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August 2, 2005

Patty Wagner
Manager
Sandia Site Office/NNSA
U.S. Department of Energy
P.O. Box 5400, MS 0184
Albuquerque, NM 87185-5400

Peter B. Davies
Director, Geoscience and Environment
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P.O. Box 5800, MS 0701
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RE: REMEDY DECISION AND CLASS 3 PERMIT MODIFICATION REQUEST TO INCORPORATE INTO RCRA PERMIT CORRECTIVE MEASURES FOR MIXED WASTE LANDFILL (SWMU 76)
SANDIA NATIONAL LABORATORIES EPA ID# NM5890110518
HWB-SNL-04-021

Dear Ms. Wagner and Mr. Davies:

As you are aware, on May 26, 2005, the Secretary of the New Mexico Environment Department (NMED) approved a remedy and a Class 3 permit modification request for corrective measures for the Mixed Waste Landfill (MWL) at Sandia National Laboratories (SNL).

A public hearing was conducted on the matter on December 2-3 and 8-9, 2005; a public comment period was held from August 11, 2004 to December 2, 2004, and extended until December 9, 2004. Based on the administrative record and the Hearing Officer's Report, the NMED Secretary selected a vegetative soil cover with bio-intrusion barrier (Corrective Measures Study Alternative III.c) as the remedy for the MWL. The draft permit modification issued by NMED was revised in accordance with the Secretary's final decision. A copy of the final permit modification is enclosed. Additionally, in accordance with Section 20.4.1.901.A(9) NMAC, attached are NMED's responses to public comment, including explanations for changes made to the draft permit in preparing the final permit. These documents are also located on the NMED web page at www.nmenv.state.nm.us/hwb/snlperm.html under Mixed Waste Landfill.

Please contact Mr. William Moats of my staff at (505) 284-5086 if you have questions or comments.

Sincerely,

John E. Kieling
Manager
Permits Management Program

JEK:wpm

cc: J. Bearzi, NMED HWB
W. Moats, NMED HWB
F. Nimick, SNL, MS 1089
D. Fate, SNL, MS 1089
J. Estrada, DOE/SSO/NNSA
J. Gould, DOE/SSO/NNSA
L. King, EPA-Region 6PD-N
File: SNL HSWA OU 1289, 2004

Enclosures

AUG 0 4 2005

V. CORRECTIVE MEASURES FOR THE MIXED WASTE LANDFILL (SWMU 76)

1. The report, *Mixed Waste Landfill Corrective Measure Study Final Report, Sandia National Laboratories, New Mexico,* dated May 2003, is incorporated herein by reference.

2. The remedy to be implemented by Permittees for the Mixed Waste Landfill shall be as defined as Alternative III.c--Vegetative Soil Cover with Bio-Intrusion Barrier, as set forth in the report referenced in V.1 of this section.

3. A Corrective Measures Implementation (CMI) Plan that incorporates the final remedy described in Section V.2 of this section shall be submitted by the Permittees for the Mixed Waste Landfill for the Administrative Authority's approval no later than 180 days following the selection of the remedy by the Administrative Authority. The CMI Plan shall provide details on the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for implementation. The CMI Plan shall, at a minimum, include:

    a. A description of the selected remedy;

    b. A description of the remediation system objectives;

    c. An identification and description of the qualifications of key persons, consultants, and contractors that will be implementing the remedy;

    d. Detailed engineering design drawings and systems specifications for all elements of the remedy;

    e. A construction and construction quality assurance work plan;

    f. An operation and maintenance plan;

    g. The results of any remedy pilot tests, such as landfill cover test plots;

    h. A schedule for submission to the Administrative Authority of periodic progress reports;

    i. A schedule for implementation of the remedy; and

    j. A health and safety plan.

4. A CMI Report for the Mixed Waste Landfill shall be submitted by the Permittees to the Administrative Authority for approval within 180 days after implementation of the remedy is complete. The CMI Report shall, at a minimum, include:

    a. A summary of the work completed;

    b. A statement signed by a registered professional engineer, that the remedy has been completed in full satisfaction of the specifications in the CMI Plan;

    c. As-built drawings and specifications signed and stamped by a registered professional engineer;

    d. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report; and

    e. A certification, signed by a responsible Permittee official stating: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations".

5. The Permittees shall submit to the Administrative Authority progress reports during implementation of the remedy in accordance with a schedule approved in the CMI Plan for the Mixed Waste Landfill. Each of the progress reports shall, at a minimum, include the following information.

    a. A description of the work completed during the reporting period;

    b. A summary of all problems, potential problems, or delays encountered during the reporting period;

    c. A description of all actions taken to eliminate or mitigate problems, potential problems, or delays;

    d. A discussion of the work projected for the next reporting period, including all sampling events; and

e. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period.

6. A long-term monitoring and maintenance plan, which includes all necessary physical and institutional controls to be implemented in the future shall be submitted by the Permittees to the Administrative Authority for approval within 180 days after the Administrative Authority's approval of the CMI Report. The Administrative Authority may require monitoring, maintenance, and physical and institutional controls different than those specified in the Corrective Measures Study report referenced in Section V.1 of this section. The plan shall also include contingency procedures that must be implemented by the Permittees if the remedy set forth in Section V.2 above fails to be protective of human health and the environment.

NMED Responses to Public Comments on the Sandia National Laboratories' Mixed Waste Landfill Permit Modification for Corrective Measures August 2, 2005

Commenter ID	Commenter/ Affiliation	Topic Area	Comment Number	Comment Summary	NMED Response Number	NMED Response	Revised Final Permit? Yes or No
A	For Citizen Action, Sue Dayton	Sodium	1.1	The unknown amounts of metallic sodium reportedly buried in the Mixed Waste Landfill (MWL or Landfill) (see FOIA document #20, par. 4) have been omitted from discussion in the Corrective Measures Study (CMS). Metallic sodium, used in the oxide reactor fuel experiments at Sandia National Laboratories (SNL), has not been identified as a hazardous substance in the inventory of the MWL nor has it been included in the CMS risk assessment. The commenter wants to know why it was not included.	R1	Sodium reacts with water and other oxidizers. Unknown, but likely small amounts of sodium metal may be present in canisters buried in the MWL that once held oxide reactor fuel samples. Provided that the canisters remain buried and are not exposed to water beyond normal soil moisture, chemical reaction of the sodium will not proceed at a rate that will threaten human health or the environment. See also Responses R5 and R49. The presence of sodium in the Landfill does not preclude the option of capping the MWL as a final remedy.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.26	An interview with George Tucker, former SNL employee, 1995 (FOIA 3) indicates that explosives were not allowed in the MWL, however FOIA document #21 states that metallic sodium "may be present". The commenter asked the New Mexico Environment Department (NMED) to address this apparent discrepancy.	R2	Metallic sodium is not classified as an explosive by the U. S. Bureau of Alcohol, Tobacco, Firearms, and Explosives.	No

Commenter ID	Commenter/ Affiliation	Topic Area	Comment Number	Comment Summary	NMED Response Number	NMED Response	Revised Final Permit? Yes or No
A	For Citizen Action, Sue Dayton	Beryllium	1.2	The commenter indicated that the MWL contains significant amounts of beryllium (218 cubic yards total) and PCBs (251 cu. yd). The commenter indicated that there is no discussion in the CMS about the beryllium and no response from the NMED regarding clean up of this material.	R3	While the Landfill contains wastes contaminated with beryllium and PCBs, there is no evidence that such wastes are migrating from the Landfill. Therefore, there is no risk to receptors regardless of the concentrations of these contaminants in the Landfill. See also Response R6. Continued monitoring during post-closure care will be conducted to ensure that hazardous waste or hazardous waste constituents are not migrating from the Landfill. The MWL is not subject to TSCA, but instead, is regulated under the New Mexico Hazardous Waste Act (NMSA 1978 §§ 74-4-1 et seq. (Repl. Pamp. 2000)) and the New Mexico Hazardous Waste Management Regulations (20.4.1 NMAC). Accordingly, the CMS did not need to address TSCA requirements.	No
A	For Citizen Action, Sue Dayton		1.3	The commenter indicated that according to the CMS the MWL contains 251 cubic yards of PCBs. Considering this amount the commenter asked why TSCA wasn't identified and discussed in the CMS	R3	See Response 3.	No
A	For Citizen Action, Sue Dayton	Risk Assessment Inhalation Factors	1.4	The commenter indicated that on pages I-84 and I-85 of the CMS (Tables 2 and 3, "Default Non-Radiological/Radiological Exposure Parameter Values for Various Land Use Scenarios"), the inhalation factors are different for	R4	It appears that the commenter is referring to Tables 2 and 3 on pages I-88 and I-89. The difference in inhalation factors is because for the chemical risks, the Environmental Protection Agency (EPA) exposure assumptions were applied; whereas, for	No

