(2) requires the installation of monitoring wells across the water table in the fine-grained sediments for early detection of contamination "beneath the waste management areas" and also in the deeper productive Ancestral Rio Grande (ARG) strata that are the fast pathway for horizontal travel of contaminated groundwater to the supply wells. RCRA §260.10 defines the ARG strata as the "uppermost aquifer". The monitoring wells installed at the MWL dump have failed over all time to meet the requirements of RCRA for monitoring contamination in either flow system. The only monitoring well with a screen installed only in the ARG strata is well MWL-MW6. NMED approved for DOE/SNL to install well MWL-MW6 in the ARG strata at the distant location 500 feet west of the western boundary of the MWL dump. However, this location does not meet the compliance requirements of 40 CFR §264.95 as stated in pertinent part:

> "The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units."

The "hydraulically downgradient limit of the waste management area" is immediately along the western and southern side of the MWL dump. In §264.95 the "uppermost

aquifer" is referring to the productive ARG strata monitored only by well MW6 and not to the fine-grained alluvial sediments that are poorly productive of groundwater.

- **Does NMED recognize that well MWL-MW6 does not meet the point of compliance requirements of 40 CFR §264.95 because of the 500-ft distance of MW6 away from the western side of the MWL?**
- **Does NMED recognize the requirement of RCRA 40 CFR §264.95 for monitoring wells to be located in the ARG strata at the point of compliance immediately along the western and southern side of the MWL dump?**

RCRA 40 CFR §264.98 requires a detection monitoring program at the MWL dump that meets the following requirement:

> §264.98(e). The owner or operator must determine the ground-water flow rate and direction in the uppermost aquifer at least annually.

DOE/SNL has never installed the network of monitoring wells at the MWL dump to meet the requirement of 40 CFR §264.98(e). DOE/SNL does not have accurate knowledge of the ground-water flow rate and direction in the uppermost aquifer i.e., the ARG strata because only one monitoring well MW6 exists in the uppermost aquifer. The averaging of different wells in different strata further misrepresents the flow properties at the MWL. Similarly, DOE/SNL does not have accurate knowledge of the direction or rate of flow at the water table in the fine-grained alluvial sediments.

- **Does NMED recognize the need for the installation of a network of monitoring wells at the MWL dump to meet the requirement of 40 CFR §264.98(e)?**

Mistakes in the installation of well MWL-MW4. Well MW4 is a multiple-screen well with two well screens. The well was installed at an angle beneath Trench D to investigate contamination by the 271,000 gallons of reactor coolant water that was dumped into the unlined trench. The upper screen is installed in the fine-grained sediments deep below the water table and the lower screen is installed across the contact of the fine-grained sediments with the ARG strata. The well was installed to investigate contamination at the water table but fails to meet this purpose because the top of the upper screen was installed too deep below the water table.

There is the ubiquitous presence of nitrate at high levels in the water samples collected from the water table below the MWL dump, but the water produced from the upper screen in well MW4 is low in nitrate. The water samples produced from monitoring well MW-6 show that water in the ARG strata are also low in nitrate.

The water level measured in the upper screen in well MW4 is much deeper than the water levels measured in the wells that are installed across the water table. In fact, the deep water levels measured in the upper screen in well MW4 is nearly identical to the level measured in the deeper ARG strata at well MW6. The anomalously deep water level

measured in the upper screen in well MW4 is evidence of leakage between the upper and lower screen.

The water level information, the quick refilling of the upper screen in well MW4 after it is pumped dry, and the low levels of nitrate are all evidence that there is leakage between the upper and lower screens in well MW4. At a minimum this leakage has been present since 2001 to the present. The placement of the upper screen at too great a distance below the water table and the ongoing leakage have prevented well MW4 from producing reliable and representative water samples for knowledge that releases from the MWL dump are contaminating the groundwater. There is an immediate need to plug and abandon well MW4 and replace the well with a new well installed to investigate groundwater contamination at the water table beneath Trench D.

- **Does NMED recognize the mistakes in the installation of well MW4 that have prevented the well from ever producing reliable and representative water samples for detection of groundwater contamination at the water table below the MWL dump?**
- **Does NMED recognize that leakage is occurring between the two screens in well MW4 and there is an immediate need to plug and abandon the well and install a new well to investigate groundwater contamination at the water table below Trench D at the MWL dump?**
- **If NMED does not recognize the leakage, then what proof does NMED have that leakage is not occurring? Keep in mind that proper inflation pressure in the packer that is installed between the two screens is not proof that leakage is not occurring.**

Mistakes in the installation of well MWL-MW5. Well MW5 is at a location too distant (175 ft) from the western boundary of the MWL dump to meet the point of compliance requirements of RCRA §264.95.

In addition, the screen in well MW5 is installed too deep below the water table to detect contamination at the water table.

Furthermore, an important mistake in the installation of well MW5 is that the well screen is installed across the contact of the alluvial fan sediments with the deeper ARG strata. The well produces a mixture of water from both geologic formations and is not reliable for the detection of contamination in either formation.

The NMED SNL Consent Order (section VIII.A.6) requires wells to be installed in only one zone of saturation in terms of aquifer properties as follows:

> "In constructing a well or piezometer, Respondents shall ensure that the well or piezometer will not serve as a conduit for contaminants to migrate between different zones of saturation."

An October 30, 2001 position paper of the NMED Hazardous Waste Bureau provides additional caution on cross-cutting screens as follows:

> "Wells with screened intervals connecting intervals of different head and/or hydraulic conductivity may act as conduits for vertical flow within the screened interval."

The construction record and the water level data are proof that the screen in well MW5 is connecting intervals of different head and hydraulic conductivity and is a conduit for vertical flow within the screened interval between the fine-grained alluvial sediments and the ARG strata.

An additional serious mistake at well MW5 is that the record of well construction shows that bentonite clay/cement grout was mistakenly poured inside the well and that the well development activities were not successful to clean the grout from the screened interval. The clay and the cement have strong properties to mask the detection of contamination in the water samples produced from the well.

Monitoring well MW5 has never produced reliable and representative water samples for the detection of groundwater contamination from releases from the MWL dump. There is an immediate need to plug and abandon well MW5 and install two new monitoring wells east of well MW5 immediately at the western boundary of the MWL dump. One of the new wells should be screened across the water table. The second well should be screened only in the ARG strata.

- **Does NMED recognize that well MWL-MW5 has never produced reliable and representative water samples for detection of groundwater contamination at the water table in the alluvial fan sediments?**
- **Does NMED recognize that well MWL-MW5 has never produced reliable and representative water samples for detection of groundwater contamination in the ARG strata?**
- **Does NMED recognize that the ARG strata are the "uppermost aquifer" as defined in RCRA SS 264.90 through 264.100?**
- **Does NMED recognize the need to plug and abandon well MWL-MW5 and replace the well with two new monitoring wells installed at the point of compliance; one well installed across the water table and the other well installed only in the ARG strata?**

The corrosion of stainless steel well screens has masked the detection of groundwater contamination below the MWL dump for longer than the past ten years. Monitoring wells MWL-BW1, -MW1, -MW2 and -MW3 have stainless steel screens. For more than the past ten years, corrosion of the screens was claimed as responsible for the measurement of high levels of nickel and chromium in the water samples produced from the wells. However, as shown in Table 1, the levels of nickel contamination in MW1 are an order of magnitude higher than the nickel levels in BW1. Both well screens are stainless steel and corroded. The markedly higher levels of nickel

measured in MW1 exceed the level that can be assigned to corrosion and represent direct evidence of a release from the dump. In fact, on July 2, 2007 DOE/SNL sent a letter to notify NMED that chromium levels measured in water samples produced from wells MWL-MW1 and -MW3 for the April 2007 sampling event exceeded the EPA MCL for chromium. In the letter, DOE/SNL made the unsubstantiated claim that corrosion of the stainless steel well screens was responsible for the high concentrations.

Over the years, NMED made the mistake to accept the unsubstantiated claim by DOE/SNL that corrosion of the stainless steel screens was the only source for the high levels of chromium and nickel. There is a record of disposal of a large volume of chromium liquid wastes in the MWL dump. There is also a record of the release of nickel wastes to the geologic formations below the dump. The buried wastes in the dump may be responsible for the high levels of nickel and chromium contamination measured in the groundwater below the dump.

It was a mistake for NMED to order DOE/SNL to plug and abandon wells MW1 and MW3 without first collecting water samples for special analytical techniques that would possibly identify if there was a release from the MWL dump. For example, water samples should be analyzed for low-levels of tritium and with chromium isotopic analyses to identify if the wastes in the dump were a contributor to the chromium contamination measured in groundwater. NMED should order DOE/SNL to collect water samples from the two wells for these analyses if the wells have not already been plugged and abandoned.

In addition, NMED should have ordered DOE/SNL to replace the wells with wells that have PVC screens when the anomalously high levels of nickel and chromium were first known to be present. High levels of chromium were first measured in well MW1 in 1997 and in MW3 in 2001.

Table 1 presents the nickel concentrations measured in wells MW1, BW1, and MW2. There is a history of measurement of anomalously high levels of nickel in water samples from well MW1 beginning with the first water sample collected in 1990 with total and dissolved levels of 46 and 43 ug/L, respectively. For comparison, the NMED approved background for total and dissolved nickel in groundwater is 28 ug/L.

Over the years, the waters produced from well MW1 show exceptionally high levels of nickel with levels above 400 ug/L since 2004. The high levels of dissolved nickel measured in well MW1 are anomalously high for the levels expected from corrosion of stainless steel well screens. Recent research has established that corrosion produces the highest levels of nickel in the early years of onset of corrosion, and in later years the dissolved nickel levels show a large decline. The decline is because of the exceptional properties of the corrosion products encrusted on the well screens to lower the concentration of nickel in water samples produced from the corroded screens. The corrosion products have an iron oxide mineralogy with strong properties for adsorption of many trace metals including nickel and chromium. Table 1 shows that this phenomenon of increase in nickel levels to a plateau followed by a great decline in measured values is

recorded for the history of nickel values measured in the water samples produced from wells BW1 and MW2.

Table 1. Total and Dissolved Zinc Measured in the Water Samples Produced From Monitoring Well MWL-MW1, -BW1 and - MW2 at the Sandia Mixed Waste Landfill.

- All three wells have stainless steel screens that have become corroded.

Date	- Well MW1 Nickel (ug/L) Total / Dissolved	- Well BW1 Nickel (ug/L) Total / Dissolved	- Well MW2 Nickel (ug/L) Total / Dissolved
09 - 90	46 / 43	ND[a] < 40 / ND < 40	ND < 40 / ND < 40
01 - 91	NA[b] / NA	NA / NA	NA / NA
04 - 91	NA / NA	NA / NA	NA / NA
10 - 91	NA / NA	NA / NA	NA / NA
07 - 92	150 / 63	ND < 40 / ND < 40	ND < 40 / ND < 40
01 - 93	78 / NA	ND < 40 / NA	ND < 40 / NA
04 - 93	97 / 94	7.5 / 16	14 (j)[c] / 13 (j)
11 - 93	95 / NA	ND < 40 / NA	ND < 40 / NA
05 - 94	110 / NA	NA / NA	ND < 40 / NA
10 - 94	130 / NA	ND < 40 / NA	ND < 40 / NA
04 - 95	120 / NA	NA / NA	7.5 (j) / NA
10 - 95	107 / NA	1.96 (j) / NA	NA / NA
04 - 96	145 / NA	ND < 0.81 / NA	3.42 (j) / NA
04 - 97	NA / NA	NA / NA	NA / NA
10 - 97	NA / NA	NA / NA	NA / NA
04 - 98	398 / 538	2.9 (j) / NA	5 (j) / 4
11 - 98	490 / 467	7.19 / 9.47	4.49 / 3.42
04 - 99	266 / 313	12.8 / 14.3	5.31 / 4.37
04 - 00	279 / 281	16.5 / NA	124 / NA
04 - 01	252 / NA	191 / NA	88.2 / NA
04 - 02	265 / NA	13.6 / NA	89.7 / NA
04 - 03	374 / NA	26.6 / NA	52 / NA
04 - 04	401 / NA	33.2 / NA	10.5 / NA
04 - 05	424 / 405	35.5 / NA	8.0 / 7.1
04 - 06	477 / NA	----------	6.8 / NA

ug/L = micrograms per liter or parts per billion

ND[a] = nickel was not detected at the listed minimum detection level

NA[b] = nickel was not analyzed in samples collected on this date

(j)[c] = the listed value is an estimated value

- The NMED approved background for total and dissolved nickel in groundwater is 28 ug/L.

- The groundwater quality standard of the New Mexico Water Quality Bureau for nickel is 200 ug/L.

- In 1974, EPA set the drinking water standard for nickel at 100 ug/L. EPA remanded the drinking water standard for nickel on February 9, 1995 and has not set a new standard.

- The 2004 World Health Organization Guideline Value is that drinking water shall not contain nickel at concentrations greater than 20 ug/L.

- For well BW1, the highest level of nickel @ 191 ug/L was measured in 2001. Since 2001, the measured nickel levels declined to a value of 35.5 ug/L in 2005.
- For well MW2, the highest level of nickel @ 124 ug/L was measured in 2000. Since 2000, the measured nickel levels declined to a value of 6.8 ug/L in 2006.

However, the nickel contamination measured in well MWL-MW1 does not show the pattern expected from corrosion. Instead, the consistent and continuing high levels are evidence of nickel contamination in groundwater because of a release from the MWL dump. Very high levels of 538 and 467 ug/L dissolved nickel were measured for two sampling dates in 1998. The measured values remained high and above 400 ug/L for samples collected in years 2004 to 2006. There is a need to investigate the groundwater contamination at the location of well MW1 by installation of a new monitoring well with a nonmetallic PVC screen immediately between the location of well MW1 and the northern side of the MWL dump.

NMED fails to address the nickel contamination that is present in the groundwater because of a release from the dump. The nickel contamination is required under RCRA to be investigated. Instead, the current plan is to plug and abandon MW1 without further investigation. The corrosion that is present in MW1 may be hiding contamination additional to the nickel. The improper sampling at MW1 further masks the contamination at MW1. See Table 1 for the MWL-MW1 data on nickel.

In 1974, EPA set the drinking water standard for nickel at 100 ug/L. However, EPA remanded the drinking water standard for nickel on February 9, 1995 and has not set a new standard. The New Mexico groundwater quality standard for nickel is 200 ug/L. The 2004 World Health Organization Guideline Value is that drinking water shall not contain nickel at concentrations greater than 20 ug/L. The nickel values of greater than 400 ug/L that are consistently measured in the groundwater produced from well MW1 are far above the water quality standard of the state of New Mexico of 200 ug/L.

