

**New Mexico Environment Department Response to Public Comments  
Sandia National Laboratories Mixed Waste Landfill  
Long-Term Monitoring and Maintenance Plan  
January 2014**

On May 26, 2005, the New Mexico Environment Department (NMED) Cabinet Secretary issued a Final Order requiring in part the preparation of a *Long-Term Monitoring and Maintenance Plan* (LTMMP) for the Sandia National Laboratories' (SNL's) Mixed Waste Landfill (MWL). The first version of the LTMMP was submitted by the U. S. Department of Energy and Sandia Corporation (Permittees) to the NMED on September 25, 2007, but was later withdrawn on December 7, 2011. A revised version of the LTMMP was submitted on March 23, 2012, and is the subject of this response to public comment.

On September 14, 2012, the NMED issued a notice announcing a 60-day public comment period for the 2012 version of the LTMMP. The comment period was later extended 30 days from November 13, 2012, to December 13, 2012, and extended again for another 60 days until February 11, 2013. Table 1 of this document lists the members of the public that submitted comments. Table 2 summarizes the comments received and contains the NMED's responses thereto, except as discussed below.

Voluminous comments were received from some members of the public that are not relevant to the LTMMP. NMED is not required to and did not respond to all comments found to be inapplicable to the LTMMP. However, many of these comments have been previously addressed in NMED's responses concerning other documents related to the MWL, such as the *Mixed Waste Landfill Corrective Measures Implementation Plan*, *Mixed Waste Landfill Corrective Measures Implementation Report*, and the *Sampling and Analysis Plan for Soil Gas Volatile Organic Compounds, Tritium, and Radon at the Mixed Waste Landfill* (see NMED's Hazardous Waste Bureau's web page at <http://www.nmenv.state.nm.us/HWB/snlperm.html> for links to NMED's responses on these documents).

Comments found to be immaterial to the LTMMP but that are addressed in this document are considered by the NMED to be of special interest to the public (for example, whether groundwater contamination is present at the MWL), or in some cases, are related to claims that the NMED is withholding information from the public or failing to meet obligations mandated by statute or regulation.

**Table 1: Public Comment Received**

<b>Commenter ID</b>	<b>Date of Letter or E-mail</b>	<b>Commenter (and Association, if Applicable)</b>
A	November 13, 2012	David McCoy, Citizen Action New Mexico; and Robert Gilkeson
B	November 5, 2012	Willard Hunter
C	October 23, 2012	Carol W. Benson
D	October 22, 1012	Judy Kaul
E	November 13, 2012	Robert Gilkeson; and Joni Arends, Concerned Citizens for Nuclear Safety;
F	November 3, 2012	David McCoy, Citizen Action New Mexico; Joni Arends, Concerned Citizens for Nuclear Safety; and Robert Gilkeson
G	December 13, 2012	Rick Shean, Albuquerque Bernalillo County Water Utility Authority
H	February 2, 2013	Tiska Blankenship
I	January 22, 2013	Robert Brito
J	January 29, 2013	Glen DeGarmo
K	January 30, 2013	Janice Evans
L	January 29, 2013	Eric Garcia
M	January 28, 2013	Linda Lillow
N	December 11, 2012	Eric Nuttall
O	February 4, 2013	Deborah Reade
P	January 23, 2013	Beverly Salas
Q	January 23, 2013	Susan Selbin
R	January 22, 2013	Water Singing-on-the-Rocks
S	February 7, 2013	Paul Robinson, Southwest Research and Information Center
T	December 10, 2012	Robert Gilkeson, Citizen Action, and Concerned Citizens for Nuclear Safety
U	February 11, 2013	Jim McKay
V	February 8, 2013	Dave McCoy, Citizen Action; Joni Arends, Concerned Citizens for Nuclear Safety; Janet Greenwald, Citizens for Alternatives to Radioactive Dumping; Robert Gilkeson, Eric Nuttall, Susan Rodriguez, Robert Dinwiddie
W	February 8, 2013	Ray Garduno, Vice Chair, Albuquerque Bernalillo County Water Utility Authority and City Councilor Albuquerque District 6 (submittal of transcript from meeting held on February 6, 2013, hosted by Bernalillo County Water Protection Advisory Board containing comments from Councilor Garduno, Elizabeth Richards, Bruce Thompson, Steve Glass, Robert Dinwiddie, David McCoy, Robert Gilkeson, Paul Robinson, Ron Zuziak, Simon Polakowski, Diane Werner, Henry Misserville, Joseph Wexler, Robert Aly, Mark Doppke, Floy Barrett, Eric Nuttall, Janet Greenwald, )
X	January 23, 2013	Susan Selbin
Y	October 16, 2012	Willard Hunter
Z	October 16, 2012	Susan Selbin