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				radiological and non-radiological under industrial, recreational and residential scenarios. The commenter wants to know the reason for these differences.		the radiological risk, Department of Energy/ Nuclear Regulatory Commission (DOE/NRC) exposure assumptions were applied. The most notable difference is the inhalation factors used for the recreational scenario. Both assessments use a base inhalation rate for the recreational scenario of 30 cubic meters per day; however the EPA-based rate as shown in Table 2 has been modified to allow for the limited exposure time and duration for the recreational receptor. RESRAD requires input of the base rate, and the other modifying factors (exposure time and duration) are separate input parameters and are applied to the base inhalation rate during the model calculations. So while the inhalation rates appear different in these tables, the final inhalations rates for both assessments for the recreational scenario are the same.	
A	For Citizen Action, Sue Dayton, 2nd submittal	Waste Inventory	1.7	Accurate records of the MWL waste inventory before 1965 no longer exist and records from 1965 to 1976 are incomplete with regard to waste disposal. (SNL ER Program, 1993, Phase 2 RFI Work Plan (FOIA 101)). The commenter had several questions regarding this issue. First, the commenter indicates that SNL states that the lost records have been found but indicated that the files contain conflicting data, the researcher	R5	NMED understands that some MWL records have been located at the Idaho National Environmental and Engineering Laboratory (INEEL). Records are incomplete and there are some discrepancies between the known inventory and historical accounts based on interviewed witnesses. However, the NMED believes that while the inventory for the MWL is not complete, it is adequate to select a final remedy for the MWL. See also Hearing	No

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				applied a straight-line average to waste disposal from 1959-1969; and the estimated values for individual waste categories. The commenter asked if NMED believes that these statements are representative of a Cold War waste site with an "excellent" inventory.		Officer's Findings of Fact and Conclusions of Law (HO FOF/COL), ¶¶ 43-45.	
A	For Citizen Action, Sue Dayton, 2nd submittal		1.10	"Most waste from this facility should be considered mixed waste since the exact composition of the waste is uncertain and radioactive chemicals as well as classified toxic materials could be expected". The commenter asked if this was indicative of a landfill with an excellent inventory.	R5	See NMED Response R5; see also HO FOF/COL, ¶¶ 43-45.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.28	The commenter indicates that between 1965 and 1970, before complete records were kept, there was a lot "unknown" about the final disposal of "Fission Product/Induced Activity. The commenter questions if these "unknown" statements are indicative of a landfill with an excellent inventory.	R5	See NMED Response R5; see also HO FOF/COL, ¶¶ 46-50.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's		1.52	The commenter stated that the purpose of RFI Phase 2 investigation was to "identify all potential or suspected sources of contamination" and "to determine thoroughly the contaminant	R5	See NMED Response R5; see also HO FOF/COL, ¶¶43-50.	No

Commenter ID	Commenter/ Affiliation	Topic Area	Comment Number	Comment Summary	NMED Response Number	NMED Response	Revised Final Permit? Yes or No
	comments			source". The commenter states that this has not been done. (pp. 6, 7)			
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments		1.54	The commenter indicated that SNL has not fully characterized the inventory of the MWL (p. 13).	R5	See NMED Response R5; see also HO FOF/COL, ¶¶ 43-50.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.64	Regarding the "WERC Independent Technical Peer Review of the Working Draft CMS for MWL", Executive Summary, the first comment in Section (ii. 1): the WERC states that the site operational history (section 1.0 of the draft CMS) fails to include information that the early inventory data (once believes to be lost) can now be found in microfiche at INEEL. This information was omitted from the CMS as well as the fact that the MWL was used for disposal of chemicals prior to the opening of the CWL. This information was obtained in a document found by Citizen Action under a FOIA request. The comment requests that the information be included in the CMS, that the records be released to the public, and that as complete MWL inventory as possible be prepared.	R6	The purpose of the CMS is for the facility to evaluate potential remedial options and recommend a remedy to the administrative authority (NMED). It is not necessary to include in the CMS Report detailed information concerning the operation of the Landfill, including the waste inventory, because this information is provided to the extent known in the RCRA Facility Investigation (RFI) Report(s). In the case of the MWL, most of this information is found in the Phase 1 and 2 RCRA RFI Reports, although some is located in other documents. The known waste inventory and other information have been made publicly available by both the NMED and the SNL to the extent that security classification requirements permit such a release of information. See also HO FOF/COL, ¶¶ 43-50.	No

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A	For Citizen Action, Sue Dayton, 2nd submittal	Changes to Waste Volume Estimates	1.5	The commenter provided selected statements taken from documents obtained by Citizen Action under a FOIA. Several following comments address this issue. The first comment indicated that an estimated 720,000 cubic feet of waste has been buried on site during the 28-year operation. (SNL ER Program Information Sheet, 1987 (FOIA 90)). The commenter asked why these estimated volumes continue to change.	R7	Estimates may change because the data from which SNL is working are old, incomplete, and in some cases may be inaccurate. This is a common occurrence for landfills that are as old as the MWL. The older estimates were made using the best available data at the time, and as new information became available, the volumes were modified accordingly. See also HO FOF/COL, ¶¶ 43-50. The records provided by SNL are more detailed than those of many such landfills used for disposal of hazardous and radioactive wastes during historical times. There are no waste disposal records for many old landfills. See also HO FOF/COL, ¶¶ 43-50.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.6	Approximately 50,000 cubic feet of radioactive waste has been buried at the site (SNL Working Draft, Sampling Plan 1992 (FOIA 92)). The commenter asked why these estimated volumes continue to change.	R7	See Response R7. See also HO FOF/COL, ¶¶ 43-50.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Knowledge of Exact Waste Quantities and Locations	1.8	The commenter asked what information NMED has on the "lost records" which have been found. The files indicate that all records prior to 1964 were destroyed as part of a record purge (letter from Delacroix Davis, Jr. to James G.	R8	NMED has relied chiefly on the waste inventory submitted with the Phase 2 RFI Report and does not possess additional records that have not been made available to the public. Although the inventory lists as much detail as possible about wastes disposed of in the individual	No

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				Steger, 1977, p. 11 (FOIA 50))		trenches and pits, the NMED does not have records for and does not generally know the exact volumes or mass, the exact levels of radioactivity, or the exact locations of most radioactive (including TRU), mixed, or hazardous wastes in the Landfill. The NMED does not possess records from INEEL; information from these records was summarized by SNL in the inventory provided in the Phase 2 RFI Report. The NMED does not know the quantities, types, or exact locations of fuel canisters, wastes from the Nevada Test Site (NTS), wastes contaminated with multiple fission products or metals, TRU wastes, or wastes disposed of in the radioactive chemical pit beyond the information provided in the inventory. See also HO FOF/COL, ¶¶ 43-50.	
A	For Citizen Action, Sue Dayton, 2nd submittal		1.11	"…the most common metal disposed of at MWL is lead. Also, barium, beryllium and chromium were probably disposed of. No records are available on the quantities of metals disposed of…" (SNL ER Program Information Sheet, FOIA, 1987 (FOIA 90)). The commenter asked if NMED has accurate records of quantities of metals (such as lead) disposed of at MWL.	R8	See Response R8. See also HO FOF/COL, ¶¶ 43-50.	No
A	For Citizen Action, Sue Dayton, 2nd		1.14	"… MWL received a variety of radioactive and potentially radioactive/hazardous mixed	R8	See Response R8. See also HO FOF/COL, ¶¶ 43-50.	No

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	submittal			waste…" Primary radionuclides are uranium and tritium; also there is some plutonium and plutonium-contaminated material, cobalt-60, cesium-137, radioactive tracers, radionuclear waste from operating and decommissioned Sandia Pulsed Reactors and experiments at the Nevada Test Site (NTS). Radioactively contaminated oils and naphthalene scintillation vials…" The commenter asked if there was a complete inventory of each of these specific waste products, i.e., quantity, type, curies, and method used for containment.			
A	For Citizen Action, Sue Dayton, 2nd submittal		1.15	"Chemical waste including acids, solvents, TCE, carbon tetrachloride, and scintillation cocktails. Other wastes disposed of in the classified area include uranium, thorium, plutonium, enriched lithium, various facilities, and plutonium-contaminated nuclear weapons test debris". The commenter states that SNL maintains that no liquid waste was disposed of in the MWL, the term "leaky" does not typically refer to solid waste. In addition, based on SNL's reports, less than a gram of plutonium was buried in the MWL. The commenter asked if that amount took into consideration the total volume of plutonium-contaminated wastes and the	R9	The less than 1 gram of plutonium includes small amounts of plutonium that contaminate some debris in the Landfill. The NMED does not possess the INEEL records. The information in the INEEL records has been summarized in the inventory, which is adequate in the case of the MWL for the purpose of remedy selection. See also Response R8 and HO FOF/COL, ¶¶ 43-50.	No