NMED has a history of arbitrary and inconsistent practice at the Los Alamos National Laboratory (LANL) and Sandia. When LANL made a claim to NMED that the high levels of chromium and nickel measured in two screened intervals of a LANL monitoring well were because of corrosion, NMED immediately responded with an order in a letter dated April 5, 2007 to install new wells stating that

> "The required actions stem from <u>speculation</u> by the Permittees that nickel and chromium detections represent leaching of stainless steel well casing in screens #1 and #2" [emphasis added].

It is well known in the technical literature including the RCRA guidance documents that corrosion causes stainless steel screens to be encrusted with corrosion products that have properties to prevent the detection of many contaminants of concern for releases from the MWL dump. From the pertinent section of *RCRA Ground-Water Monitoring: Draft Technical Guidance, November 1992*:

> "Monitoring well casing and screen materials should not chemically alter ground-water samples, especially with respect to the analytes of concern, as a

result of their sorbing, desorbing, or leaching analytes. For example, if a metal such as chromium is an analyte of interest, the well casing or screen should not increase or decrease the amount of chromium in the ground water. Any material leaching from the casing or screen should not be an analyte of interest, or interfere in the analysis of an analyte of interest" (p.6-16 to 6-18).

"The presence of corrosion products represents a high potential for the alteration of ground-water sample chemical quality. The surfaces where corrosion occurs also present potential sites for a variety of chemical reactions and adsorption. These surface interactions can cause significant changes in dissolved metal or organic compounds in ground-water samples" (p. 6-30).

"Disadvantages of stainless steel well casing and screen materials:
· May corrode under some geochemical and microbiological conditions;
· May sorb cations and anions;
· May contribute metal ions (iron, chromium, nickel, manganese) to groundwater samples;
· High weight per unit length; and
· Type 304 and Type 316 stainless steel are unsuitable for use when monitoring for inorganic constituents" (p. 6-32). (Emphasis supplied).
[Note: The well screens at the MWL dump are Type 304 stainless steel. Many of the contaminants of concern at the MWL dump are inorganic constituents. In 2007, NMED has ordered for the replacement monitoring wells at the MWL dump to be installed only with screens made of nonmetallic PVC.]

- **Does NMED recognize that corrosion of the stainless steel screens has prevented monitoring wells MWL-BW1, -MW1, -MW2 and -MW3 from producing reliable and representative water samples from at least 1997 to the present?**

RCRA identifies the high levels of nickel contamination measured in the water samples produced from monitoring well MWL-MW1 as "Statistically Significant Evidence of Contamination." The discussion of "statistically significant evidence of contamination" is in **40 CFR 40 CFR §264.98 Detection Monitoring Program** with the following pertinent parts:

"(2) The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well as the compliance point within a reasonable period of time after completion of sampling. The Regional Administrator will specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground-water samples."

"(g) If the owner or operator determines pursuant to paragraph (f) of this section that there is statistically significant evidence of contamination for chemical

parameters or hazardous constituents specified pursuant to paragraph (a) of this section at any monitoring well at the compliance point, he or she must:

(1) Notify the Regional Administrator of this finding in writing within seven days. The notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;"

"(4) Within 90 days, submit to the Regional Administrator an application for a permit modification to establish a compliance monitoring program meeting the requirements of §264.99. The application must include the following information:

(i) An identification of the concentration of any appendix IX constituent detected in the ground water at each monitoring well at the compliance point;

(ii) Any proposed changes to the ground-water monitoring system at the facility necessary to meet the requirements of §264.99;"

DOE/SNL did not inform NMED that the high levels of nickel measured in monitoring well MWL-MW1 represent "statistically significant evidence of contamination" and that DOE/SNL was required to establish a compliance monitoring program meeting the requirements of 40 CFR §264.99. The monitoring wells installed at the MWL dump never met the compliance monitoring program requirements of §264.99. A minimum requirement was to replace monitoring well MWL-MW1 with a well that had a nonmetallic PVC screen to make a determination of the source of the nickel contamination that was consistently and continuously measured to the present time at high levels in the water samples produced from the well.

- **Does NMED recognize that the high nickel values consistently and continuously measured in the water samples produced from monitoring well MWL-MW1 represent evidence of groundwater contamination due to a release from the MWL dump?**
- **Does NMED recognize that there is a requirement to install a new monitoring well with a nonmetallic screen immediately near the location of well MW1 to accurately measure the nickel contamination and to investigate if additional contamination is present given the properties of the corroded well screen to mask the detection of many inorganic contaminants of concern for the buried wastes in the MWL dump?**
- **What proof does NMED have that the high nickel values measured in well MWL-MW1 do not represent a release from the hazardous wastes buried in the MWL?**

Improper sampling methods have prevented wells MWL-BW1, -MW1, -MW2, -MW3, and -MW4 from producing reliable and representative water samples. NMED approved of the improper high-flow pumping methods that were used for purging the five wells to dryness with the collection of water samples days later from the highly aerated water that refilled the wells. The improper purging and sampling methods have

prevented the wells from being reliable for the detection of the volatile solvent contaminants that are known to be buried in the MWL dump.

There are many EPA reports published over the past 20 years that describe the need to use low-flow purging and sampling techniques in order to collect reliable and representative water samples from monitoring wells installed in the alluvial sediments that are present at the water table below the MWL dump. Despite these reports, NMED requested for DOE/SNL to use high-flow sampling methods that masked the detection of the volatile solvent contaminants that may be present in the groundwater beneath the MWL dump.

In fact, DOE/SNL propose the use of low-flow purging and sampling techniques in the Long Term Monitoring and Maintenance Plan (LTMMP) that NMED released for public comment on October 31, 2007:

> "In order to obtain the most representative samples possible, the DOE/Sandia will use dedicated low-flow pumps and sampling techniques in MWL wells during long-term monitoring. Low-flow purging and sampling techniques are recommended for all MWL wells because the hydrogeologic environment is well suited for this type of groundwater sampling. In the past, low-flow sampling techniques have been successful at other sites across SNL/NM. However, on October 23, 2003, the NMED requested that all DOE/Sandia low-flow sampling (which the NMED termed "micropurging") be ceased for all RCRA-compliant groundwater monitoring at SNL/NM (NMED October 2003).
>
> The low-flow purging method has been approved by the EPA (Puls and Barcelona 1996) and offers the following advantages over conventional sampling methods currently used at the MWL:
> • Low-flow sampling causes less well disturbance, minimizing the disturbance of the fine-grained sediments that have collected in the wells. As a result, samples collected using low-flow purging and sampling methods typically have lower sample turbidity and variability of sampling results.
> • Low-flow sampling minimizes the required purge volume by up to 95 percent, reducing the time and labor required for purging and sampling and minimizing waste.
> • Low-flow purging reduces problems related to excessive drawdown and pumped volumes.
> • Dedicated equipment for low-flow sampling saves field time and eliminates contamination from other wells and equipment handling" (p. 3-27).

- **Does NMED recognize that the improper high-flow purging and sampling methods have prevented the collection of reliable and representative water samples from five of the seven monitoring wells at the MWL dump?**
- **Does NMED recognize that the improper high-flow purging and sampling methods may have masked the detection of solvent contaminants in the water samples produced from the monitoring wells at the MWL dump?**

Failure to install the required network of detection monitoring wells immediately along the western and southern boundary of the MWL. The only monitoring well that was ever installed at a location close to the western boundary of the MWL is well MW3. However, even this well has never produced reliable and representative water samples because of 1). the mud-rotary drilling method that invaded the screened interval with a combination of bentonite clay and organic additives, 2). the improper sampling method that pumped the well to dryness with collection days later of the water that refilled the well and 3). corrosion of the stainless steel well screen.

In 2007 NMED and DOE/SNL recognized some of the deficiencies in the existing network of monitoring wells at the MWL dump. The fact that NMED now recognizes the requirement of RCRA to locate monitoring wells immediately along the western side of the MWL dump is shown by the instruction for the installation of two new monitoring wells in an order issued by NMED to DOE/SNL in a letter sent on 10-30-07:

> "The new wells need to be placed as close to the old landfill boundary as possible to ensure the detection of any contaminants in the groundwater. Thus, NMED approves the work plan with the following conditions.
>
> - Both new wells shall be positioned as close as possible to the former west fence that originally surrounded the Mixed Waste Landfill. NMED is aware that, once installed, the new wells will fall within the footprint of the new cover."

The DOE/SNL *Long-Term Monitoring and Maintenance Plan* (LTMMP) that was released by NMED for public comment on October 31, 2007 proposes to install three new monitoring wells at locations within 70-ft of the western fence line. The new wells are proposed to be installed across the water table.

The LTMMP still fails to meet the requirements of RCRA for the necessary network of monitoring wells because the flow of groundwater at the water table is to the southwest and the LTMMP does not install any monitoring wells along the southern side of the MWL dump. The LTMMP also does not identify the need in RCRA §264.95 to install monitoring wells in the ARG strata at locations immediately along the western and southern sides of the MWL.

- **Does NMED recognize the requirement of RCRA to locate monitoring wells immediately along the southern side of the MWL dump with screens installed across the water table for "early detection of contamination" and with screens installed in the deeper ARG strata; the strata recognized by RCRA as the uppermost aquifer?"**

The MWL monitoring wells are not at crucial locations for knowledge of groundwater contamination from the highly mobile contamination in the buried wastes. The sampling investigations performed in the 1980's and early 1990's identified discrete regions inside the MWL where large quantities of tritium and solvent wastes including PCE were buried. There are no monitoring wells at appropriate locations to identify if these wastes have contaminated the groundwater. This is an important issue because the fate and transport model uses the highly mobile tritium and PCE as "indicator

parameters" that the groundwater below the MWL dump is not contaminated. The assertion by DOE/SNL and NMED of "no contamination in groundwater" from releases at the MWL is disingenuous and not proven because there are no monitoring wells at the locations where this groundwater contamination would be expected to be present.

The NMED Notice of Disapproval (NOD) issued on November 24, 2006 ordered DOE/SNL to install monitoring wells inside the MWL where high levels of contaminants were discovered in the earlier RCRA facility investigations (RFI).
The order from NMED Comment No. 19 and the response from DOE/SNL is as follows in pertinent part from the DOE/SNL response on January 15, 2007:

> Comment 19 in the NMED Order: Propose some additional monitoring to be conducted at locations within the landfill where contaminants were detected at their highest levels during the RFI.
> DOE/SNL Response to Comment 19: Additional monitoring at locations within the landfill using intrusive techniques is not recommended, and could compromise the integrity of the cover.

The refusal of DOE/SNL to install monitoring wells inside the MWL dump to investigate groundwater contamination by tritium and solvents including PCE is unacceptable. The existing monitoring well MWL-MW4 is installed through the cover. In addition, NMED issued an letter on October 30, 2007 that ordered DOE/SNL to install monitoring wells through the cover:

> Both new wells shall be positioned as close as possible to the former west fence that originally surrounded the Mixed Waste Landfill. NMED is aware that, once installed, the new wells will fall within the footprint of the new cover.

It is essential to install monitoring wells at locations inside the MWL dump where large quantities of the highly mobile tritium and solvent wastes are known to be buried. The monitoring wells should be a design for measuring contamination in the soil gas throughout the thick vadose zone and also measuring contamination in water samples collected at the water table.

- **Will NMED order DOE/SNL to install monitoring wells inside the MWL dump as required by the NMED Notice of Disapproval (NOD) issued on November 24, 2006?**

The immediate need to install a network of monitoring wells for monitoring the release of contamination to the vadose zone below the unlined pits and trenches of the MWL. There is an essential need to monitor the release of contaminants to the vadose zone for early detection and remediation of the release. However, the DOE/SNL LTMMP does not propose to monitor the vadose zone beneath the unlined pits and trenches. Instead, DOE/SNL propose to monitor the vadose zone at only three locations that are located outside the perimeter of the proposed dirt cover and are too distant from the unlined pits and trenches for the detection of releases that may contaminate the groundwater below the MWL dump.

Indeed, the groundwater at the water table below the MWL dump may already be contaminated with tritium and solvents including PCE, but this contamination has not been detected because of the deficiencies in the existing network of monitoring wells and will not be investigated by the monitoring scheme in the DOE/SNL LTMMP. RCRA §264.98 requires continuous monitoring of the vadose zone beneath each of the unlined pits and trenches at the MWL for early detection of releases. This required monitoring has never been performed and is not included in the LTMMP.

- **Will NMED require the installation of a large network of multiple-port monitoring wells for sampling the soil gas from immediately below the unlined pits and trenches to a depth of up to 100 feet below the bottom of the disposal units for early detection of releases?**
- **Will NMED require the installation at appropriate locations inside the MWL of multiple-port wells to sample soil gas at appropriate depths throughout the thickness of the vadose zone to the top of the region zone of saturation?**

DOE/SNL annual groundwater monitoring reports have misrepresented the monitoring well network at the MWL dump. The annual DOE/SNL groundwater monitoring reports up to 2006 always presented the monitoring wells at the MWL dump to be at appropriate locations and to produce reliable and representative water samples. From the 2006 report prepared for SNL Department 6765 by Shaw Environmental, Inc.

> "Annual groundwater sampling was conducted at the MWL located in Technical Area 3 at SNL/NM. Sampling was conducted from April 3 through April 18, 2006. All seven monitoring wells at the MWL were sampled, including background monitoring well MWL-BW1, on-site monitoring well MWL-MW4, and <u>downgradient monitoring wells</u> MWL-MW1, MWL-MW2, MWL-MW3, MWL-MW5, and MWL-MW6" [emphasis supplied](p. 3).
>
> The Executive Summary from the 2006 report -
> "Annual groundwater sampling was conducted at the Sandia National Laboratories Mixed Waste Landfill (MWL) in April 2006. Seven monitoring wells were sampled using a Bennett™ pump in accordance with the April 2006 Mini-Sampling and Analysis Plan for the MWL (SNL/NM 2006). The samples were analyzed off site at General Engineering Laboratories, Inc. for a broad suite of radiochemical and chemical parameters, and the results are presented in this report. <u>The results</u> show constituent concentrations within historical ranges for the site and <u>indicate no evidence of groundwater contamination from the landfill</u>" [emphasis supplied].