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				plutonium reportedly contained in the 19 drums as reported in the MWL known inventory? The commenter also request that these records, apparently on microfiche and stored at INEEL, be made available to the public in order to fully characterize the content of the MWL.			
A	For Citizen Action, Sue Dayton, 2nd submittal		1.17	In an interview with former SNL employee H. Abbott (interview date unknown), he states "Possible mixed fission products went to dump. Lots of fuel in mountains stored. Only neutron activated material went to the dump. Lots, large amounts of DU (depleted uranium)." The commenter would like a list of the fission products, volumes, and curies disposed of at the MWL. The commenter asked if NMED has records of where these mixed fission products originated. The commenter also asked what "lots of fuel stored in mountains" refers to.	R10	NMED does not know where fission-product contaminated wastes were generated, although it is possible that some of the waste was generated locally at SNL. Some of the waste is from the NTS and possibly other DOE facilities in the U.S. NMED has no knowledge of any nuclear fuels stored "in mountains". Nuclear fuels are not hazardous waste, and thus are not subject to RCRA. See also Response R8.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.22	"Records of disposal in pits from Nevada Test Site and South Pacific were examined and then disposed of at the MWL." (Interview with former SNL employee Bob Schwing, 1995(FOIA 7).) The commenter asked if there are such records, and in which section at	R8	See Response R8.	No

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				MWL these materials were disposed of.			
A	For Citizen Action, Sue Dayton, 2nd submittal		1.23	"…other records suggest that transuranic wastes may have been buried at the MWL; waste records did not define contents of the TRU waste before 1972, thus actual presence and quantities of these wastes cannot be accurately determined…". (SNL ER Program, 1993 Phases 2 RFI Work Plan (FOIA 101).) The commenter asked if NMED has further documentation about TRU wastes disposed of at MWL, and does NMED believe the information represents an accurate inventory of waste disposed of at the MWL.	R11	See Responses R5 and R8.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.24	"On the order of 1000s of REM/hr [disposed of in the MWL] on contact. Truckloads were disposed of during decommissioning. Some elements of reactor exceeded 5000 rem/yr. Disposal of much material in pits-100 rem/hr" (Interview with former SNL employee Max Moms regarding disposal of nuclear reactor material in dump, 1998 (FOIA 12).) The commenter asked what "elements of reactor waste exceeded 5000 rem/hr"	R12	NMED does not know how many reactor vessel plates exist in the MWL and which of these plates specifically had radioactivity levels of greater than 5000 rem/hr.	No
A	For Citizen Action, Sue		1.25	Interview with Frank Statzula a former SNL employee (FOIA 58)	R8	See Response R8.	No

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	Dayton, 2nd submittal			mentions a radioactive acid pit and indicates that chemicals, radioactive materials were disposed of in the pit until 1969. The commenter indicated that this pit was not disclosed to members of the SNL/Citizens Advisory Board. The commenter asked if NMED has a complete inventory of waste disposed of in the radioactive acid pit.			
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments		1.51	The commenter stated that pit contents (see examples, pits 35-36) do not match the gamma levels at surface taken by SNL (pp. 7, 8).	R13	That certain pit contents have gamma radiation sources in them that are not included in the inventory simply means that the inventory is incomplete. Again, NMED is aware that the inventory is incomplete; but it is adequate for remedy selection.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.65	WERC describes the MWL inventory as: Anecdotal testimony in the records regarding disposal of non-stabilized free liquids. The location of many dangerous materials appears to be unknown such as nuclear fuel canisters and radioactive sealed sources. The amount of hazardous waste is not well understood, i.e.; inventory does not match characterization of Pit 35 and Trench B and C. Volumes of waste vary widely in different sections of the report. Meanings of words "debris" and "all waste" in the CMS are	R14	The meaning of the terms "all waste" and "debris" as used in the CMS should be taken as their ordinary meanings. See also Responses R5, R8, and R13.	No

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				uncertain. The commenter requests that NMED responds to these issues.			
M	Citizen, Steve Dapra		13.4	The commenter indicated that although SNL does not know the identity of every item in the MWL, there is a thorough inventory of the Landfill's contents. No previously unknown items have been detected, either from the soil, water, or air sampling; or by radiation detection instruments. There is no reason to believe that any of the possibly unknown items are harmful. (See also Summary of the MWL, p.2, par. 4.)	R15	NMED agrees that samples of air, ground water, surface soil, and subsurface soil were analyzed for a wide variety of chemical and radiological parameters. Hazardous or radioactive contaminants released from the MWL are few and include low levels of tritium, radon, and cadmium. However, that other hazardous or radioactive contaminants were not detected as releases does not mean that other wastes/contaminants within the Landfill are of no harm to the human health and the environment should they ever migrate from the Landfill. This is one reason why it is prudent to continue monitor the MWL. See also Response R8.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Truck Trailer	1.29	"Trailer was buried in Trench F, deeper than the picture shows. The trailer was not a flatbed, but a box-type with doors, which was backed down the trench, unhooked and the truck drove out". The commenter asked if NMED knows of any box-type trailers that were disposed of at MWL. SNL responded by stating that no box-type trailers were buried in the Landfill. The commenter believes that this raises	R16	NMED has a copy of a photograph of the truck trailer. The truck trailer is of the flat-bed variety.	No

Commenter ID	Commenter/ Affiliation	Topic Area	Comment Number	Comment Summary	NMED Response Number	NMED Response	Revised Final Permit? Yes or No
				questions regarding the complete inventory at the Landfill.			
A	For Citizen Action, Sue Dayton, 2nd submittal	Off site tritium monitoring and source	1.9	"They have a feel for what is in there but the numbers are questionable…use vegetation as indicator, succulent plants work best. Elevated concentrations [found] up to 5 km away. (Interview the Donna Hartzel to G.L, 1989 (FOIA).) The commenter asked if NMED has reviewed this document and if NMED has conducted any off-site radiological monitoring to detect tritium in vegetation. Does the statement in the document mean that biological transport of tritium has been occurring for years? What are the elevated concentrations of tritium referred to in this report and is this still occurring. What does the term "have a feel for" mean in terms of describing the MWL inventory?	R17	NMED has been aware for many years that vegetation growing on and near the MWL contains small amounts of tritium, as tritium moves with water and has been released from the Landfill. NMED has not reviewed this particular report and has not collected and analyzed samples of vegetation at the MWL. However, the levels of tritium flux from the Landfill do not demonstrate that an unacceptable risk to the environment occurs at the Landfill.	No
A	For Citizen Action, Sue Dayton, 2nd Submittal	Reactor vessel plates	1.12	The commenter indicated that "SP-4 contains what is purported to be reactor vessel plates. Very little is known about these plates, their origin, number, size or configuration." (Memo from Jerry Pease/SNL to Mark Jackson, John Gould/DOE/KAO, 1997 (FOIA 22).) The commenter asked if there is still little known about the reactor vessel plates.	R18	NMED is only aware of what was reported in the inventory. As indicated in the inventory, sample pieces of reactor vessel plates, with radioactivity dose levels of 2 rem/hour on contact, are buried in pit SP-4. The plates originated from a reactor that was decommissioned in 1978, which once existed at a location in the San Fernando Valley. Sample sections are reported to be 6-ft long. Reactor vessel plates not retained as	No

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						samples were disposed of at Beatty, Nevada. SP-4 is concrete lined, the only lined pit at the MWL.	
A	For Citizen Action, Sue Dayton, 2nd submittal	Liquids and Liquid Waste	1.13	"Radioactivity contaminated waste water was discharged into one of the trenches during the month of 1967; the water could potentially have increased the migration rate of contamination through the soil column towards the aquifer." (SNL ER Program Information Sheet FOIA, 1987 (FOIA 90).) The commenter indicated that SNL maintains that no liquids were disposed of in the MWL, and those that were disposed of were containerized. Does NMED agree that this statement from the FOIA document 90 refers to liquid wastewater that is not containerized?	R19	In 1967, approximately 204,000 gallons of coolant wastewater from the SNL Engineering Reactor Facility was discharged into Trench D. This wastewater, a liquid, was not containerized prior to its disposal into the MWL. There is no evidence that the disposal of this wastewater increased the migration rates of any hazardous or radioactive constituents, except possibly that for tritium, which moves readily with water. Sampling and analysis of soil beneath Trench D during the installation of ground-water monitoring well MWL-MW4 show that only small levels of tritium have been released from this trench. No other contaminants besides tritium were found below the trench. It is clear to NMED that the MWL received some liquid wastes.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.16	"Characteristics of contamination: disposal in unlined pits and trenches; contaminated oils, liquids and solvents; solid and liquid wastes." The commenter indicated that SNL maintains that no liquid wastes were disposed of at the MWL, this statement refutes that claim. The commenter asked that NMED respond to the comment.	R19	See Response R19.	No

Commenter ID	Commenter/ Affiliation	Topic Area	Comment Number	Comment Summary	NMED Response Number	NMED Response	Revised Final Permit? Yes or No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.27	"After 1975, SNL required liquid wastes to be solidified prior to disposal. Before this time unsolidified radioactive liquids, whether containerized or not were disposed of in the MWL. (ER Program/Site Health and safety Plan, 1992 (FOIA 115,116).) The commenter points out that this conflicts with SNL statement that no liquids were disposed of at MWL. The commenter wants NMED to comment on this.	R19	See Response R19.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.18	In a 1989 interview with SNL employee Donna Hartzel, she states "Two summers ago workers found 5 feet of water in nearby completed trench. Workers pumped water into the trench to the west." The commenter asked if the above quote supports the DOE/SNL assertion that workers were not allowed to dispose of liquids into MWL.	R19	See Response R19.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.20	"Organic wastes were disposed of at the MWL beginning in 1959 and continued until 1962 when the Chemical Waste Landfill (CWL) was opened." (ER Program/Site Health and Safety Plan, 1992 (FOIA 116).) Uncontainerized liquids were disposed of at the CWL ; it makes sense that liquids were disposed of at MWL prior to being sent to CWL. Why would	R20	There is abundant evidence that liquid wastes were commonly disposed of in the CWL. SNL has admitted to this practice. Although the waste disposal practices between the two landfills appear to be inconsistent, NMED does not know the reason why this was the case. Each landfill must be assessed on a site-by-site basis.	No

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				SNL indicate that liquids were solidified at MWL, and not at CWL.			
M	Citizen , Steve Dapra		13.1	The commenter indicated that there are no free liquids in the MWL. According to the Summary of MWL, Oct. 3, 2002, p. 2, par. 2: Disposal of free liquids was not allowed at the MWL. Liquids such as acids, bases, and solvents were solidified with commercially available agents such as Aquaset, Safe-T-Set, Petroset, vermiculite, marble chips, or yellow powder before containerization and disposal.	R21	The commenter is referring to information provided by the SNL, where they make a general statement that liquids were solidified prior to their disposal in the MWL. As mentioned above, it is clear to the NMED that the MWL received some liquid wastes.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Soil Gas Sampling	1.19	'Incompatible and un-neutralized ignitable and reactive gases may have been placed in pits and trenches. Subsequent reactions generate hazardous vapors which could penetrate soil caps and be released. Potential for release to air from pits 24-30 is high". (SNL ER Program Information Sheet, FOIA, 1992 (FOIA 90).) The commenter asked if it was true that no active soil gas surveys have been conducted in classified pits 24-30.	R22	Passive soil-gas surveys were done in the area of the pits. Active soil-gas surveys were conducted near the pits on all sides. The pits in the classified area of the MWL were also investigated by the sampling and analysis of soil beneath them via angled boreholes. NMED is satisfied that the SNL efforts to detect releases of contaminants from the pits in the classified area of the MWL are adequate. The only contaminants released from this area of the Landfill are low levels of tritium and radon.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Fuel Canisters	1.21	"Based on interviews with TA5 personnel there may be hazardous constituents in the canisters. As little process knowledge, there have	R23	The canisters that formerly contained samples of oxide reactor fuel may have contained hazardous components such as sodium and heavy metals. NMED has	No

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				been no controls since it was generated…." The commenter asked what those statements mean.		investigated this matter and has determined that the fuel rod samples were removed from the canisters prior to the disposal of the canisters in the MWL.	
M	Citizen, Steve Dapra		13.7	The commenter indicated that certain parties claimed that fuel rods are buried in the MWL. This claim is answered in a letter from Ron Curry, Secretary of New Mexico Environment Department to Dr. Maurice Weisberg, M.D, (August 22, 2003). The claim is both false and unreasonable. Fuel rods are extremely expensive and they would not be buried.	R23	See Response R23.	No
N	Citizen, Maurice Weisburg, M.D.		14.1	The commenter indicated that his principal concerns involve the possible presence of high-level wastes buried with metal containers that have undergone irradiation in onsite research reactors in TA-5. Related to that concern is an SNL document dated October 15,1993 "Site Team Report on Spent Fuels", which is an assessment of the vulnerability of storage of irradiated nuclear fuels, both fresh as well as previously irradiated. In only a few instances are these materials referred as spend fuels or high-level wastes. Instead the term used is "RINM" (reactor irradiated nuclear material). The statement on page 3 of the executive summary states	R24	NMED believes that many of the steel containers within the Landfill have or will rust. Any liquids contained within the steel containers could migrate from the Landfill if conditions are appropriate; however, this does not necessarily mean that any release would pose unacceptable risk to human health and the environment. Thus, NMED agrees that continued monitoring of the vadose zone and the ground water is necessary to ensure protection of human health and the environment. With respect to comments on reactor irradiated nuclear material and the Sandia Pulse Reactor, this issue is not directly related to the MWL and will not be discussed further in these responses.	No

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				that " there is no spent reactor fuel onsite [disposed in MWL] from the SNL reactors." This would seem misleading since both fresh and pre-irradiated samples were used and exposed in the core for different time periods. Storage of RINM form experiments in one instance was into 32-foot deep holes with steel sides and an open gravel filled bottom. For storage after use, Sandia Pulse Reactor had 19 such storage areas. The commenter expressed concern that 11 years later we are still talking about long-term storage, with no approved method of disposal. The commenter is concerned about leaking from the unit into the vadose zone and ground water, and is concerned about the Albuquerque sole aquifer. The commenter is also concerned about the corrosion of the metal containers. He asked about the follow-up on the Tiger Team, and what findings were presented.		See also Response R23.	
A	For Citizen Action, Sue Dayton, 2nd submittal	1984 Landfill Excavation Estimate	1.30	The commenter indicated that in 1984 George Tucker of SNL made an estimate for the clean up of the MWL. The cost estimate included protective equipment, with the waste being shipped to the Nevada Test site. The cost estimate assumed "a lot of manual labor". The total in 1984 was	R25	The risk assessment demonstrated that it is not protective of workers to excavate the Landfill at this time because of the high level of risk associated with exposure to radioactive wastes. Costs have escalated since 1984, but it would be possible to excavate the MWL in the future should it become warranted. SNL is required by the final order issued by the	No

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				$181,570,000. The commenter asked why MWL couldn't be cleaned up today based on the above excavation scenario and the cost estimates performed in 1984.		NMED Secretary to reevaluate the performance of the Landfill cover/bio-intrusion barrier and the feasibility of excavation every five years.	
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Animal/plant transport of contaminants	1.31	The commenter stated that buried waste can be mobilized to the ground surface through plant roots and animals and insect burrowing can dramatically increase infiltration of water into the Landfill with covers as thick as those proposed.	R26	NMED agrees that bio-intrusion via burrowing animals and roots can cause contaminants to migrate to the ground surface, and can create open spaces that will locally increase cover permeability. Once on the surface, contaminants can continue to migrate by the activities of other animals, and by wind erosion and surface water erosion/solution. The degree of contamination that could be brought to the surface by plant roots or burrowing animals is case specific, depending much on the size and chemical/physical characteristics of the waste, and the size and burrowing habits of the animals. Water erosion is probably the most significant threat to cover integrity in terms of creating exposure to waste over a short time frame. All of these factors form the basis for NMED to require maintenance of the cover and continued monitoring of surface soil. In the case of the MWL, bio-intrusion is not expected to play a major role in the migration of contaminants because the wastes are relatively insoluble and the debris items mostly large in size. The required bio-barrier should limit the ability of small burrowing animals to	No

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						bring contaminants/debris to the surface, and should help limit root penetration.	
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D		1.32	The commenter indicated that vertical transport of contaminants to the ground surface by biota may be small on a short time scale, but over many decades these processes may become dominant in mobilizing buried wastes.	R26	See Response R26	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph. D.		1.33	The commenter indicated that Dr. Hakonson cites a study by the Pacific Northwest Laboratory that suggests radiological doses that result from bio-intrusion into low level waste landfills located in arid areas can ultimately over time become as high as doses calculated from human intrusion.	R26	See Response R26.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.		1.36	The commenter indicated that under the right conditions the roots of all types of vegetation have the ability to extend several meters into the soil and transport contaminants to the surface.	R26	See Response R26.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments		1.39	The commenter indicated that once contaminants are transported to ground surface a complex distribution process occurs that can result in widespread transport of	R26	See Response R26.	No

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	by Tom Hakonson, Ph.D.			contaminants across the Landfill surface to off-site areas.			
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.		1.38	The commenter states that SNL's conclusion that the waste has not been mobilized to the ground surface by animals is poorly supported as it is 1) based on soil sampling taken (in Part) from areas of the Landfill recently backfilled; 2) sampling was coarse in resolution; 3) samples were non-random in space; and 4) samples purposely did not include disturbed areas created by burrowing animals.	R27	Although the commenter criticizes surface soil sampling at the MWL because in his opinion it was not random, he also recommends the collection of samples from biased sampling locations (animal burrows and older parts of the Landfill). There have been several surface soil sampling events conducted at the MWL and these efforts have been adequate. For future monitoring, NMED believes that the collection and analysis of soil samples from burrows and ant mounds should be done as suggested by this commenter.	No
F	Citizen, Carl White, Dept. of Biology, UNM		6.1	The commenter stated that rodents are present on the site, and that they can burrow allowing water infiltration. The rodents can also bring up materials out of the Landfill, and then they would be consumed by other animals and predators, which would distribute any contaminates. The commenter believes it is foolish to discard the bio-intrusion barrier.	R28	NMED agrees that a bio-intrusion barrier is necessary at the MWL to minimize the impact of burrowing animals and reduce the penetration of plant roots. In addition, NMED intends for the SNL to maintain the cover system and monitor animal burrows for any future migration of contaminants.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments	Evapotranspiration Cap	1.35	The commenter indicated that both cap designs (Dwyer et, al. SNL Environmental Restoration Group) do a credible job of analyzing the evapotranspiration (ET) cover, and	R29	NMED agrees that an ET, with the addition of a bio-barrier, should provide adequate protection of ground water. NMED also agrees that it remains necessary to continue monitoring the	No