- **Does NMED support the claim made in the DOE/SNL 2006 annual groundwater monitoring report that the well monitoring network consists of five downgradient monitoring wells and one background well? If so, then state the basis for the support of the statement.**
- **Does EPA support the position in the DOE/SNL 2006 annual groundwater monitoring report that the well monitoring network produced water quality data that was reliable and representative to "indicate no evidence of groundwater**

contamination from the landfill?" If so, then state the basis for the support of the statement.

55. The above described problems at the SNL Mixed Waste Landfill are typical of problems throughout the SNL facility for lack of appropriate groundwater monitoring requirements being in place. Further, numerous well screens throughout the SNL facility are corroded and in need of replacement. SNL and NMED should provide the current listing of the many wells that require replacement due to corrosion.
56. The Los Alamos National Laboratory (LANL) provided an informational meeting for the LANL RCRA permit to the Northern New Mexico Citizen Advisory Board. A similar meeting is hereby requested for interested organizations, including Citizen Action, to be held in the Albuquerque area by Sandia National Laboratories previous to close of any comment period. NMED should ensure that the DOE apply equivalent treatment for public participation for the review of the Sandia RCRA permit.
57. The Draft Permit should further be denied due to the refusal of DOE/SNL for over a year to provide answers to the following questions relevant to air emissions submitted on a Freedom of Information Request to DOE/SNL that should be answered by the Draft Permit:
    a. Provide documents that show the types and amounts of potential chemical emissions for each facility at SNL. (SA, p. 3-17, para 3.8.1).
    b. Provide documents showing any State of New Mexico or EPA air permit for the Thermal Treatment Facility. (SA, p. 2-43).
    c. Provide documents showing the types of solvents burned at the Thermal Treatment Facility.
    d. Provide documents that describe the "existing SNL/NM program" for decontamination, decommissioning and demolition of the MDL under the MESA project. (SA, p. 2-45).
    e. Provide documents that describe whether the "existing SNL/NM program" for decontamination, decommissioning and demolition of the MDL under the MESA project is a RCRA regulated activity.
    f. Identify all facilities using High Particulate Efficiency Filters (HEPA) and for each facility using HEPA filters provide the RCRA waste codes for any hazardous wastes contained in the HEPA filters.
    g. Provide documents showing disposal of HEPA filters for the question above.
    h. Provide documents that show the total inventory of radionuclides at SNL.
    i. Provide documents providing the factual data for the conformity analysis performed for SNL.
    j. Provide USEPA air permit for hazardous air pollutants.
    k. Provide documents showing the types and quantities of radiological air emissions for each facility at SNL.
    l. Provide the documents for any independent analyses that have been performed for radiological air emissions at SNL.
    m. Provide documents showing the methods used for monitoring the chemical and radiological air emissions for each facility at SNL.

n. Provide documents which show the programs in place at SNL for monitoring and controlling hazardous air pollutants for each facility at SNL.
o. Provide documents that analyze for any disproportionate adverse health or environmental effects on minority or low income populations within the ROI (Region of Interest) 15 mile radius about the SNL Steam Plant. (SA, p. 3-38, para 3.15 and SA, p. 4-8, para 4.2.8).
p. Provide documents showing the potential environmental releases/effects for a terrorist attack on facilities at SNL.
q. Provide documentation as to whether SNL constitutes a "major source" as defined by 40 CFR 63.2.
r. Provide documents that show the facilities for which SNL is required to comply with the Maximum Achievable Control Technology (MACT) requirements of 40 CFR 63.
s. Provide the location for all process vents at SNL including but not limited to, process vents for the processes of distillation, fractionation, thin-film evaporation process, solvent extraction process, steam stripping process and gas stripping process. A process vent means an open-ended pipe, stack, or duct through which a gas stream containing hazardous air pollutants (HAP) is continuously or intermittently discharged to the atmosphere by any of the processes listed in 40 CFR 63.680(c)(2)(i) through (c)(2)(vi).
t. Provide documents that demonstrate compliance for SNL with 40 CFR 63.683 (b) that provides general standards for control of air emissions, removal or destruction of hazardous air pollutants (HAP), and concentration limits for treatment.
u. Provide documents that demonstrate compliance for SNL with 40 CFR 63.683 (c) that provides for controls for air emissions from process vents.
v. Provide documents that demonstrate compliance for SNL with 40 CFR 63.683 (d) that provides for controlling equipment leaks by implementing leak detection and control measures specified in section 63.691.
w. Provide documents that demonstrate compliance for SNL with 40 CFR 63.684 that provides standards for off-site material treatment to remove or destroy HAP at specified performance levels for different types of treatment processes.
x. Provide documents that identify the use of any incineration or thermal destruction devices at SNL.
y. Provide documents that demonstrate compliance for SNL with 40 CFR 63.685 that provides standards for control of air emissions from tanks.
z. Provide documents that demonstrate compliance for SNL with 40 CFR 63.689 that provides standards for transfer systems.
aa. Provide documents that demonstrate compliance for SNL with 40 CFR 63.690 that provides standards for process vents.
bb. Provide documents that demonstrate compliance for SNL with 40 CFR 63.691 that provides standards for equipment leaks.
cc. Provide documents that demonstrate compliance for SNL with 40 CFR 63.694 that covers testing methods and procedures for measurement of VOHAP concentration at point of delivery and point-of-treatment.

58. Citizen Action supports inclusion in the Sandia permit of a Public E-Mail Notification List, as has been included in the WIPP Permit, Module I.H. That provision was agreed to by DOE, numerous organizations, and NMED, and should be included in the Sandia permit. Sandia should provide a link on its Home Page whereby members of the public may review the actions requiring e-mail notification. Specific provisions of the Sandia permit should include the notice requirement to inform those on the e-mail notification list.
59. The issues listed above are not exhaustive of Citizen Action's concerns, and we are aware that several other organizations, may submit comments that identify numerous other issues which we also believe should be fully addressed in the permit.
60. Citizen Action requests a public hearing on the draft permit. Further, and prior to any notice of public hearing, pursuant to 20.4.1.901. A.4 NMAC, Citizen Action requests that NMED, the Permittees, and other parties conduct negotiations to attempt to resolve issues related to the draft permit. Citizen Action believes that other parties and NMED would agree with some of the concerns and objections raised in our comments and that a revised draft permit could be developed prior to the public hearing, so that continuing and additional public comment is taken throughout the permitting process.

Thank you for your consideration. Please submit this statement for the administrative record for the SNL Draft RCRA Part B permit, the Module IV permit modification and the LTMMP proceedings.

Sincerely,

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December 5, 2008
Mr. James Bearzi, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

RE: - 1. NMED November 20, 2006 Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Work Plan, November 2005, And Requirements For Soil-Vapor Sampling and Analysis Plan Sandia National Laboratories (the November 20, 2006 NOD)

- 2. NMED September 26, 2008 Approval: *INVESTIGATION REPORT ON THE SOIL-VAPOR VOLATILE ORGANIC COMPOUNDS, TRITIUM, AND RADON SAMPLING AT THE MIXED WASTE LANDFILL, AUGUST 2008* - (the Soil Vapor Report).

- 3. NMED October 10, 2008 Notice of Disapproval: *MIXED WASTE LANDFILL CORRECTIVE MEASURES IMPLEMENTATION PLAN, NOVEMBER 2005 SANDIA NATIONAL LABORATORIES, NM5890110518 SNL-05-025* - (the October 10, 2008 NOD).

Dear Mr. Bearzi,

Regarding the above actions by the Hazardous Waste Bureau (HWB) of the New Mexico Environment Department (NMED), the Interested Parties (Citizen Action and Registered Geologist Robert H. Gilkeson) are requesting

- 1). a notice period for public comment and review of the "*INVESTIGATION REPORT ON THE SOIL-VAPOR VOLATILE ORGANIC COMPOUNDS, TRITIUM, AND RADON SAMPLING AT THE MIXED WASTE LANDFILL, AUGUST 2008*" - (the 2008 Soil Vapor Report),
- 2). a public hearing on the 2008 Soil Vapor Report, and
- 3). answers to the questions in this letter.

Major Finding No. 1. The sampling locations in the 2008 Soil Vapor Report were at too few locations to meet the requirements in the NMED November 20, 2006 NOD that are pasted below:

- From page 8 in the November 20, 2006 NOD:

  - "**General Comments and Requirements for Soil-Gas Sampling**
  As the Permittees are aware, most site characterization data for the MWL (other than groundwater data) dates before the mid 1990's. Because the rupturing of containers and the leaking of their contents could have occurred since the mid 1990's, the NMED requires more current soil-gas data to help resolve this issue [emphasis supplied]. The Permittees shall therefore collect and analyze active soil-gas samples taken at depths of 10 and 30 feet at a minimum of three locations within the landfill where previous sampling has detected the highest soil-gas concentrations in the past. The soil-gas samples shall be analyzed for volatile organic compounds, tritium, and radon."

- From page 7 in the November 20, 2006 NOD:

  - Comment no. 19 on the MWL Fate and Transport Model. "Propose some additional monitoring to be conducted at locations within the landfill where contaminants were detected at their highest levels during the RFi."

However, the data presented in the 2008 Soil Vapor Report are proof that

- 1). samples were collected at too few locations to identify the rupturing of containers and the leaking of their contents that could have occurred since the mid 1990's,
- 2). the data presented in the Soil Vapor Report show the need to collect soil-gas samples at many locations across the MWL dump and at depths much greater than 50 feet below ground surface (bgs) in order to determine the nature and extent of contamination with tritium, VOCs, and methane, and
- 3). the Soil Vapor Report did not include samples collected at important locations within the MWL dump where contaminants were detected at their highest levels during the mid-1990's Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI).

The failure of the Soil Vapor Report to include samples collected at locations within the landfill where contaminants were detected at their highest levels during the mid-1990's RFI was described below in the October 10, 2008 NOD:

  - "In NOD Comment 19, NMED asked that the Permittees propose additional monitoring points at locations (surface and subsurface) within the landfill where contaminants were detected at their highest levels during the RCRA Facility Investigation of the MWL. No additional sampling was proposed by the Permittees, ..."

The October 10, 2008 NOD was issued <u>after</u> the NMED approved the 2008 Soil Vapor Report on September 26, 2008, and the failure of DOE/SNL to collect samples within the MWL dump where samples were detected at their highest levels during the RFI was reason alone that it was a mistake on September 26, 2008 for the NMED HWB to approve the DOE/SNL *Investigation Report On The Soil-Vapor Volatile Organic Compounds, Tritium, And Radon Sampling At The Mixed Waste Landfill* (the 2008 Soil Vapor Report).

The failure of the 2008 Soil Vapor Report to include subsurface samples from the locations in the Classified Area of the MWL dump where the large inventory of tritium wastes are buried in unlined pits is illustrated by Figures 1, 2, 3 and 4. Figure 1 is a map of the MWL dump. Figure 2 shows the six locations (DP1 to DP6) where subsurface samples were collected for tritium and soil-vapor VOCs. However, Figures 3 and 4 show that none of the six sampling locations were close to the unlined pits in the Classified Area of the MWL dump where the large inventory of tritium wastes are buried.

The fact that a very large inventory of the tritium wastes were buried in Pit 33 in the Classified Area was described in Finding no. 62 in the April 20, 2005 NMED Hearing Officers Report for the MWL dump. Finding no. 62 is pasted below:

  - "62. Sandia's 1992 and 1993 surface samples indicated that the highest tritium activities were at Pit 33, where records show that almost half of the curies of tritium disposed of at the landfill were placed."

Figure 4 shows that the highest tritium contamination of surface soils at the MWL dump is at the location of Pit 33 in the Classified Area. Figure 3 shows that much of the inventory of tritium waste were buried in Pit 33 and other unlined pits in the Classified Area of the MWL dump. Comparison of Figure 2 to Figure 3 shows the great distance that all of the 6 DP probe holes were located away from Pit 33 and the other unlined pits where the inventory of tritium wastes were disposed of.

Question no. 1. Why did NMED approve of the 2008 Soil Vapor Report given the failure of DOE/SNL to collect samples near the unlined pits in the Classified Area where the large inventory of tritium wastes were known to be buried?

The November 20, 2006 NMED NOD described the purpose of the 2008 Soil Vapor Report as follows:

- "Because the rupturing of containers and the leaking of their contents could have occurred since the mid 1990's, the NMED requires more current soil-gas data to help resolve this issue."

Figures 12 and 13 are pictures of barrels of waste disposed of into Trenches E and F at the MWL dump. However, Figure 2 shows that the 2006 Soil Vapor Report collected no data for tritium or VOCs at locations close to the two trenches. Figure 2 shows that DP2 was the only probe hole located in the southern part of the MWL dump and DP2 is located close to the western side of Trench G.

Question no. 2. Why did NMED approve the 2008 Soil Vapor Report given the failure of the report to investigate "the rupturing of containers and leaking of their contents" for Trenches E and F in the MWL dump?

Major Finding No. 2. NMED did not provide the required public comment on the 2008 Soil Vapor Report. The Interested Parties do not agree with the conclusions drawn by the Soil Vapor Report nor the approval of the Soil Vapor Report by the New Mexico Environment Department (NMED) that has occurred without the required written notice to the public.

The NMED did not provide the public with an opportunity to comment on the Soil Vapor Report as required by the NMED Final Order issued on May 26, 2005. The pertinent excerpts from the Final Order are pasted below:

- "3. NMED and Sandia shall provide a convenient method for the public to review Sandia's Corrective Measures Implementation Plan, Corrective Measures Implementation Report, progress reports, long-term monitoring and maintenance plan, and any other major documents developed by NMED or Sandia for the MWL ("the documents"), including but not limited to, posting the documents on a publicly-accessible website" (p. 4 in the Final Order).
- "4. NMED and Sandia shall provide a method and schedule that allows interested members of the public to review and comment on the documents, and NMED shall review, consider and respond to these public comments prior to approving any of these documents (with the exception of any documents, such as progress reports, that NMED does not approve in the normal course of permit review and oversight)" (p. 4 in the Final Order).

Question no. 3. The Soil Vapor Report is a "major document" because it will be used to validate the CMIP soil cover and the fate and transport model. Why didn't NMED comply with the requirement in the Final Order that NMED shall provide a method and schedule that allows interested members of the public to review and comment on the Soil Vapor Report, and NMED shall review, consider and respond to these public comments prior to approving the Soil Vapor Report?

Major Finding No. 3. The data presented in the Soil Vapor Report do not support the NMED finding on page 1 of the September 26, 2008 NMED approval letter for the Soil Vapor Report that is pasted below:

- ***"The New Mexico Environment Department (NMED) has reviewed the subject report and finds the levels and distribution of tritium, radon and volatile organic compound (VOC) vapors are consistent with earlier data used to develop the conceptual model for the MWL. As demonstrated in the risk assessment that is included in the MWL Corrective Measures Study Report, similar levels detected in the past for these constituents were found not to pose unacceptable risk to human health and the environment based on an industrial land-use scenario".***

In fact, the earlier mid-1990's RCRA Facility Investigation data (RFI data) and also the new 2008 sampling data collected for the 2008 Soil Vapor Report were too sparse in locations across and in depth below the MWL dump to develop the required conceptual model for the nature and extent of tritium and VOC contamination in the vadose zone below the MWL dump. Furthermore, the documents in the NMED Administrative Record are proof that there was never a reliable network of monitoring wells at the MWL dump, and because of this fact, the risk assessment in the MWL Corrective Measures Study Report is without basis and must be retracted.

In addition, the levels of tritium contamination measured in the 2008 sampling data are markedly higher than the earlier data used to develop the conceptual model for the MWL dump. This is a serious problem which the 2008 Soil Vapor Report avoids by making the mistake to claim that the high levels are because the 2008 samples were collected inside the MWL dump and the 1995 RFI data were collected from the perimeter of the dump. The pertinent excerpt from the 2008 Soil Vapor Report is pasted below:

- "Because none of the 2008 tritium samples were collected from the same locations that were sampled in 1995, a direct comparison of the 1995 and 2008 tritium concentrations was not possible. However, in general, tritium concentrations in the majority of the 2008 samples are higher than those in the 1995 samples. The highest tritium concentrations were 7.80E+06 picocuries per liter (pCi/L) in 1995 and 3.95E+07 pCi/L in 2008." (p. i)

- "All of the 1995 tritium samples were collected from boreholes around the perimeter of the MWL, whereas 20 out of 24 of the 2008 samples were collected from the [DP sampling locations in the] interior of the MWL. The overall higher tritium concentrations found in the 2008 samples were expected because most of these samples were collected in close proximity to waste pits and trenches in the landfill." (p. i)

There is much misinformation in the above statement as described below:

First, it was a mistake in the 2008 Soil Vapor Report to describe the 2008 samples as collected in close proximity to the waste trenches and pits. Comparison of Figure 2 to Figures 3 and 4 shows that none of the six 2008 DP sample locations were in close proximity to the pits where the large inventory of tritium waste were known to be buried.

Second, it was a mistake to describe the 1995 tritium samples as collected from boreholes around the perimeter of the MWL dump because the 1995 boreholes were drilled at an angle to collect samples for tritium from locations interior to the MWL dump and below the waste trenches and pits. Figure 7 shows the locations interior to the MWL dump where samples were collected from the set of 13 angle boreholes.

Third, it was possible to locate some of the 2008 probe holes close to the 1995 angle boreholes and the decision not to do this was a mistake. Nevertheless, a comparison of Figures 2 and 7 show the close location of DP3 to angle borehole BH-11. In addition, the comparison of the two figures shows that the higher tritium concentrations would be expected at the angle borehole because it was located further to the interior of the MWL dump and DP3 was a vertical probe hole located along the perimeter. However, the table below shows the markedly higher tritium levels measured at DP3 compared to the levels measured in angle borehole BH-11.

- Borehole	10-ft Samples	30-ft Samples	50-ft Samples
- BH-11 (1995)	7,000 pCi/L	1,230 pCi/L	1,060 pCi/L
- DP3 (2008)	189,000 pCi/L	8,210 pCi/L	5,150 pCi/L
- Factor higher in 2008 compared to 1995 ---------	27 times	6.7 times	4.9 times

Figure 2 shows that DP1 is the closest probe hole to the north of the unlined pits in the Classified Area of the MWL dump where the large inventory of tritium waste were known to be buried. DP1 is located a lateral distance greater than 60 feet from Pit 33. The high levels of tritium contamination measured in the sediments samples collected from DP1 are below:

- Borehole	10-ft Samples	30-ft Samples	50-ft Samples
- DP1 (2008)	75,400 pCi/L	1,270,000 pCi/L	not sampled
- DP5 (2008)	39,500,000 pCi/L	6,820,000 pCi/L	319,000 pCi/L

Unfortunately, samples were not collected from deeper than 30 feet below ground surface at DP1. There is a need for knowledge of tritium contamination at greater depths in the vadose zone at DP1 because the contamination measured at 30 feet is 17 times higher that the contamination measured at 10 feet.

DP5 is the probe hole where the highest tritium contamination was measured in the 2008 sampling program. The measured contamination is posted in the table above. DP5 is located in the Unclassified Area a distance greater than 150 feet from Pit 33.

The 2008 study collected no data from the known tritium Hot Spots. The Soil Vapor Report makes the claim that the highest level of tritium in the vadose zone is at the location of probe hole DP5 and the report used the tritium concentration measured at DP5 to calculate risk. The pertinent excerpt from the Soil Gas Report is pasted below:

"A risk assessment evaluation was performed based on the maximum tritium concentration detected in the 2008 samples [collected at probe hole DP5]. . . The risk assessment calculations show that the tritium concentrations at the MWL pose no threat to human health or the environment." (p. i).

However, Figures 2, 3 and 4 show that probe hole DP5 is located a lateral distance of greater than 150 feet away from the large inventory of tritium waste (>1500 Curies) buried in unlined pits in the Classified Area of the MWL dump. The 2008 Soil Vapor Report made a mistake to use the level of tritium measured in DP5 for the risk assessment calculations to show that the tritium concentrations at the MWL dump pose no threat to human health or the environment.

Question no. 4. Does NMED recognize that it was a mistake for the 2008 Soil Vapor Report to use the tritium value measured in probe hole DP5 for the conclusion that the tritium concentrations at the MWL dump pose no threat to human health or the environment?

The short half-life of 12.3 years for tritium is another reason that the markedly higher levels measured in 2008 compared to 1995 are evidence of a large release of tritium and possibly other contaminants from the unlined pits and trenches in the MWL dump. For example, as described below in this letter, the 2008 sampling data are evidence of a release of VOCs from the unlined pits in the southern region of the Classified Area.

Question no. 5. Does NMED recognize that the sparse sampling data collected in the 2008 sampling program show a large increase in the tritium contamination in the vadose zone below the MWL dump as compared to the earlier RFI data?

Question no. 6. Does NMED recognize that the nature and extent of tritium contamination in the vadose zone below the MWL dump is not known at this time and additional characterization of this contamination is necessary from information collected from deep probe holes, core holes and multiple-port vadose zone monitoring wells at locations inside the Unclassified Area and the Classified Area in the MWL dump?

The calibration of the DOE/SNL Fate and Transport Model for the MWL dump requires accurate knowledge of the nature and extent of tritium contamination in the vadose zone below the dump.

Question no. 7. Does NMED recognize that 2008 Soil Vapor Report shows that the existing data on tritium contamination does not provide for accurate calibration of the DOE/SNL MWL Dump Fate and Transport Model?

Question no. 8. Does NMED recognize that the dirt cover must not be installed over the MWL dump until there is accurate knowledge of the nature and extent of the tritium (and also VOC) contamination below the MWL dump?

Major Finding No. 4. The sparse data presented in the 2008 Soil Vapor Report do not support the isopleth maps for tritium contamination that are presented in the report. The 2008 Soil Vapor Report presents isopleth maps for the nature and extent of tritium contamination to a depth of 50 feet below the 2.6 acre dump. The isopleth maps

for tritium contamination at 10 feet bgs and 50 feet bgs are in Figures 5 and 6. However, tritium contamination was only measured at six locations at depths of 10 and 30 feet below ground surface (bgs) and at only three locations at a depth of 50 feet bgs. In addition, all of the data used to construct the isopleth maps were at locations far away from the unlined pits in the Classified Area where the historical records show practically all of the tritium waste to be disposed of.

It is a serious mistake that the isopleth maps present the highest tritium contamination to be present in the vadose zone in the northwestern Unclassified Area of the MWL dump. The major mistake in using data that were too sparse and missing from important locations for the construction of the tritium concentration isopleth maps is reason for NMED to retract the approval of the 2008 Soil Vapor Report and for the NMED to order DOE/SNL to collect the necessary data that will provide for accurate isopleth maps.

Question no. 9. Does NMED recognize that the data collected in the 2008 sampling program were not sufficient for the construction of the tritium contamination isopleth maps in the 2008 Soil Vapor Report because the data were too sparse and missing from important locations where the large inventory of tritium wastes were buried?

Major Finding No. 5. The sampling data in the 2008 Soil Vapor Report were collected at too few locations across the MWL dump and at too shallow a depth to support the conclusions presented in the report for the VOC contamination. The 2008 Soil Vapor Report makes conclusions about the nature and extent of VOC contamination that are not supported by the sparse data on VOCs that were only collected at six locations across the MWL dump in the 2008 sampling program. The locations of the six DP probe holes are displayed on Figure 2. VOC soil gas samples were collected to depths of 30 feet below ground surface (bgs) at the six DP locations. Soil gas samples at the depth of 50 feet bgs were only collected at DP1, DP4 and DP6.

The sampling data in the 2008 Soil Vapor Report are too sparse to support the following conclusions on page ii in the report:

- "(t)he 1994 and 2008 overall [VOC] concentrations have declined substantially at the MWL since 1994."
- "Because the findings of this investigation are consistent with the conceptual model of the MWL, the cover should be constructed."

This conclusion in the 2008 Soil Vapor Report to install the dirt cover is not credible because of the sparse data for VOCs below the MWL dump in both the 2008 sampling program and in the earlier 1994 RFI Facility Investigation and the large increase in tritium contamination in the 2008 samples.

The sparse soil gas data collected in the 1994 RFI Facility Investigation. The 2008 Soil Vapor Report describes the importance to collect soil-gas data at locations inside the MWL dump. Nevertheless, Figures 8 and 9 show that the 1994 RFI Facility Investigation only collected soil gas samples at eight (8) locations inside the MWL dump and the 8 sampling locations were all in the northern part of the Unclassified Area. No soil gas samples were collected inside the Classified Area or inside the southern part of the Unclassified Area. In addition, for the 1994 RFI, the soil gas samples were only collected at depths of 10 and 30 feet bgs. It was a major mistake that the 1994 RFI did

not collect soil gas samples for VOC contamination to a depth of hundreds of feet below the MWL dump because of the general and large increase in VOC contamination that occurred from 10 feet to 30 feet bgs. The increase is displayed in Table 1.

Table 1. Total VOCs and PCE values measured in the eight probe holes located inside the northwestern part of the MWL dump for the 1994 RFI Investigation.

1994	Total VOCs (ppmV[A])			PCE (ppmV)		
DP[B] no.	10 ft bgs	30 ft bgs	Increase	10 ft bgs	30 ft bgs	Increase
- 5	0.340	1.130	3.3 times	0.240	0.520	2.2 times
- 6	0.410	1.690	4.1 times	0.240	0.720	3 times
- 7	0.810	3.710	4.6 times	0.310	1.100	4.5 times
- 8	0.630	3.210	5.1 times	0.200	0.790	3.9 times
- 9	2.460	4.630	1.9 times	0.380	0.690	1.8 times
- 10	30.700	27.700	~0 change	1.700	2.500	1.5 times
- 11	8.020	9.500	1.2 times	5.200	5.900	1.1 times
- 12	1.990	3.010	1.5 times	1.700	1.600	~ 0 change

[A]ppmV = parts per million volume [B]DP means direct push probe hole

The large increase in measured VOC contamination from 10 ft to 30 ft bgs at the sparse number of sampling locations inside the MWL dump was an important reason for the mid-1990's RCRA Facility investigation to collect VOC soil-gas data at many locations across the MWL dump and to depths of greater than 200 feet bgs. However, this necessary sampling program was never done at any time including the 2008 study.

The important need to characterize VOC contamination in the vadose zone to depths greater than 200 feet below the MWL dump is illustrated by the VOC plume that is present below the SNL Chemical Waste Landfill (CWL). Figure 10 is a cross-section view of the Total VOC Contamination in the plume below the SNL CWL. The figure shows that the highest VOC concentrations are present at a depth of approximately 200 feet below the CWL and that much lower values are present at a shallow depth.

Figure 10 also shows that the total VOC concentrations at a shallow depth below the SNL CWL are comparable to the total VOC concentrations that were measured in most of the 8 probe holes in Table 1 for the MWL dump.

Figure 10 also shows the importance to locate multiple-port vadose zone monitoring wells at locations inside the MWL dump in order to detect and monitor the vapor phase contamination. This is because Figure 10 shows that monitoring wells D-3 and MW-2A that are located along the perimeter of the SNL CWL do not provide resolution of the plume.

Figure 10 shows the mistake in the plans of DOE/SNL to locate the multiple-port vadose zone monitoring wells (e.g., the three FLUTe[B] wells in Figure 11) at distances greater than 50 feet away from the boundary of the MWL dump. The great decline in PCE concentrations that occur with distance away from the MWL dump is also illustrated by the data in Figures 8 and 9. The very large decline in concentrations with lateral

distance away from the western boundary of the MWL dump that is displayed in Figures 8 and 9 and the poor resolution in Figure 10 of the plume below the SNL CWL for monitoring wells located along the perimeter of the CWL are all important information that shows the important need to locate multiple-port vadose zone monitoring wells inside the MWL dump and close to the unlined pits and trenches. If there is resistance to locating the monitoring wells inside the MWL dump, then the necessary multiple-port monitoring wells can be installed in angle boreholes that are located outside the planned boundary of the dirt cover.

Question no. 10. Does NMED recognize that the body of knowledge shows that the proposed locations of the three FLUTe[B] wells outside the boundary of the dirt cover will prevent the wells from the detection of VOCs and tritium that are released from the unlined pits and trenches in the MWL dump?

Question no. 11. Does NMED recognize the need to locate multiple-port vadose zone monitoring wells inside the MWL dump or in angle boreholes drilled under the unlined pits and trenches from locations outside the planned perimeter of the dirt cover?

Major Finding No. 5. The statements about the VOC and tritium contamination in the 2008 Soil Vapor Report that are incorrect to the data. Three examples of statements in the 2008 Soil Vapor Report that are incorrect to the data in the report are presented in this section. The first example is the following statement on page 7-2 in the report:

- "In addition, CFC-12, PCE, TCE, and total VOC concentrations in the 50-foot samples collected in 2008 are less than those in the 30-foot samples, which indicates that soil-vapor VOC concentrations decrease with depth."