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	by Tom Hakonson, Ph.D.			in the reviewer's opinion both cap designs will provide adequate protection of ground water from contaminants assuming the site is diligently monitored and maintained throughout the post-closure monitoring period while assuming the surface pathway proves to be unimportant in contributing doses to humans.		ground water as well as the vadose zone and surface soil to ensure that any future migration of contaminants will not occur at levels that pose unacceptable risk. Monitoring of surface soil will ensure that the surface will not become an unrecognized pathway for contaminants that would threaten human health or the environment.	
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Vapor transport through evapotranspiration Cap	1.37	The commenter indicated that while an ET cap can minimize soil moisture it could contribute to vapor phase transport of volatiles.	R30	Vapor transport can occur through any ET cover. However, in the case of the MWL, active soil-gas surveys demonstrate that vapors of total volatile organic compounds within and beneath the Landfill are low, and do not threaten human health or the environment, including ground water. Tritium and radon are also present at the MWL in the form of gases. However, the levels of tritium and radon measured at the surface are also sufficiently low such that they do not threaten the environment or human health.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Human Intrusion	1.40	The commenter stated that human intrusion scenarios should take a conservative approach such as the loss of institutional controls under a subsistence farmer scenario.	R31	It appears that the commenter is referring to the NRC regulation in 40 Code of Federal Regulations (CFR) Section 61.59(b), which is not applicable to RCRA. Under EPA regulations, there is no requirement that a facility must assume a loss of institutional controls and evaluate a subsistence farming scenario at some time in the future (for example 100	No

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						years in the future). Nonetheless, NMED intends to enforce institutional controls through SNL's RCRA permit as long as such controls are needed.	
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments		1.53	The commenter suggests that SNL follow recommendation from EPA and DOE that SNL conduct a risk assessment that includes "no administrative controls in place after 100 years (pp. 12, 13).	R31	See Response R31	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Climate Change	1.41	The commenter stated that changes in climate could radically affect the integrity of the cap.	R32	SNL is required by order of the NMED Secretary to reevaluate the performance of the evapotranspiration cover every five years. If significant climatic changes were to occur during this period that would adversely affect the performance of the cover system, NMED can impose additional requirements or a new remedy for the MWL to ensure protection of human health and the environment.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Moisture Measurements	1.42	The commenter indicated that SNL's proposed plan to use a neutron moisture gauge (NMG) are vague on how the monitoring data will be used to conclude that percolation is or is not occurring. NMG is labor intensive (data must be downloaded and managed) and the NMG must be calibrated to soil (difficult when layered soils are involved), and reliable measurements are limited to	R33	NMGs have been shown to be an effective tool to monitor soil moisture. NMED agrees that specific calibrations must be conducted and that correction factors may need to be applied to account for changes in soil bulk density. The final order issued by the NMED Secretary requires that SNL submit for MNED approval a long-term monitoring plan, and a list of "triggers" which will set in motion additional testing or the implementation of an additional or	No

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				volumetric water content above 5% the NMG integrates moisture content over a relatively large area making it difficult to pinpoint the specific zone depth being interrogated. NMG provides instantaneous estimates of soil moisture so that measuring after precipitation is critical. NMG should not be used as an early warning system.		different remedy. Finally, NMED intends to require environmental monitoring beyond that of soil moisture. Thus, NMG and soil moisture will not be used as the sole early warning system.	
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.	Closure/post-closure	1.34	The commenter stated that one of the more important deficiencies in Sandia National Lab's closure plan proposed for the MWL is the assumption that vertical and horizontal transport of contaminants resulting from biological processes is not an important contributor to exposure pathways.	R34	The document reviewed by Dr. Hakonson was not a closure plan, which was the reason that details concerning long-term monitoring and maintenance were not provided in the document. Instead, the document was intended to describe chiefly the design and construction quality assurance of the proposed ET cover. See also Response R36.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.		1.43	The commenter stated that little or no planning has been done on the post-closure phase of the Mixed Waste Landfill closure and there is no contingency plan should the ET cap not perform as predicted.	R35	NMED has always intended that post-closure care, including monitoring, and maintenance, be addressed following selection of a remedy for the MWL. This is based on the fact that the details for such monitoring/maintenance are dependent on the chosen remedy. The final order issued by the NMED Secretary requires a long-term monitoring and maintenance plan (including the proposal for contingency options) to be submitted for approval by the NMED within 180	No

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						days of completion of the remedy (ET cover with bio-barrier).	
A	For Citizen Action, Sue Dayton, 2nd submittal, comments by Tom Hakonson, Ph.D.		1.44	Dr. Tom Hakonson has the following recommendations: 1) Any post-closure plan should provide measurements on all possible migration pathways that include vadose zone transport, soil sampling for surface contaminants and biological transport; 2) Soil surveys should be required in undisturbed areas closed early in the Landfill operation with comprehensive long-term sampling program after MWL is closed consisting of sampling of surface soils and biota; 3) A comprehensive sampling plan should be required that reflects the inventory of the contaminants in the Landfill, not just tritium; 4) The use of bio-intrusion barriers to keep animals from burrowing into the Landfill has had mixed reviews in terms of effectiveness, a wire mesh type barrier proposed by Dwyer is the best choice for the MWL in terms of effectiveness. The commenter would like NMED to address these recommendations.	R36	NMED agrees that a surface soil, subsurface soil, soil vapor, and ground water monitoring program must be established to ensure early detection of any future migration of contaminants. The scope of the exact program is to be detailed in the long-term monitoring and maintenance plan required by the RCRA permit as a result of the Secretary's final order. The NMED also agrees that the sampling plan should require a wide range of contaminants to be analyzed for, and not limit the analytes solely to tritium. Sampling, in part, should include the sampling of animal burrows and ant mounds. However, surface soil sampling should be conducted in every area of the MWL, and not be limited to older portions of the Landfill. The NMED prefers a rock bio-intrusion barrier to that of a wire mesh because the NMED believes that a rock barrier is likely to last longer and will not corrode and release heavy metals into the environment. Finally, NMED agrees that a bio-intrusion barrier is necessary.	No
A	For Citizen Ac For Citizen	Baseline Risk Assessment	1.45	The commenter indicated that a new baseline risk assessment for the MWL has not been conducted	R37	NMED accepts the baseline risk assessments as presented in the Phase 2 RFI and the CMS Reports. NMED	No

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	Action, Sue Dayton, 2nd submittal			by SNL due to the uncertainties of the inventory and source terms. This was verified by Tommy Tharp/SNL at a public meeting of the "WERC Independent Technical Peer Review of the Working Draft CMS for MWL", in December, 2002. This was also mentioned in the WERC Peer Review Report. The commenter would like NMED to comment on this.		acknowledges that there are some uncertainties associated with the contents of the Landfill. However, the goal of a baseline risk assessment is to assess risk to human health and the environment under current conditions, meaning contamination that has been released from the MWL. Therefore, uncertainties concerning contaminants that have not been released from the MWL do not affect the risk assessment. For additional information and the purpose of the baseline risk assessment, see EPA's Office of Solid and Hazardous Waste (OSWER) Directive No. 9355.0-30. See HO FOF/COL, ¶¶ 109-27.	
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Suspect Data	1.46	Resnikoff "Risk Screening Review of SNL Risk Assessment for MWL, SWMU 76" revealed numerous problems with SNL's methodology in its risk assessment for the MWL which are addressed in several comments. First, the commenter indicated that SNL had results for measurements of plutonium at 3 different labs, and that samples with plutonium detections were discarded and those without detections were kept because they were more favorable data (p. 9).	R38	Questionable laboratory results for plutonium-238 and plutonium-239/240 were obtained from several core samples recovered during the drilling of the borehole for well MWL- MW4. In response, NMED required SNL to repeat the analysis and in addition, NMED obtained split samples for an independent analysis. Results from the split sampling effort indicated that there had not been a release of plutonium into the subsurface in the vicinity of MWL-MW4. NMED carefully scrutinized the environmental and quality control data for the MWL and considers the data to be overall of acceptable quality, as did WERC.	No

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A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments		1.47	The commenter indicated that SNL discarded samples showing high concentration of constituents of concern and kept samples concentrations with false positives (p. 9)	R38	See Response R38.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, combining chemical and radiological risk	1.48	The commenter stated that radionuclide and cancer risk should be combined, not subtracted as SNL has done in its risk assessment (pp. 11, 12).	R39	NMED does not concur that the cancer and radiological risks were subtracted from each other, but rather the risks were evaluated independently as was the practice at the time the risk assessment was done. Currently, the EPA treats radiological contaminants as carcinogens, and calculates the risk differently as compared to the past. However, in the case of the MWL, the risk will not be sufficiently different if calculated using the newer method to require a different remedy for the Landfill. See also HO Report, ¶¶ 109-27.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Children vs adults	1.49	The commenter indicated that SNL's calculations apply only to an adult male and has used outdated conversion factors instead of newer dose conversion factors (DCF) that evaluate dose to children as well as adults (pp. 11, 12).	R40	NMED believes that DCFs were appropriately applied, as the site will be restricted to industrial use. The evaluation of an adult only is reasonable in this case. See also HO FOF/COL, ¶¶ 109-27.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr.	Filtered Water Samples	1.50	The commenter indicated there are questions which remain regarding the filtering of water samples by SNL (p. 8).	R41	NMED agrees that use of filtered water samples could result in an underestimation of the total levels of metals and radionuclides present in the ground water. However, most samples	No