In fact, the 50-foot samples were collected at only three locations in the sparse set of samples that were collected at only eight locations in 2008. In addition, for the location of DP3 in the southern part of the Classified Area of the MWL dump, all of the VOC constituents show an increase in concentrations in the 30-foot and in the 50-foot samples as compared to the concentrations in the 10-ft samples. The data from DP3 are presented below in Table 2. For DP3, the data in Table 2 show large increases with depth to 50-feet for total VOCs and methane.

The data in Table 2 indicate that soil-vapor VOC concentrations increase with depth at the location of DP3 and the VOC concentrations at depths greater than 50-feet are not known but must be investigated with a new sampling program that measures VOC concentrations through the total thickness of the vadose zone and at the water table. Figures 1 and 2 show that probe hole DP3 is located approximately 25 feet west of pit SP-1 where disposal of hazardous wastes began in 1959 and the Chemical Waste Landfill at SNL did not open until 1962.

The location of a monitoring well installed across the water table at a location near DP3 is necessary because of 1). the large amount of hazardous wastes disposed of into pit SP-1 (known as the "Acid Pit"), 2). the increasing concentrations of VOCs measured in soil gas samples collected from DP3, and 3). the southwest direction of groundwater travel at the water table below the MWL dump.

Question no. 12. Does NMED recognize the need to locate a multiple-port vadose zone monitoring well with ports to a depth greater than 400-feet below ground surface at the location of DP3?

Question no. 13. Does NMED recognize the need to install a monitoring well across the water table at a location immediately south of the Classified Area of the MWL dump to monitor contamination below the unlined pits including the "Acid Pit" which is located in the southeast corner of the Classified Area?

Table 2. Concentrations of VOCs measured in soil gas samples collected from the 2008 DP probe holes.

	ppbV				
- DP3	CFC-12	PCE	TCE	total VOC	methane
- 10-ft	55	53	39	658	ND (1,900)
- 30-ft	100	100	110	904	220,000
- 50-ft	110	120	140	1,330	5,400,000
- DP4					
- 10-ft	70	120	34	446	ND (1,900)
- 30-ft	110	190	100	893	4,600
- DP6					
- 10-ft	31 [30]	1.2 [190]	4.2 [42]	111 [373]	ND (1,900)
- 30-ft	53 [53]	310 [300]	110 [110]	670 [654]	ND (1,900)

ppbV = parts per billion on a volume basis
ND (1,9000 = not detected at the listed method detection limit
[30] = value in brackets is for duplicate sample

Table 2 presents the VOC concentrations measured at the locations of probe holes DP4 and DP6 where samples were only collected to a maximum depth of 30-feet. However, for both DP4 and DP6, there are marked increases in the VOC concentrations measured at 30-feet compared to the values measured at 10-ft below ground surface.

Overall, the data in Table 2 show that it was a mistake for the 2008 Soil Vapor Report to make the statement that the data "indicates that soil-vapor VOC concentrations decrease with depth." In fact, the sparse data show that VOC concentrations increase with depth at 50% of the sampling locations and the nature and extent of VOC (and Tritium) contamination below the MWL dump is not known but must be investigated before the soil cover is installed over the dump.

Question no. 14. Does NMED recognize that the increasing trends in VOC contamination measured in soil gas samples collected from 50% of the probe holes in the 2008 Soil Vapor Report requires additional investigation of the nature and extent of VOC contamination in the vadose zone and in the groundwater below the MWL dump?

The second example of statements in the 2008 Soil Vapor Report that are incorrect to the data is the statement on page 6-3 about trigger levels:

- "The maximum concentrations of PCE and TCE in the 1994 samples were less than the respective [long-term monitoring and maintenance plan] LTMMP triggers, and total VOCs exceeded the trigger."

The mistake in the above statement is that it does not acknowledge that the 1994 samples were collected only at eight locations inside the MWL dump and only at depths of 10-feet and 30-feet below ground surface. Table 1 presents the large increase in measured concentrations for total VOCs and PCE that were measured in the 30-ft samples compared to the values measured in the 10-ft samples. It is possible that contamination levels increased at greater depth below the MWL to concentrations that exceeded the trigger levels for PCE, TCE and total VOCs. For example, Figure 10 shows that the measured levels of total VOCs were below the trigger level (e.g., 25 parts per million on a volume basis) at depths to greater than 100 feet below ground surface but increased to levels greater than 2-4 times the trigger level at a depth of ~ 200 feet below ground surface. The same increase in VOC contamination may be present in the vadose zone below the MWL dump but the contamination has never been studied.

Question no. 15. Does NMED recognize that the nature and extent of VOC contamination in the vadose zone below the MWL dump is not known and the contamination may exceed the trigger levels in the LTMMP as indicated by the VOC plume below the SNL Chemical Waste Landfill?

The third example of statements in the 2008 Soil Vapor Report that are incorrect to the data is the statement on page i about the tritium contamination:

- "All of the 1995 tritium samples were collected from boreholes around the perimeter of the MWL, whereas 20 out of 24 of the 2008 samples were collected from the [DP sampling locations in the] interior of the MWL. The overall higher tritium concentrations found in the 2008 samples were expected because most of these samples were collected in close proximity to waste pits and trenches in the landfill." (p. i)

The mistake in this statement was described earlier on page 4 of this letter. In fact, the 1995 samples were collected from boreholes drilled at an angle to collect samples from under the unlined pits and trenches in the MWL dump.

The fourth example of statements in the 2008 Soil Vapor Report that are incorrect to the data for tritium contamination is the statement on page i about the risk assessment:

- "A risk assessment evaluation was performed based on the maximum tritium concentration detected in the 2008 samples [collected at probe hole DP5]. . . The risk assessment calculations show that the tritium concentrations at the MWL pose no threat to human health or the environment." (p. i).

In fact, as described on page 6 of this letter, the risk assessment was not credible because all of the tritium samples collected in the 2008 sampling

program were at locations far away from the unlined pits in the Classified Area where the large inventory of tritium wastes were known to be buried.

Major Finding No. 6. The incorrect statement in the 2008 Soil Vapor Report about the disposal of liquid wastes in the MWL dump. The pertinent excerpt is on page 1-1 of the 2008 Soil Vapor Report:

- "With the exception of a one-time disposal of coolant water to Trench D, disposal of free liquids at other disposal pits and trenches was not allowed at the MWL. Liquids such as acids, bases, and solvents were solidified with commercially available agents before containerization and disposal."

The above statement is incorrect and in contradiction with Finding No. 34 in the April 25, 2005 Hearing Officer's Report for the MWL dump. Finding No. 34 is pasted below:

> "Prior to 1975, liquid radioactive wastes were disposed in the landfill without solidification or other treatment. In 1975, up to 5,000 gallons of potable water were used to extinguish a fire in Trench B; however, the exact quantity of water is unknown." (NMED Administrative Record No. 000819).

Question no. 16. Why does NMED allow DOE/SNL to make statements in reports like the 2008 Soil Vapor Report that are not factual and not accurate to the NMED Administrative Record?

Major Finding No. 6. Nickel and chromium are contaminants of concern for the waste disposed of in the MWL dump according to the findings from the mid-1990's RCRA Facility Investigation. In the October 10, 2008 NMED Notice of Disapproval for the DOE/SNL Corrective Measures Implementation Plan, NMED requested DOE/SNL to provide additional monitoring at locations where contaminants were detected at their highest levels during the 1990's RCRA Facility Investigation. The pertinent excerpt from the NMED NOD is pasted below:

> "In NOD Comment 19 [in the November 20, 2006 NMED NOD] , NMED asked that the Permittees propose additional monitoring points at locations (surface and subsurface) within the landfill where contaminants were detected at their highest levels during the RCRA Facility Investigation of the MWL. No additional sampling was proposed by the Permittees, chiefly on the basis that intrusive monitoring techniques could possibly compromise cover integrity. However, NMED believes that additional monitoring points can be located within the landfill, and that such monitoring can be conducted without necessarily driving heavy vehicles over the landfill surface. The Permittees shall propose additional monitoring points at locations within the landfill where radon, tritium, and VOCs were detected at their highest levels during the RCRA Facility Investigation. These monitoring locations should consider air, surface soil, and subsurface soil as media to be monitored." (page 4 in the NMED October 10, 2008 NOD).

The NMED is correct to identify the need for additional monitoring points within the landfill at locations within the landfill where contaminants were detected at their highest levels during the RCRA Facility Investigation (RFI) of the MWL dump. This need must also address the failure of the RFI to characterize the nature and extent of contamination

in the vadose zone below the MWL dump and in the groundwater because of the history of waste disposal in the MWL dump. The contamination of groundwater because of the disposal of RCRA hazardous liquid wastes including chromium into Trench D in the Unclassified Area and RCRA hazardous VOC wastes into the Acid Pit in the Classified Area of the MWL has never been investigated. In addition, the nature and extent of the nickel plume identified in all of the water samples produced from monitoring well MW1 has not been characterized. Table 3 lists the nickel contamination measured in water samples produced from the four MWL dump monitoring wells with stainless steel screens installed across the water table. The locations of the four monitoring wells are on Figure 1.

Table 3. Total and Dissolved Nickel Measured in the Water Samples Produced From Monitoring Well MWL-MW1, -MW-3, -BW1 and - MW2 at the Sandia Mixed Waste Landfill. The four wells have stainless steel screens.

Date	- Well MW1 Nickel (ug/L) T / D	- Well MW3 Nickel (ug/L) T / D	- Well BW1 Nickel (ug/L) T / D	- Well MW2 Nickel (ug/L) T / D
09 - 90	46 / 43	ND[a]<40/ND< 40	ND<40/ND<40	ND<40/ND<40
01 - 91	NA[b] / NA	NA / NA	NA / NA	NA / NA
04 - 91	NA / NA	NA / NA	NA / NA	NA / NA
10 - 91	NA / NA	NA / NA	NA / NA	NA / NA
07 - 92	150 / 63	66 / 43	ND<40/ND<40	ND<40 / ND<40
01 - 93	78 / NA	26 (j)[c] / NA	ND < 40 / NA	ND < 40 / NA
04 - 93	97 / 94	37 (j) / 33 (j)	7.5 / 16	14 (j) / 13 (j)
11 - 93	95 / NA	ND < 40 / NA	ND < 40 / NA	ND < 40 / NA
05 - 94	110 / NA	ND <40 / NA	NA / NA	ND < 40 / NA
10 - 94	130 / NA	ND < 40 / NA	9.8 (j) / NA	ND < 40 / NA
04 - 95	120 / NA	NA / NA	9.3 (j) / NA	7.5 (j) / NA
10 - 95	107 / NA	7.99 (j) / NA	1.96 (j) / NA	NA / NA
04 - 96	145 / NA	3.67 (j) / NA	ND < 0.81 / NA	3.42 (j) / NA
04 - 97	NA / NA	NA / NA	NA / NA	NA / NA
10 - 97	NA / NA	NA / NA	NA / NA	NA / NA
04 - 98	398 / 538	36.2 / 28.5	2.9 (j) / NA	5 (j) / 4
11 - 98	490 / 467	18 / 18.3	7.19 / 9.47	4.49 / 3.42
04 - 99	266 / 313	31 / 31.3	12.8 / 14.3	5.31 / 4.37
04 - 00	279 / 281	25.1 / NA	16.5 / NA	124 / NA
04 - 01	252 / NA	14.1 / NA	191 / NA	88.2 / NA
04 - 02	265 / NA	96.1 / NA	13.6 / NA	89.7 / NA
04 - 03	374 / NA	NA / 69.4	26.6 / NA	52 / NA
04 - 04	401 / NA	56 / NA	33.2 / NA	10.5 / NA
04 - 05	424 / 405	17.3 / 11.5	35.5 / NA	10.5 / NA
04 - 06	477 / NA	157 / NA	NA / NA	6. 76 / NA
04 - 07	436 / 284	84.8 / 120	NA / NA	7.34 / 5.41

T = Concentration of total nickel measured in an unfiltered water sample
D = Concentration of dissolved nickel measured in a filtered water sample
ug/L = micrograms per liter or parts per billion
ND[a] = nickel was not detected at the listed minimum detection level
NA[b] = nickel was not analyzed in samples collected on this date
(j)[c] = the listed value is an estimated value

- **The NMED approved background concentration for total and dissolved nickel in groundwater is 28 ug/L.**
- **The NMED proposed trigger for total and dissolved nickel in groundwater is 50 ug/L.**

The nickel plume is growing in size and for the past few years has been detected in the water samples produced from both monitoring wells MW1 and MW3. Table 3 lists the nickel contamination measured in water samples produced from the four MWL dump monitoring wells with stainless steel screens installed across the water table. The locations of the four monitoring wells are on Figure 1.

The high levels of dissolved nickel were measured in wells MW1 and MW3 that are located close to the buried waste and low levels of dissolved nickel were measured in wells BW1 and MW2 that are located distant from the MWL dump. The 10/10/08 NOD identifies nickel as a contaminant of concern for wastes disposed of in the MWL dump and sets the trigger level for nickel contamination in groundwater at 50 ug/L. Table 1 shows that the dissolved nickel contamination measured in water samples produced from well MW1 consistently exceeded the proposed NMED trigger level of 50 ug/L beginning in 1992 up to the most recent water samples collected in 2007. In addition, Table 1 shows that the dissolved nickel contamination measured in water samples produced from well MW1 has consistently exceeded the WQCC standard of 200 ug/L for the past ten years.

The NMED has made a mistake to assign the nickel contamination in well MW1 as only from corrosion of the stainless steel screen. The high nickel concentrations measured in well MW1 and now also in well MW3 compared to the low values measured in wells BW1 and MW2 are statistically significant evidence of contamination under RCRA. The nature and extent of this contamination must be characterized by installing a new monitoring well across the water table near the location of well MW1. The new well should have a PVC screen and casing, and water samples should be collected with low-flow pumping methods. NMED has made a mistake to order DOE/SNL to plug and abandon well MW1 without requiring the installation of a new monitoring well to investigate the nickel plume.

Question no. 17. Why hasn't NMED required DOE/SNL to characterize the nature and extent of the nickel plume in the groundwater at the water table below the MWL dump?