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	Resnikoff's comments					were unfiltered in both the field and laboratory, and NMED has obtained and analyzed unfiltered water samples. In addition, no data from filtered water samples for either metals or radionuclides were used in the risk assessments.	
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Phase 2 RFI Report	1.55	The commenter states that the RFI Phase 2 conducted by SNL concluded that MWL contaminants "present little risk to ground water or as air emissions to potential receptors". This conclusion was disputed in a memo sent to Will Moats by Barbara Toth (August 11, 1999); in that memo she noted numerous deficiencies in the SNL risk assessment. The letter states "Surface/subsurface soil erosion due to surface/subsurface water movement and windblown contaminant transport acts as the primary means for contaminant migration out of the MWL to the surrounding environment… this subsequently threatens human health and the environment". The commenter asked if NMED agrees with this assessment of the MWL by Ms. Toth.	R42	The memorandum in question was written early in Ms. Toth's evaluation of the MWL risk assessment. Ms. Toth is a former employee of the NMED. Mr. Moats was informed by Ms. Toth prior to her departure from the NMED that given the lack of appreciable contaminant releases, any changes she would recommend for the risk assessment would not change the overall outcome of the risk assessment. She concluded that the MWL did not pose unacceptable risk to human health and the environment. After Ms. Toth's departure, two other experts have reviewed the risk assessment on behalf of the NMED and have independently determined that the risk assessment is adequate. Additionally, a risk assessor working with the WERC concluded that the risk assessment was technically adequate; however, it was also overly conservative because it took into account a number of contaminants which had not been actually released into the environment. See also HO FOF/COL, pp 109-27.	No

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A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Cr-VI versus Cr-III	1.56	The commenter asked why the RFI Phase 2 states all chromium contamination at MWL is chromium III, the most conservative type. The commenter asked if NMED knows the type of all chromium contaminants at MWL.	R43	NMED has previously provided comments to SNL concerning hexavalent (Cr-VI) versus trivalent (Cr-III) chromium. NMED concurs that the assumption that all chromium is trivalent chrome is not a conservative assumption, but rather is the least conservative approach. The inventory for the MWL does not specifically list any Cr-VI-contaminated wastes, suggesting that little, if any, Cr-VI wastes were disposed of in the Landfill. Sampling and analysis of soil beneath the trenches and pits did not find evidence of a chromium release. Finally, there is no evidence of a release of Cr-VI in filtered samples of ground water.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Inhalation of metals	1.57	The commenter stated that SNL claims the inhalation pathway doesn't apply to metals due to their "lack of volatility". This was found to be incorrect as metals can attach to soil particles and be inhaled. The commenter asked if SNL's risk assessment included inhalation pathway of heavy metals.	R44	NMED agrees that inhalation of metals in soil does occur and should be evaluated using a particulate emission factor (PEF). SNL did consider the inhalation of both vapor phase and particulate airborne compounds (see Appendix I, Table 1 and the soil inhalation equation presented on page I-85).	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, sources of toxicological parameters	1.58	The commenter states that NMED recommends SNL use EPA's IRIS and HEAST or EPA's NCEA to determine toxicological parameters. The commenter asked if information from these sources	R45	Toxicity data from these databases were applied in the risk assessments (refer to Table 13, Appendix I).	No

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				been integrated into the risk assessment.			
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Use of NMED risk parameters	1.59	The memo recommends SNL use exposure parameter values recommended by HRMB/NMED; the commenter asked if these have been integrated into the SNL risk assessment.	R46	The recommended exposure parameters were applied in the risk assessments. Refer to Tables 2 and 3 in Appendix I of the CMS.	No
A	For Citizen Action, Sue Dayton, 2nd submittal, Dr. Resnikoff's comments	Risk Assessment, Exposure parameters	1.60	The memo recommends exposure parameter values be used to evaluate exposure and risk from dermal contact with contaminants in soil under industrial, residential and recreational land use scenarios. The commenter asked if these had been done.	R47	SNL identified the dermal contact pathway as a potential nonradiological organic constituent pathway in all the land use scenarios. However, the exposure via this pathway was considered insignificant and excluded from the final risk analyses. However, potential risks associated with the dermal pathway were addressed in the uncertainty analysis.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Risk Assessment Risks for CMS alternatives	1.61	The commenter indicates that at a January 31, 2003 "WERC Independent Technical Peer Review of the "Working Draft CMS" for MWL it was pointed out by SNL staff that these risk assessments were only relative to the different remedies being investigated and did not relate directly to the predicted risk. This issue needs to be clarified as it only adds uncertainty to the overall remedy if the risk assessment is not modeled relative to a conservative model of the site	R48	Although several staff members were present, NMED has no recollection of the discussion mentioned in the comment. However, NMED can offer that the CMS provides a baseline risk assessment and a risk assessment for each proposed alternative. The latter assessments are done to determine the long-term and short-term risks of each of the remedial alternatives under evaluation. This is a standard procedure for conducting a CMS.	No

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				situation. The commenter asked for NMED to comment on this.			
A	For Citizen Action, Sue Dayton, 2nd submittal	Risk Assessment, waste vs releases	1.62	At the same meeting it was stated that "the risk assessment is based on known releases from the site…several questions remained unanswered during the meeting about the amount and type of waste in the MWL". The commenter would like NMED to respond to this.	R49	Pursuant to EPA Directive OSWER 9355.0-30, a risk assessment does not have to be conducted on contents of landfill but rather only on the contaminants released. See also HO FOF/COL, ¶¶ 109-27.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Risk Assessment, Sensitivity analysis	1.63	At the same meeting it was stated, "It would seem that a sensitivity analysis of the risk assessment would give some indication of the significance of this concern especially in light of the relative nature of the assessment noted above. (WERC executive summary, p.v.)	R50	A sensitively analysis of the contents of the MWL is not necessary, as direct exposure to these contents would result in unacceptable risk.	No
A	For Citizen Action, Sue Dayton, 2nd submittal		1.69	WERC addresses SNL's risk analysis and recommends that SNL conduct a sensitivity analysis. A problem is SNL's consistent "bending" of information to favor its preferred alternative. To correct this situation it would behoove the NMED to require DOE to conduct an independent sensitivity analysis. The commenter asked that the uncertainties related to the inventory of the Landfill be addressed in a risk assessment that	R50	See Response R50; see also HO FOF/COL, ¶¶ 109-27.	No

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				includes all waste products rather than the two contaminants that have been found to migrate from the Landfill.			
A	For Citizen Action, Sue Dayton, 2nd submittal	Temporary cover with future excavation	1.66	WERC strongly recommends that because the "uncertainly of the contents in the MWL could eventually lead to the requirement of excavation" SNL include an alternative that involves a temporary cap with future excavation.	R51	Although the CMS did not address this suggested remedial alternative directly, one can combine the capping and excavation alternatives presented in the CMS and obtain this information.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Onsite disposal	1.67	WERC recommends that SNL include an onsite disposal facility as an alternative for waste. SNL has buildings that could be utilized for this. WERC also recommends including an option for RCRA approved landfill and an onsite retrievable storage unit. The commenter requests that NMED require SNL to include these options as well as a scenario for the construction of a corrective action management unit (CAMU).	R52	The CMS Report addressed a RCRA cap option and onsite storage with off-site disposal. Although several buildings are located in the vicinity of the MWL, NMED does not know whether these buildings would become available to store waste in the future. Even if they were available, it seems doubtful that the existing buildings would have adequate capacity to store the volume of waste that would be generated by excavation of the MWL. Additionally, the existing buildings would have to be reconfigured for waste storage, which possibly could cost as much or more than erecting new structures to store waste. One potential problem with onsite storage of mixed waste is that RCRA prohibits the storage of such wastes beyond 1 year (with a possible extension of 1 additional year), unless the waste meets or can be	No