The mistakes and deficiencies in the 2008 Soil Vapor Report and its findings are a matter of significant public interest. A Soil Gas Technical Hearing was held on this matter on May 1, 2007 and comments on the technical hearing were submitted by Citizen Action and Gilkeson. Nevertheless, the tritium and soil gas sampling activities at the MWL dump in 2008 were not responsive to the comments provided to NMED by Citizen Action and Gilkeson.

Please provide answers to the 17 questions as soon as practicable.

Sincerely,

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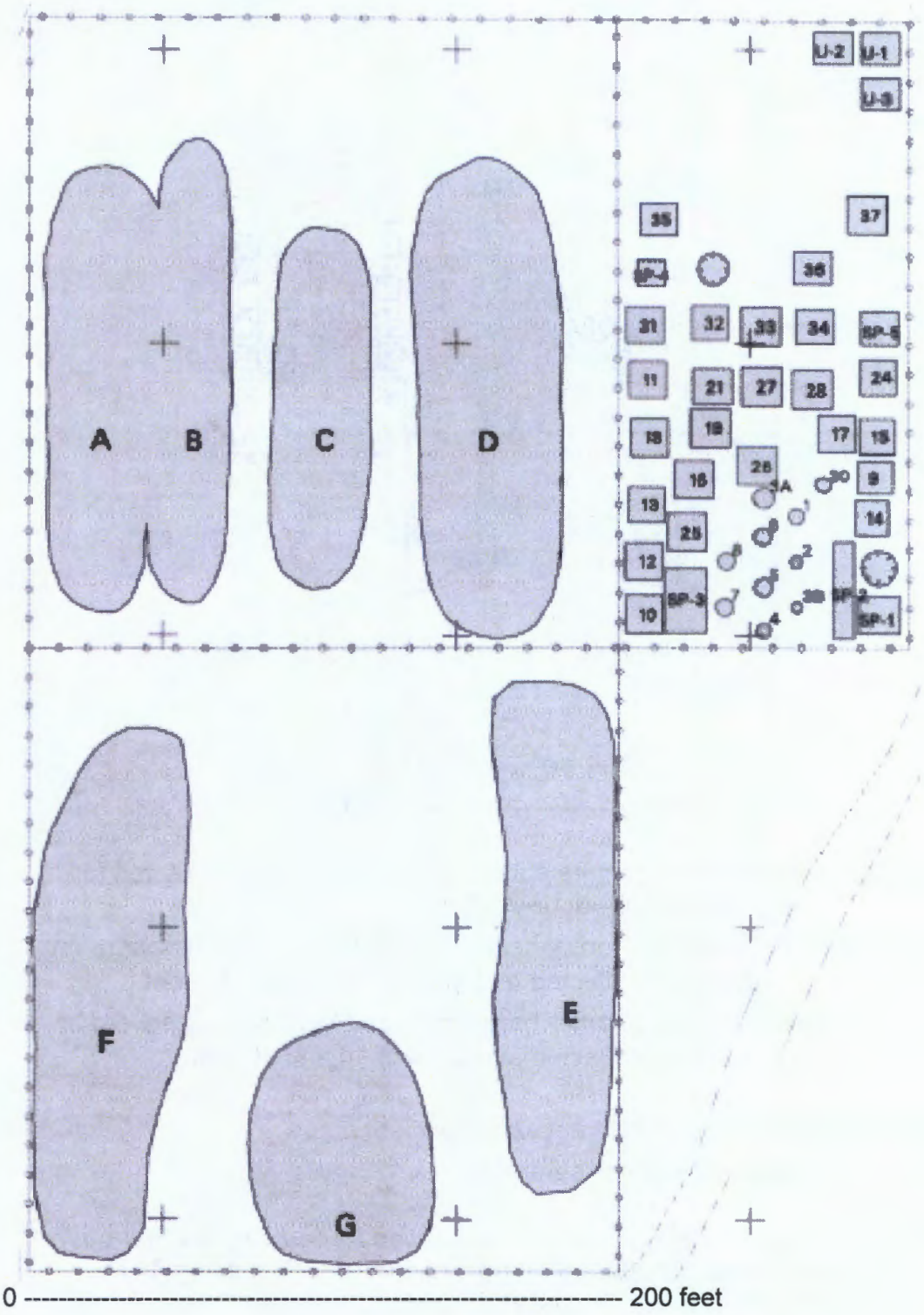
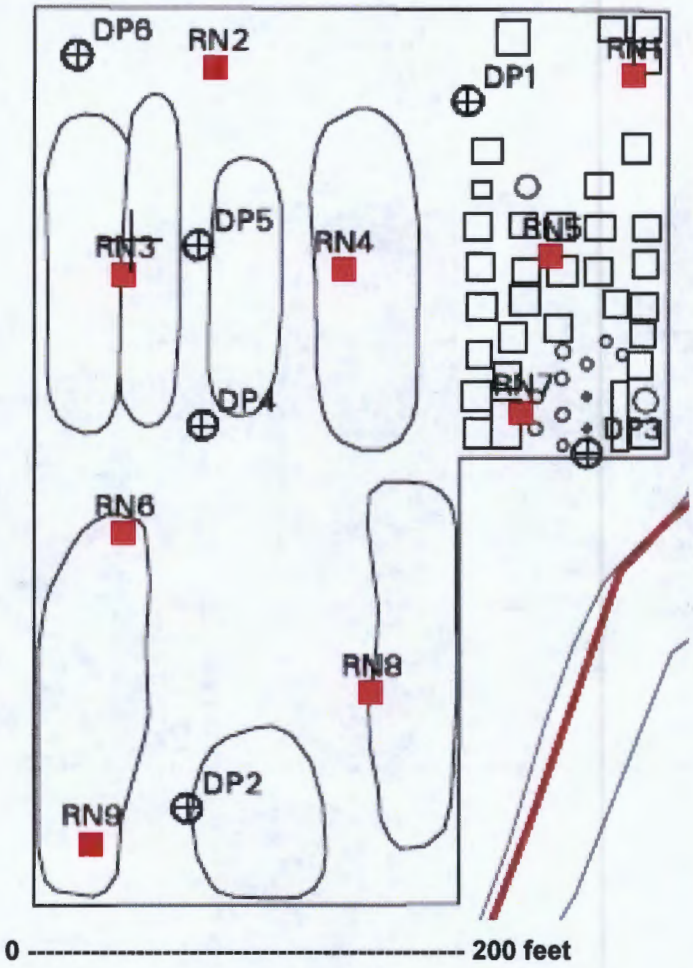
Figure 1. Map of unlined disposal trenches and pits at the Sandia MWL dump
Unclassified Area - Trenches A to G
Classified Area - Pits 1 to 37, U-1 to U-3, SP-1 to SP-4



Source: Figure 2 in 2001 WERC Report *"Mixed Waste Landfill Peer Review"*

Figure 2. 2008 Radon, Tritium and Soil-Vapor VOC Locations at the Sandia Mixed Waste Landfill Dump.



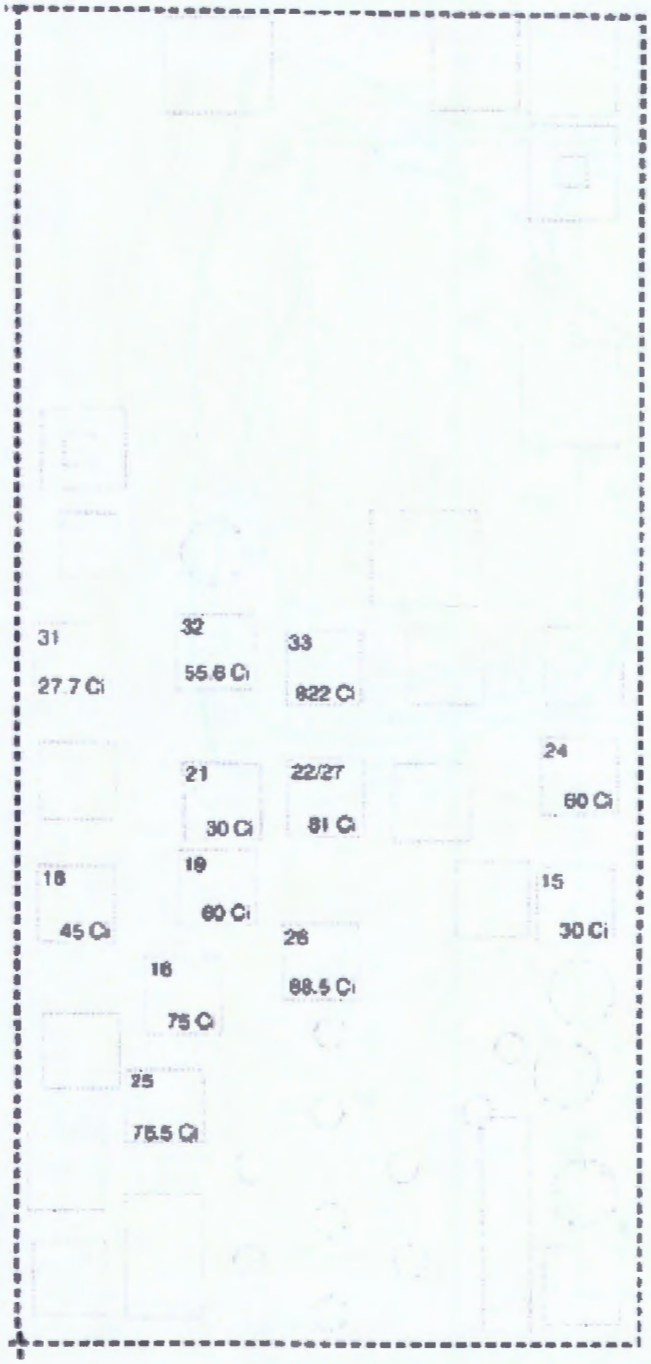
- DP1 to DP6 Six locations where subsurface samples were collected for tritium and soil-vapor VOCs.
- DP2, DP3, DP5 Three locations where tritium and VOC analyses were on samples collected at depths of 10, 30 and 50 feet.
- DP1, DP4, DP6 Three locations where tritium and VOC analyses were on samples collected at depths of 10 and 30 feet.

- Tritium analyses were on sediment samples.
- VOC analyses were on soil gas samples.

Source: From Figure 4-1 in DOE/SNL *Investigation Report On The Soil-Vapor Volatile Organic Compounds, Tritium and Radon Sampling At The Mixed Waste Landfill* August 2008 DOE Sandia Site Office

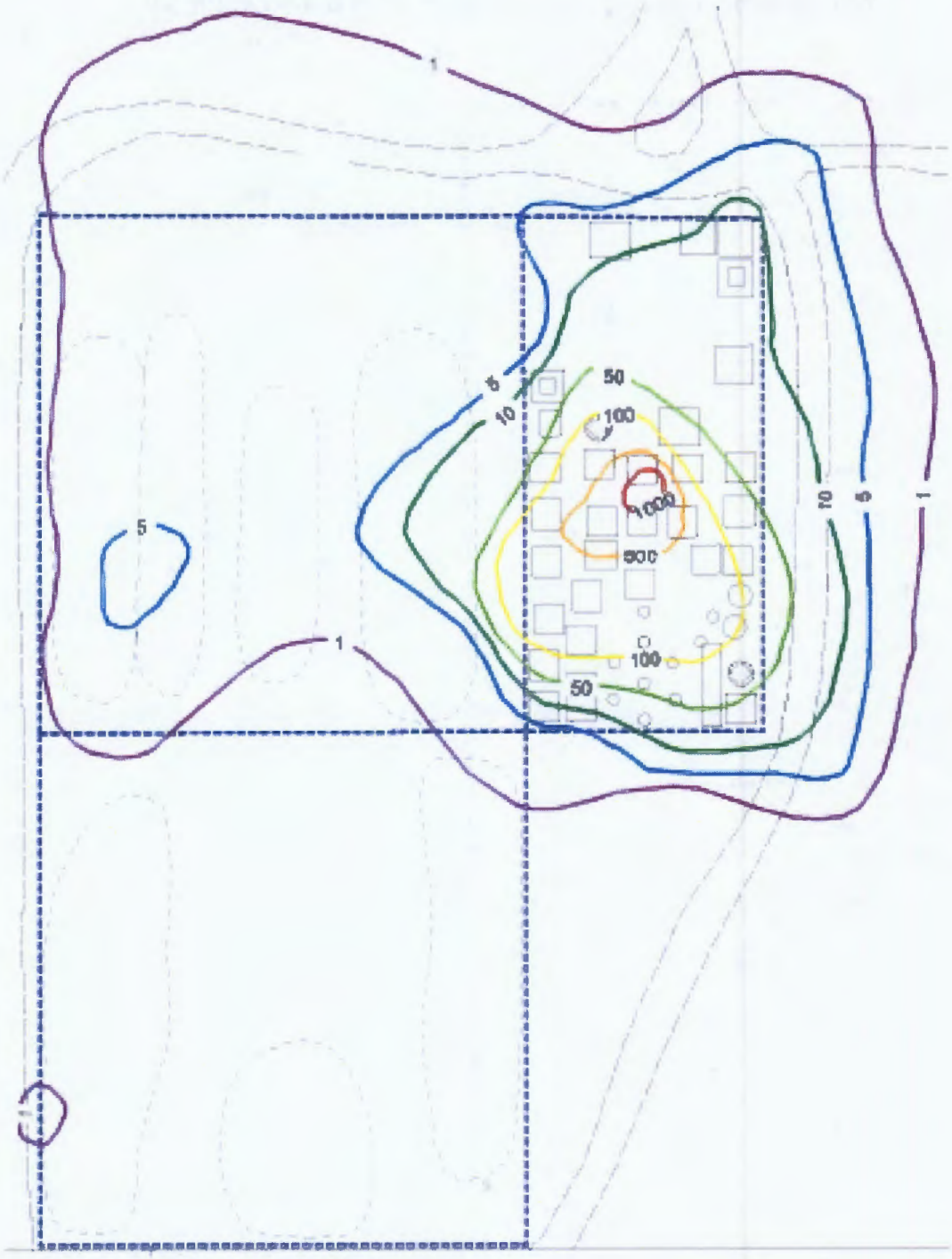
Figure 3. Inventory of Tritium Buried in Unlined Pits in the Classified Area of the Sandia MWL Dump.

- For Example - 822 Curies of Tritium were buried in Pit 33



Source: Figure 9 in 2001 WERC Report *"Mixed Waste Landfill Peer Review"*

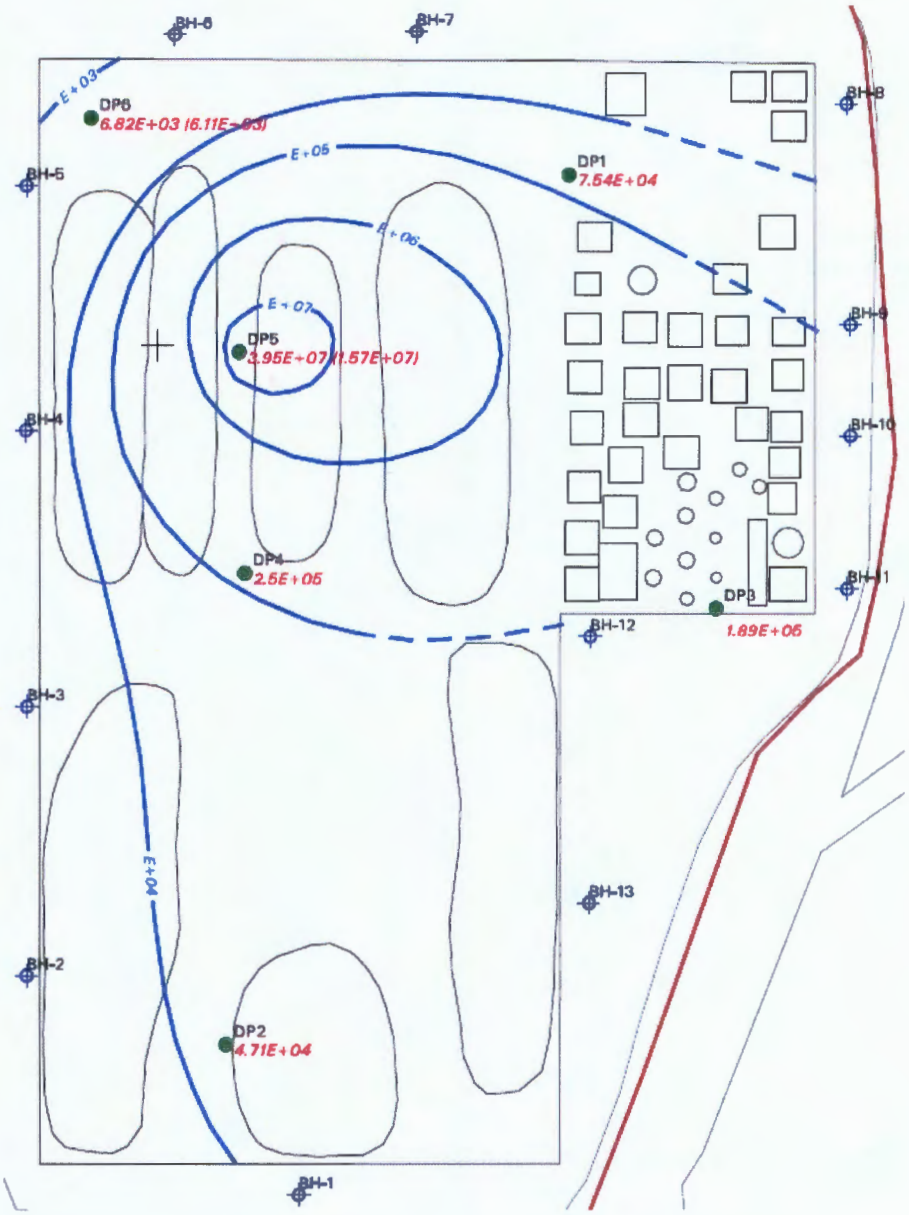
Figure 4. Tritium in Surface Soils at the Sandia MWL Dump (1993 RFI data).



------- 1 to 1000 ------- Tritium isopleths (picocuries / gram)

Source: Sandia MWL Corrective Measures Study Final Report May 2003

Figure 5. 2008 Tritium Sediment Sample Concentration Isopleths (pCi/L) at the 10-foot depth at the DOE/SNL MWL Dump

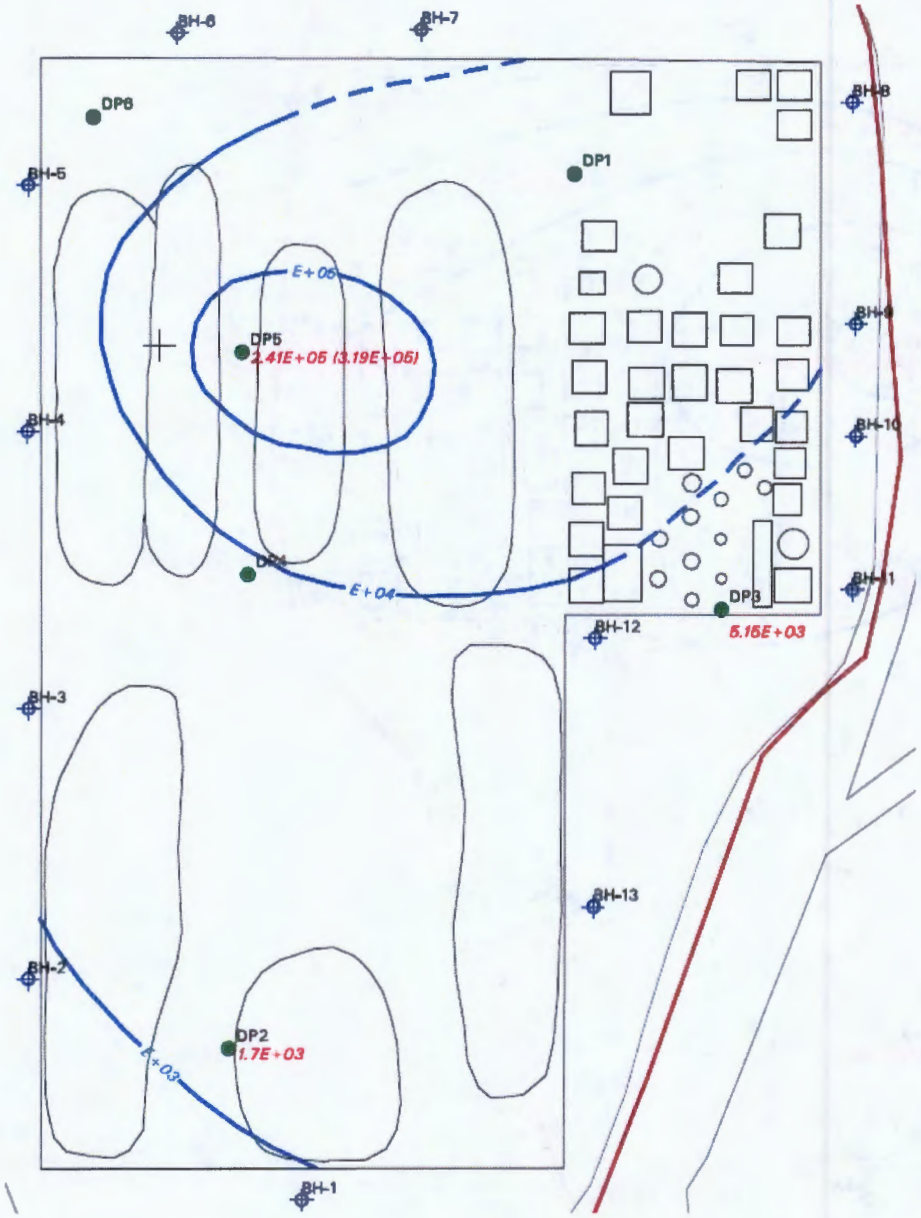


0 ---------- 200 feet

- DP1 to DP6 - Six 2008 Vertical Probe Holes where Tritium (Pci/L) was measured on sediment samples collected at a depth of 10 feet.
- BH-1 to BH-13 - Thirteen Angle Coreholes where triitum was measured on sediment samples collected from below pits and trenches in the MWL dump.

Source: Figure 6-3 in DOE/SNL 2008 Soil Vapor Report For MWL dump.

Figure 6. 2008 Tritium Sediment Sample Concentration Isopleths (pCi/L) at the 50-foot depth at the DOE/SNL MWL Dump

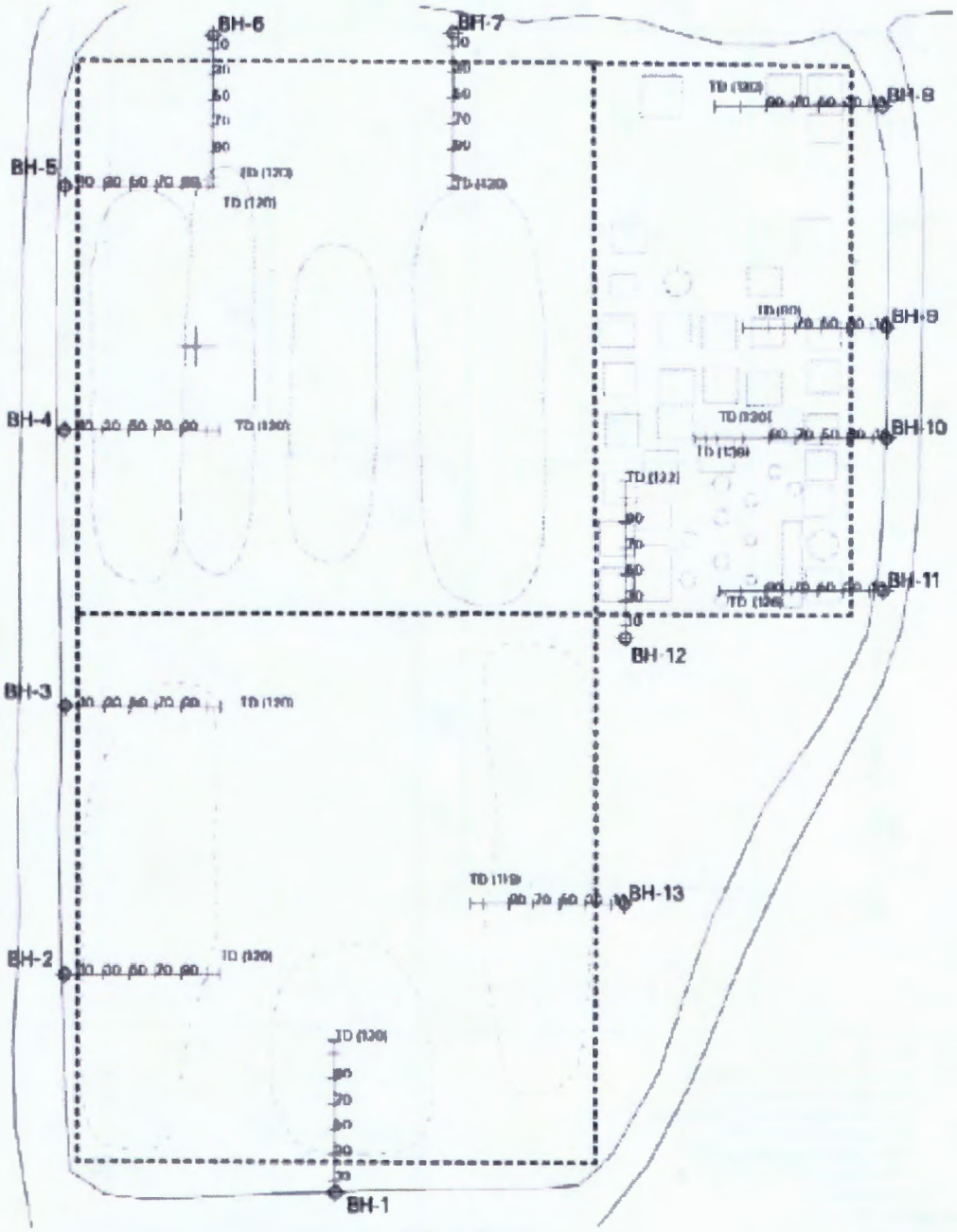


0 ---------- 200 feet

- DP2, DP3 and DP5 - Three 2008 Vertical Probe Holes where Tritium (Pci/L) was measured on sediment samples collected at a depth of 10 feet.
- BH-1 to BH-13 - Thirteen Angle Coreholes where triitum was measured on sediment samples collected from below pits and trenches in the MWL dump.

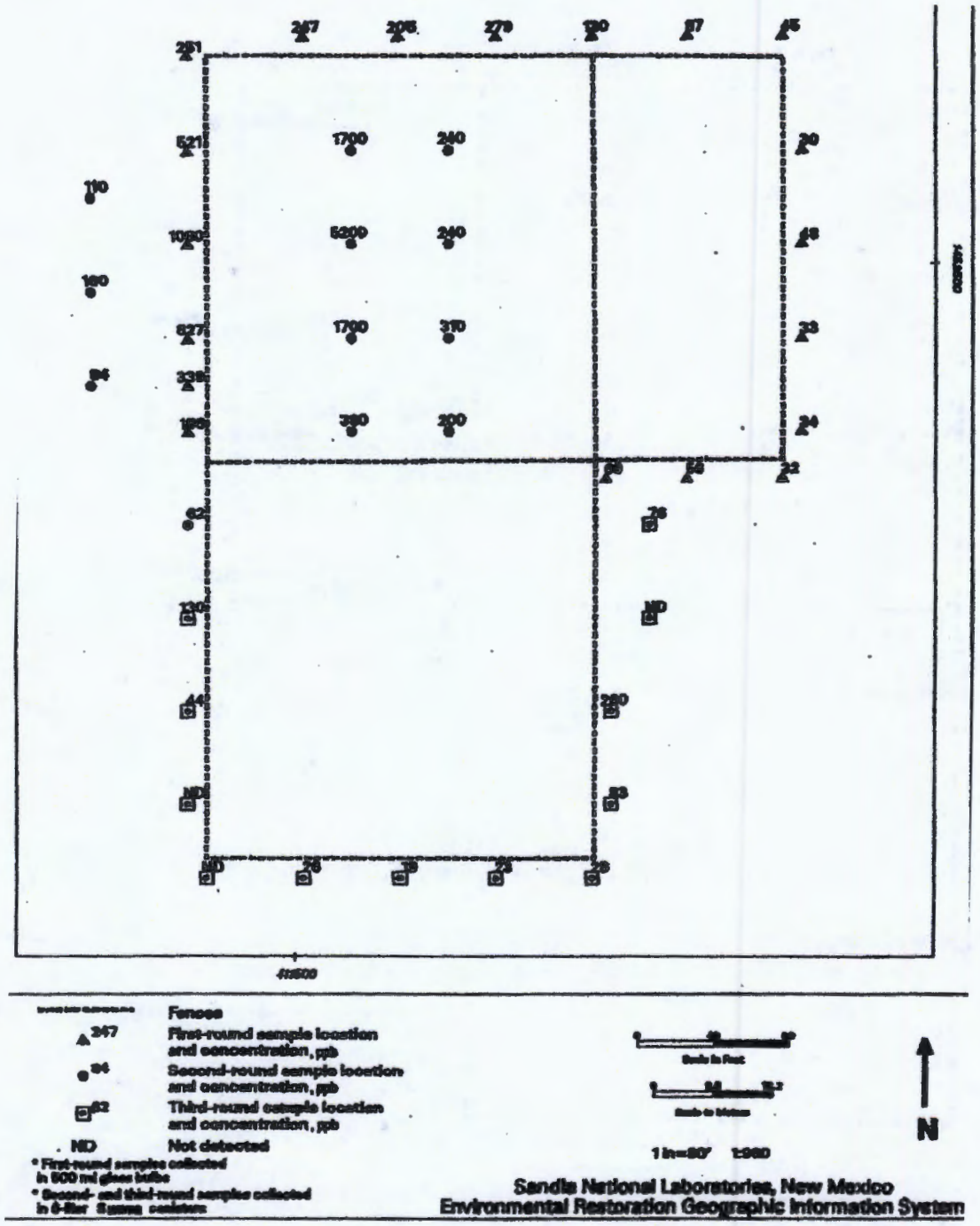
Source: Figure 6-5 in DOE/SNL 2008 Soil Vapor Report For MWL dump.