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						treated to meet the standards at 20.4.1.800 NMAC incorporating 40 CFR 268.40. Although a CAMU was not evaluated in the CMS, given the similar size of the CWL and the MWL, the costs and construction logistics for a CAMU would likely be on the order of that of the existing CAMU located next to the CWL.	
A	For Citizen Action, Sue Dayton, 2nd submittal	Soil Vapor Monitoring /Extraction	1.68	WERC recommends that SNL include a soil vapor extraction alternative as part of a long-term monitoring strategy.	R53	NMED agrees that a soil vapor monitoring system could be designed with the option to be convert it into a soil vapor extraction system should it become necessary in the future.	No
A	For Citizen Action, Sue Dayton, 2nd submittal	Fate and transport model	1.70	WERC recommends that SNL conduct a numerical fate and transport model for simulation of the MWL. The data from this could then be integrated into a risk assessment that considers the sensitivities of various options for the MWL. The commenter asked if NMED will require SNL to develop such a model.	R54	The final order issued by the NMED Secretary requires the SNL to submit to the NMED for approval a fate and transport model.	Yes
A	For Citizen Action, Sue Dayton, 2nd submittal	General Comments	1.71	The commenter indicated that in 2001 Citizen Action asked the Secretary of NMED to issue an order to SNL to complete a CMS for the MWL. Citizen Action believes that the plan to cover the Landfill with 3 feet of dirt was not	R55	The CMS evaluated several potential remedies, including the SNL preferred remedy of covering the Landfill and excavation. The remedy of a cover, with a bio-barrier, was shown to be protective of human health and the environment, to be cost-effective, and to offered	No

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				sufficient.		acceptable short-term and long-term risk; this remedial alternative meets the requirements of RCRA. Under RCRA, so long as the remedy is protective of human health and the environment; there is no requirement that the most protective or most expensive remedy be selected. In the case of the MWL, the fact that contaminants currently released into the environment pose no unacceptable risk, combined with the low potential for future significant releases, substantiated the cover remedy selected. See also HO FOF/COL and Report.	
A	For Citizen Action, Sue Dayton, 2nd submittal	General Comments	1.72	From the beginning SNL has downplayed the risk of the MWL. Numerous independent experts, including those who participated in WERC, have suggested that information on MWL is incomplete, biased, and disingenuous. They believe the term "Accelerated Clean Up" is misleading because it is not really a clean up.	R56	WERC as a group has agreed with NMED that data quality is acceptable and that data are sufficiently complete to make a decision on a remedy for the MWL. Split sampling results and the review of a sample of waste disposal records do not support a conclusion that the SNL has been disingenuous with data, or has held back critical data needed to make an informed decision. NMED is unaware of WERC's opinion of the term "Accelerated Clean Up". It is NMED's responsibility to ensure that the clean up is undertaken in accordance with RCRA requirements; SNL's terminology has no impact on RCRA's requirements.	No
A	For Citizen Action, Sue Dayton, 2nd	General Comments	1.73	The commenter believes that the CMS failed to present a full range of options for the waste; did not	R57	Although SNL is not required to include in the CMS recommendations of third parties, SNL did include a number of	No

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	submittal			present the true costs of an excavation scenario; failed to produce a baseline risk assessment; failed to include historical data that relates directly to risk; failed to consider the full inventory of the Landfill and numerous uncertainties associated with the Landfill; and failed to consider recommendations of independent reviews that attempt to find an appropriate solution for this waste site.		important recommendations from WERC. The CMS Report presented an adequate number of alternatives, including excavation, the preferred alternative of Citizen Action. The cost data provided in the CMS are adequate for the intended purpose; the cost data represent estimates only, and are not intended to represent detailed cost estimates in support of procuring contracts. Whether the cost estimates are precisely accurate or not, the excavation alternatives will undoubtedly be much more expensive than the capping alternatives. NMED finds that the cost estimates for the alternatives, including the excavation alternatives, are within the proper order of magnitude. See also HO FOF/COL and Report. The CMS and the Phase 2 RFI Reports include a baseline risk assessment. Uncertainties with respect to the investigation of any solid waste management unit will always exist because sampling by definition means that only a sample of soil is analyzed for contaminants not all of the soil that exists at the site. Technical expertise and professional judgment must necessarily be used to make a decision on the adequacy of site investigations. See also Responses R5, R6, R7, R8, R48, and R49.	

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A	For Citizen Action, Sue Dayton, 2nd submittal	General Comments	1.74	The commenter believes that considering the volume of scientific knowledge available at SNL, the CMS is an embarrassing and biased document, which puts the public at risk.	R58	NMED does not agree with this comment. The remedy selected by NMED was one of the alternatives evaluated as part of the CMS. The CMS Report contained considerable detail on a fair number of potential remedial alternatives, and was found by the NMED to be adequate for the purpose of selecting a remedy that is protective of human health and the environment.	No
B	Albuquerque Center for Peace and Justice and Citizens for Alternatives to Radioactive Dumping, Janet Greenwald	Above Ground Retrievable Storage	2.1	The commenter believes that the wastes in the MWL should be placed in above ground retrievable storage, located close to where the wastes are now buried.	R59	The CMS Report addressed this potential remedial alternative. Above ground retrievable storage was not selected because of the high cost, the risk to workers, and the potential that hazardous wastes would be excavated that currently have no treatment/disposal options.	No
B	Albuquerque Center for Peace and Justice and Citizens for Alternatives to Radioactive Dumping, Janet Greenwald	Long half life of plutonium	2.2	The commenter is concerned about the disposal of plutonium that has a long half-life at the Landfill, and the length of time that governments are around. The commenter is concerned that the buried plutonium will outlast the government.	R60	It is correct that plutonium isotopes have long half-lives. However, it is likely that RCRA or some successor statute will ensure protection of human health and the environment as long as the MWL exists.	No

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B	Albuquerque Center for Peace and Justice and Citizens for Alternatives to Radioactive Dumping, Janet Greenwald	Future funding for excavation	2.3	The commenter urges NMED to clean up the MWL now; she is concerned about shrinking government budgets, and that addressing the clean up later may be too late. The commenter is concerned about the contamination of the land and water and nearby communities.	R61	Current releases of contaminants and expected future releases of contaminants do not pose and are not expected to pose unacceptable risk to the land, ground water, or the community. The evidence does not presently support excavation of the Landfill in the near term due to the unacceptable risk to onsite workers and because the cover with biobarrier is protective.	No
C	Anonymous Citizen	Capping and Monitoring the MWL	3.1	The commenter believes that capping and long-term monitoring is the correct choice. The commenter is concerned about the cost, the risk to workers and the waste management issues, which the commenter believes are substantial if the Landfill is excavated at this time.	R62	NMED generally agrees with this comment. However, NMED will not allow any remedy to be implemented that is not protective of human health and the environment, regardless of costs.	No
D	Citizen, Lois Chemistruct	No Further Action (NFA)	4.1	The commenter would like to see NFA at this time and a vegetative soil cover	R63	NMED believes that granting NFA status without implementing the selected remedy does not provide adequate protection of human health and the environment. For modest additional cost and effort, the facility can provide a more protective landfill cover with a higher degree of predictable performance. Also, compared to what is proposed in the Phase 2 RFI Report, NMED believes that more robust monitoring and post-closure care of the Landfill are needed to ensure protection of human health and the environment.	No

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						The selected remedy, an evapotranspiration cap with bio-barrier, is a type of vegetative soil cover.	
E	Citizen, JoAnne Rampone	Opposed to Excavation of MWL	5.1	The commenter expressed concern about any excavation taking place. The commenter was concerned about worker exposure, and is concerned about the unknown chemicals and the worker digging them up. The commenter asked that she be kept informed.	R64	NMED agrees that excavating the MWL in the near-term poses unacceptable risk to site workers. In the final order issued by the NMED Secretary, the public will be notified and given an opportunity to comment on all important documents related to corrective action at the MWL.	Yes. The final permit requires a public participa-tion process.
H	Citizen, Thomas P. Swiler, former member of the Sandia National Laboratories, Citizen Advisory Board		8.2	The commenter agrees with NMED that removal of the contents of MWL at this time or in the foreseeable future would be a greater risk to the environment than leaving in place. Therefore he indicated that he supports this.	R64	See Response R64.	
G	Citizen, Bob Long	O & M Direct Cost (Operations and Maintenance)	7.1	The commenter had a concern regarding alternative III.b (vegetative cover) versus III.c (vegetative cover with bio-barrier). The commenter asked why the operation and maintenance (O&M) direct cost for III.c was $540,000, more than for III.b. The commenter believes they should have the same	R65	The higher elevation and somewhat larger footprint of the cover with bio-barrier increases soil erosion potential. Soil erosion of the cover and any subsidence of the Landfill will be more costly to repair because of the addition of the rock bio-barrier layer. Nonetheless, the cost difference in SNL's estimates appears to be higher than expected, even over a 30	No