Figure 7. Map of the 1994 RFI Angle Boreholes Below the Sandia MWL Dump.



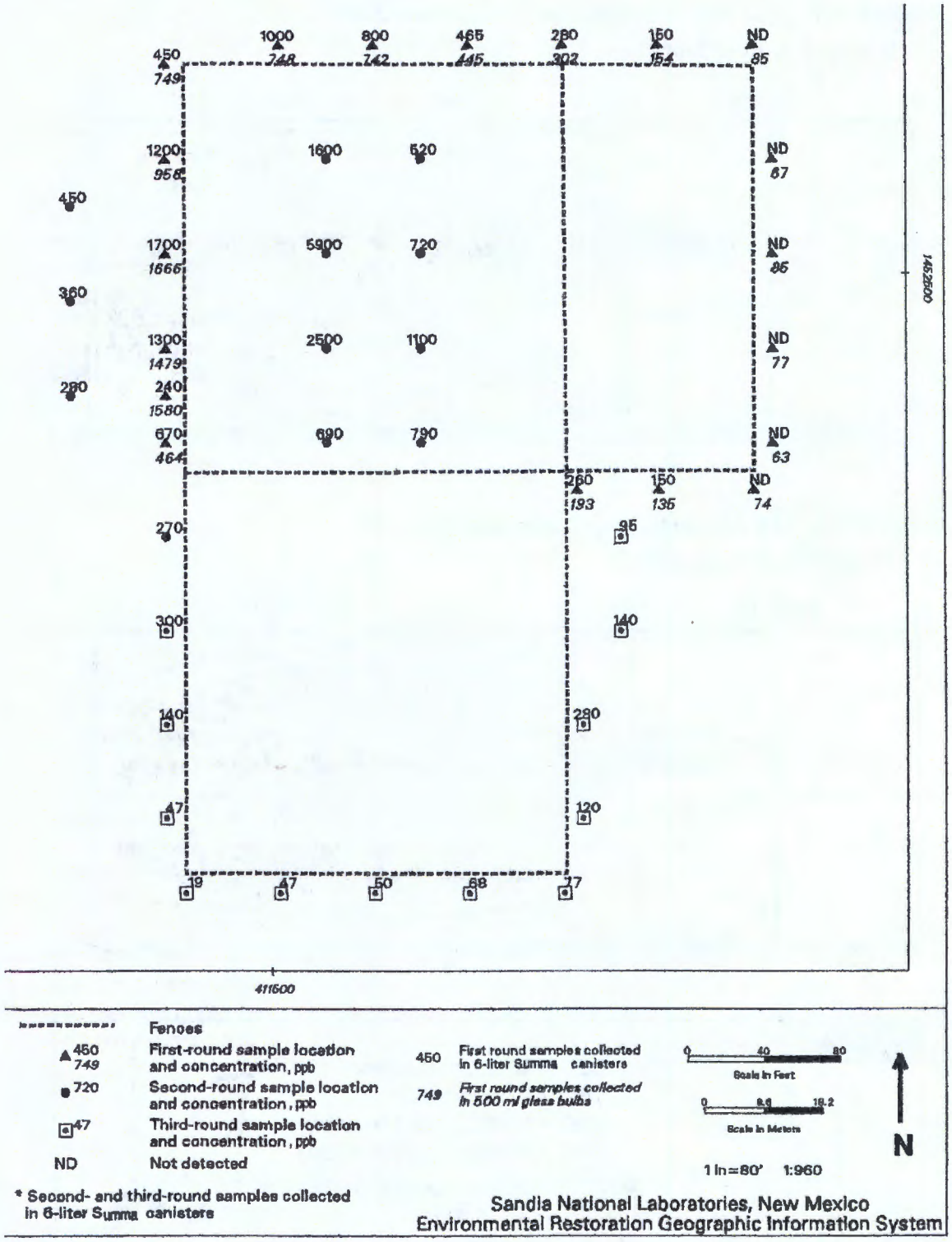
Source: Figure 10 in 2001 WERC Report *"Mixed Waste Landfill Peer Review"*

Figure 8. PCE in soil gas @ 10 feet below ground surface for measurements in probe holes at the Sandia MWL dump



Source: RCRA Phase 2 RFI Report, September, 1996

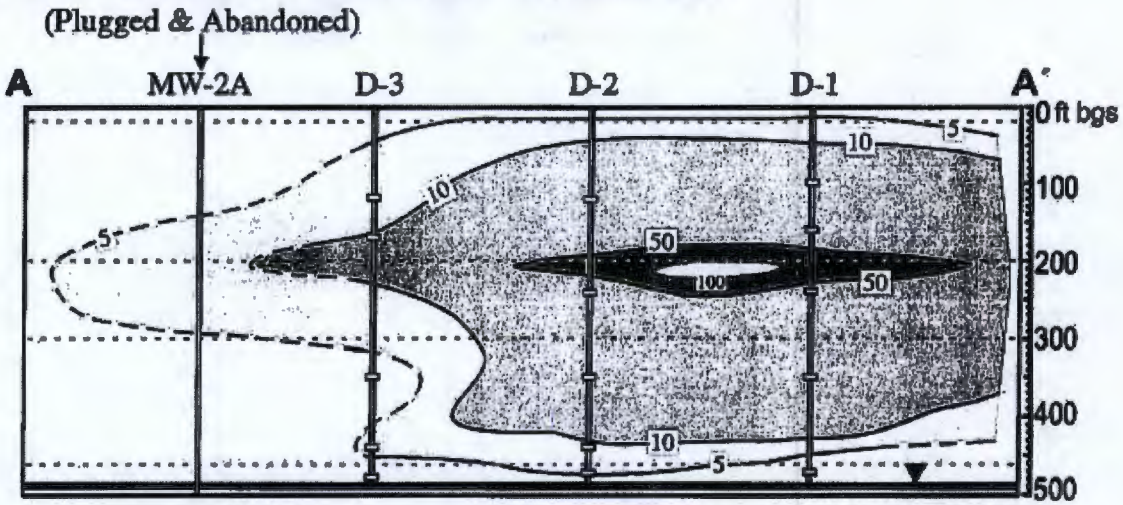
Figure 9. PCE in Soil Gas at 30 ft below ground surface at Sandia Mixed Waste Landfill.



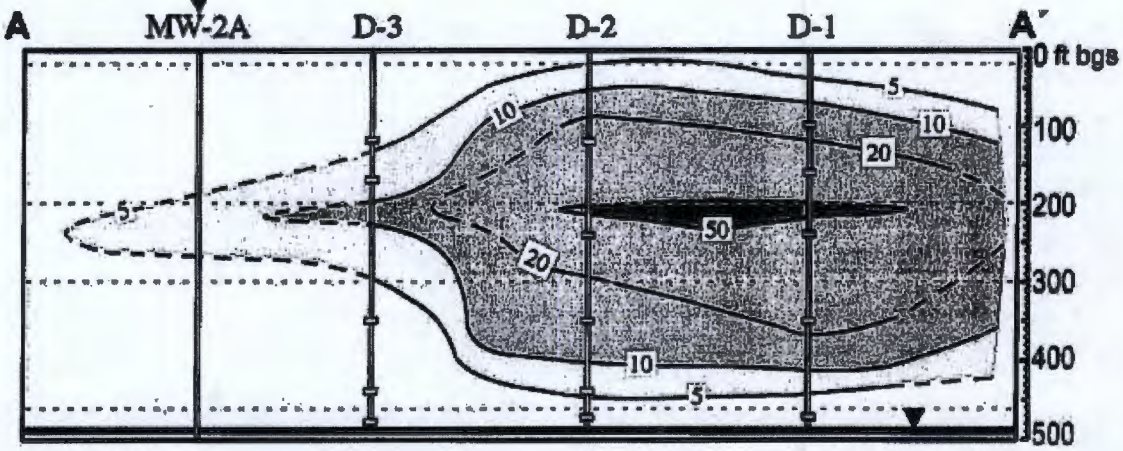
Source: RCRA Phase 2 RFI Report, September, 1996

Figure 10. Soil Gas Plume Measured In Deep Vadose Zone Monitoring Wells For Long-Term Monitoring of the Sandia Chemical Waste Landfill.

Post-VE VCM Total VOC Concentration - September 2004



Post-VE VCM TCE Concentration - September 2004



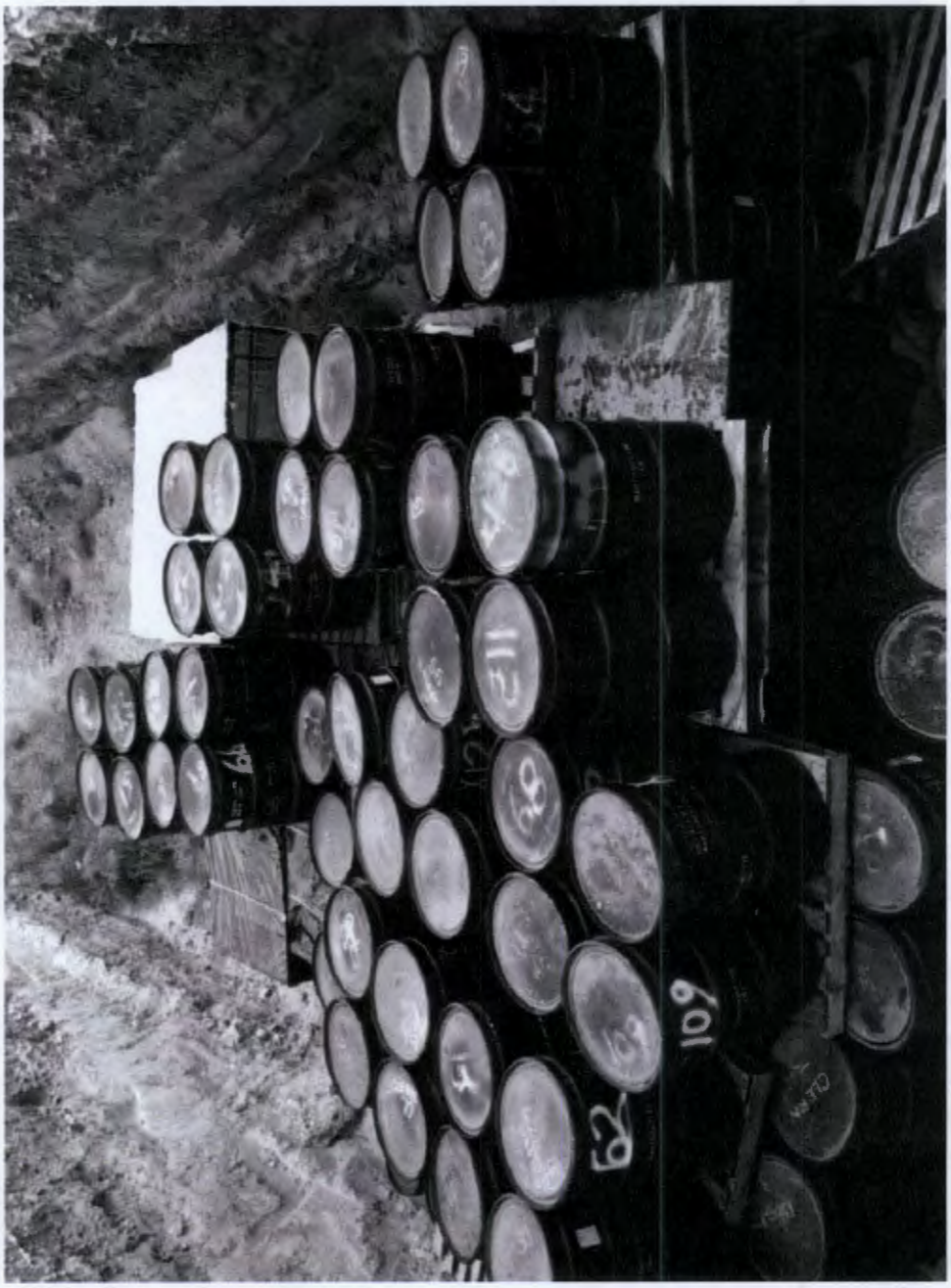
Source: NMED Draft Post-Closure Care Permit For Sandia Chemical Waste Landfill

Figure 11. Proposed locations for the three long-term vadose zone monitoring wells (e.g., FLUTe[R] wells) at the Sandia MWL Dump.

- *MWL-VW-1 to VW-3* - The proposed locations for the three FLUTe[R] wells

Source: DOE/SNL Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill, September 2007

Figure 12. Barrels of waste dumped into Trench E at the Sandia MWL Dump. Picture Date May 1980.



Source: Figure 5 in 2001 WERC Report *"Mixed Waste Landfill Peer Review"*

Figure 13. Barrels of waste dumped into Trench F at the Sandia MWL Dump. Picture Date1987.

Source: Figure 7 in 2001 WERC Report *"Mixed Waste Landfill Peer Review"*