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				O& M cost.		year period upon which the estimate is based. NMED does not expect a lot of maintenance of the cover to be needed over any 30 year period.	
H	Citizen, Thomas P. Swiler, former member of the Sandia National Laboratories Citizen Advisory Board	Ground Water Monitoring	8.1	The commenter does not believe there is any evidence that the Landfill is leaking contaminates that would endanger ground water or cause a plume that would increase the cost of remediation. The commenter found the indication that showed contaminates could leak from the MWL, which was provided by Dr. Mark Baskaran to be flawed.	R66	Although a few contaminants have migrated from the Landfill and occur in surface soil and subsurface soil, data show that ground water has not been impacted, nor likely is it to be impacted in the future. Thus, NMED does not agree with the assertions made by Dr. Baskaran that ground water at the MWL is contaminated. However, NMED believes that continued ground water monitoring is prudent and necessary to ensure long-term protection of human health and the environment.	No
H	Citizen, Thomas P. Swiler, former member of the Sandia National Laboratories, Citizen Advisory Board	Questioning the need to cap the MWL	8.3	The commenter does not support the capping of the MWL. He believes that the MWL already has maintenance free vegetative cover formed by nature and the passing of time and is not convinced that adding an additional layer of soil and establishing a new vegetative cover over the MWL will make it safer. He is concerned that such action will give many a false sense of closure and about the additional cost of the cover. He would like to know how the additional cover would make MWL safer in terms of reducing the percolation of water through MWL, reducing moisture	R67	The scientific evidence shows that a properly designed and constructed ET cap and bio-intrusion barrier will provide additional protection over that of the current operational cover, with only modest additional cost. Furthermore, there is almost no scientific data on the physical characteristics of the operational cover, such as the cover thickness, the material(s) from which it was constructed, or construction quality assurance. This is a concern because the future performance of the current operational cover can not be modeled with confidence. Also, the NMED is aware of one instance where a piece of radioactive debris was not buried	No

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				content in the MWL, and reducing the possibility of inadvertent human or animal intrusion into the MWL.		sufficiently deep and was exposed on the surface (this has since been corrected by the SNL). NMED agrees with the commenter that monitoring of the site should continue. NMED intends to require at least 30 years of post-closure care and monitoring, and has the authority to extend this time period as necessary to protect human health and the environment. Given the long-half lives of some of the radionuclides buried in the Landfill, monitoring and maintenance may be required as long as the Landfill exists.	
M	Citizen, Steve Dapra		13.8	The commenter does not believe that a cap or cover at MWL is necessary. He recommends that a sufficient amount of soil be spread over the area to smooth out the lumps, that the soil be given a crown to prevent low spots from forming when the dirt settles, and that native grasses be planted on the MWL, so it will have the same appearance as the surrounding terrain. The commenter believes the current regimen of air and water sampling should continue for 20 years. If the Landfill has not leaked by that time, it probably isn't going to.	R67	See Response R67.	No
M	Citizen, Steve Dapra		13.10	The commenter does not support the placement of an engineered cover or cap, however he has no	R67	See Response R67	No

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				objection if that proposal is implemented. Also, he has no objection if the monitoring time is greater than 20 years.			
I	Citizen, Craig D. Richards	Re-evaluation of Data/assumptions	9.1	The commenter is satisfied with the vegetative cover for the near further, but asked where the funding will come from and when a re-evaluation of all the data and assumptions over time will be done. The commenter indicated that the radioactivity, transport modes, technology will change rapidly over the next 30-50 years and that technical breakthroughs may offer a full-scale disposal option rather than just monitoring and storage. MWL inventory charts indicate that Co-60 and H-3 "go away" by 2039/2049; what year has been selected for future excavation? The commenter believes the cost estimates for the NFA/vegetative cover and vegetative cover/barrier seem too low (i.e. less than $2 million for monitoring the MWL for the next 70 years). He expressed concern regarding the cost estimates.	R68	Under RCRA, SNL must provide the funds to implement the remedy. The final order issued by the NMED Secretary requires SNL to reevaluate the feasibility of excavation every five years. Therefore, new technologies will be taken into account during the re-evaluations. The future excavation alternatives did not include a specific date or time period after which excavation would begin. The cost estimates for future excavation assumed the Landfill would be excavated 50 years after closure. After the initial costs of installing the monitoring devices are incurred (some actually are already in place), annual monitoring costs will not exceed a few tens of thousands of dollars. The estimated costs for the cover alternatives are in the right order of magnitude.	Yes
J	Citizen, Robert Anderson	Avoiding excavation	10.1	The commenter believes that dangerous, unknown constituents at the site should not be left in place because there are too many risks associated with them for the	R69	The remedy selected by the NMED is protective of human health and the environment. Post-closure care and monitoring will be conducted to ensure the safety of the public and the	No

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				communities and the water supply.		environment. The MWL will be tracked in SNL's RCRA permit, along with many other solid waste management units/areas of concern identified at SNL.	
K	Citizen, Diana de la Rosa, Sandia Site	Capping	11.1	The commenter encourages capping the facility. The commenter states that digging it up would create emergency issues, ALARA **(a**s low as reasonably achievable) issues and potential lawsuits.	R70	NMED agrees that capping the Landfill is appropriate, provided that the Landfill is properly monitored for future releases. NMED also agrees that excavation of the Landfill would be difficult from both a safety and regulatory perspective, and that meeting the intent of ALARA would not be easy for excavation workers. The NMED does not support current excavation of the MWL due to unacceptable risks to site workers.	No
L	Citizen, J.D. Jojola	Ground Water	12.1	The commenter stated that he was submitting a copy of the WERC academy recommendations concerning vadose zone monitoring and the ground water protection plan.	R71	NMED agrees that the site must be continually monitored, including the vadose zone and the ground water. The final permit requires SNL to submit a long-term monitoring and maintenance plan to NMED for approval.	No
M	Citizen, Steve Dapra	Ground Water Contamination	13.2	The commenter stated that the MWL has not caused contamination of ground water. See the "Department of Energy and Sandia National Laboratories" response to Dr. Baskaran's Final Report, Mixed Waste Landfill Review, and pp. 20, 22-28.	R72	NMED agrees that currently there is no ground water contamination at the MWL. However, NMED believes it is prudent to continue monitoring the ground water.	No
M	Citizen, Steve Dapra	Air Monitoring	13.3	The MWL has not caused air contamination. See "Department of Energy and Sandia Nation	R73	Air quality data provided in the Phase 2 RFI Report and a separate report of radon emissions indicate that there is no air	No

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				Laboratories', Response to Dr. Baskaran's Final Report, "Mixed Waste Landfill Review," pp. 33-35.		contamination above risk-based standards. Air quality sampling conducted by the NMED DOE Oversight Bureau at the MWL and three background stations did not detect any air contamination above risk-based standards.	
M	Citizen, Steve Dapra	Tritium	13.5	The commenter indicated that tritium contamination below or near the MWL has been studied and discussed in some detail. See the "Department of Energy and Sandia National Laboratories' Response to Dr. Baskaran's Final Report, " Mixed Waste Landfill Review," pp.19, 24, 28-29, 33-35.	R74	NMED agrees that tritium contamination in surface soil and the vadose zone has been adequately characterized by SNL. The activity levels of the tritium contamination are sufficiently low that the tritium contamination does not pose unacceptable risk to human health or the environment under an industrial land use scenario.	No
M	Citizen, Steve Dapra	Hiding Behind Classified Status	13.6	The commenter stated that certain parties have claimed that SNL or DOE has been concealing Landfill contents using classified status, but the commenter believes that these claims are unsupported. (See Memorandum from Rich Kilbury, DOE Oversight Bureau SNL/ITRI, to Roger Kennett, DOE Oversight Bureau, Program Manager, SNL/ITRI, July 21, 2000).	R75	Other than security requirements associated with classified information, NMED has no evidence or reason to suspect that SNL has intentionally withheld information on the Landfill's contents. The inventory for the Landfill was in part prepared from classified records, with the classified information removed, in order to produce an inventory that the public could review. NMED reviewed a sample of these records and was able to correlate the information with the Landfill inventory. See HO FOF/COL, ¶¶ 43-50.	No
N	Citizen, Maurice	Monitoring	14.2	The commenter believes that air monitoring and monitoring of the	R76	NMED agrees with this comment.	No

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	Weisburg, M.D			vadose zone and the ground water is a prudent requirement.			
N	Citizen, Maurice Weisburg, M.D	Pro-Excavation	14.3	The commenter is concerned about waste material being located so close to the border of a major city; he believes it would be prudent to move the wastes to a more secure location.	R77	See Responses R55, 61, and 67.	No

LIST OF ACRONYMS

ALARA – As Low As Reasonably Achievable
CAMU – Corrective Action Management Unit
CMS – Corrective Measure Study
COL – Conclusions of Law
CWL – Chemical Waste Landfill
DCF – Dose Conversion Factor
DOE – U. S. Department of Energy
DU – Depleted Uranium
EPA – U. S. Environmental Protection Agency
ER – Environmental Restoration
FOF – Findings of Fact
FOIA -- Freedom of Information Act
HEAST – Health Effects Assessment Summary Table
HO – Hearing Officer
INEEL – Idaho National Environmental and Engineering Laboratory
IRIS – Integrated Risk Information System
MWL – Mixed Waste Landfill
NCEA – National Center for Environmental Assessment
NFA – No Further Action or Corrective Action Complete
NMED – New Mexico Environment Department
NMG – Neutron Moisture Gauge
NRC – Nuclear Regulatory Commission
O&M – Operation and Maintenance
OSWER – Office of Solid Waste and Emergency Response
PCB – Polychlorinated Biphenyl
PEF – Particulate Emission Factor
RCRA – Resource Conservation and Recovery Act
RFI – RCRA Facility Investigation
SNL – Sandia National Laboratories
TSCA – Toxic Substances Control Act
TRU - Transuranic