AA	October 16, 2012	Meredith Bunting
BB	October 16, 2012	Janet Greenwald
CC	October 16, 2012	Henry Misserville
DD	October 16, 2012	Floy Barrett
EE	October 25, 2012	Dave McCoy, Citizen Action
FF	December 8, 2012	Citizens for Alternatives to Radioactive Dumping (CARD)
GG	December 8, 2012	Our Endangered Aquifer Working Group (OEAWG)
HH	October 26, 2012	Janet Greenwald
II	November 13, 2012	Janet Greenwald, Citizens for Alternatives to Radioactive Dumping (CARD)
JJ	February 8 and 11, 2013	Dave McCoy, Citizen Action (1 <sup>st</sup> set petition with many signatures)
KK	September 19, 2012	Dave McCoy, Citizen Action (2 <sup>nd</sup> set petition with many signatures)
LL	February 11, 2013	Henry Misserville
MM	October 16, 2012	Dave McCoy, Citizen Action
NN	October 16, 2012	Veronica Cruz
OO	October 4, 2012	Veronica Cruz
PP	October 5, 2012	Grace Sena
QQ	October 5, 2012	Marty Padilla
RR	February 11, 2013	Dave McCoy, Citizen Action; Janet Greenwald, CARD; Lesley Weinstock, Aqua es Vida Action Team; Marlene Quintana, Albuquerque's Endangered Aquifer Group

**Table 2: Summaries of Public Comments and NMED Responses Regarding Sandia National Laboratories Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (LTMMP)**

Commenter ID	Topic Area	Summary of Public Comment	NMED Response Number	NMED Response
A, B, D, F, H, I, J, K, L, M, O, P, Q, R, U, V, W, X, Y, Z, AA, BB, CC, DD, JJ, KK, OO, PP, QQ, RR	Public Hearing and Remedy Selection	(A) The commenters state that a public hearing should be held to re-evaluate site characterization data and to select a different remedy. Commenters opined that the hearing should be held because the groundwater monitoring network is inadequate, that contaminant releases from the landfill have caused groundwater contamination, that New Mexico Environment Department (NMED) personnel presented false information concerning the monitoring of groundwater at the hearing for remedy selection held in December 2004, and that issues related to the LTMMP require a permit modification of complex nature.	R1	<p>(A) The Mixed Waste landfill (MWL) <i>Long-Term Monitoring and Maintenance Plan</i> (LTMMP) is not a document that is subject to the hearing requirements of 20.4.1.901.A NMAC.</p> <p>The New Mexico Environment Department (NMED) held a public hearing in December 2004 for the purpose of remedy selection. The final decision to construct the cover, along with other requirements, was made by the Department Secretary in his Final Order dated May 26, 2005.</p> <p>Re-evaluation of site characterization and remedy selection has been addressed previously by the NMED in Response R2 for the <i>MWL Corrective Measures Implementation (CMI) Plan</i> and Response 1 for the <i>CMI Report</i>. As discussed in these previous responses, the cover will maintain a low and thus acceptable level of risk to the public, workers, and the environment, is a proven reliable and effective technology, and will further reduce waste mobility. The cover will prevent wastes from endangering human health, ground water, and the environment by minimizing the infiltration and percolation of moisture into the landfill, by preventing the intrusion of small animals into waste, and by shielding people, workers, and the environment from harmful radiation. No comments were received on the LTMMP or by any other means that provide any credible scientific evidence that the remedy is not protective of human health and the environment. The feasibility of a different remedy (excavation) and the continued effectiveness of the selected remedy will be evaluated in the 5-year reviews required by the Secretary’s Final Order.</p> <p>NMED disagrees that the groundwater monitoring network is inadequate as discussed below in Response R10 of this document. This issue has also been previously addressed by the NMED in its</p>

<p>F, V, W, N, RR</p> <p>RR</p>		<p>(B) Commenters also suggested that the NMED not approve the LTMMP.</p> <p>(C) The commenters accuse NMED of violating the provisions of RCRA, IPRA, and the Open Meetings Act.</p>	<p>Responses R29, R40, R45, R49, R50, and R53 for the CMI Plan and Responses 4, 6, 8, 11, 25, 26, 27, and 28 for the CMI Report.</p> <p>NMED also disagrees that contaminant releases from the MWL have caused groundwater contamination as discussed below in Response R9 of this document. This issue has been previously addressed by the NMED in Responses R1, R42, R43, R46, R47, R48, R52, R54, and R56 for the CMI Plan and Response 12 for the CMI Report.</p> <p>NMED personnel did not provide false information at the 2004 public hearing or at any other time. The groundwater monitoring network at that time (installed under EPA as lead oversight) was judged by the NMED to be acceptable in large part because the results of extensive investigation of the vadose zone, which indicated conclusively that there has been no release of contaminants from the landfill that pose a threat to groundwater, the environment, or human health. Also, most wastes within the landfill are immobile and are unlikely to migrate from the landfill in the future. Given this situation, groundwater monitoring wells are arguably not necessary at the MWL because monitoring of the vadose zone alone should be adequate to protect groundwater. However, in light of public concern, NMED has taken the conservative position that groundwater monitoring is to continue at the MWL through implementation of the LTMMP. The U.S. Department of Energy and Sandia Corporation (Permittees) have agreed to conduct this monitoring under the LTMMP.</p> <p>Approval of the LTMMP does not require a modification of the Permittees' current Hazardous Waste Operating Permit (Permit).</p> <p>(B) Because the LTMMP will document the site controls to be implemented at the MWL, NMED approved the LTMMP.</p> <p>(C) The NMED has met all requirements under RCRA, IPRA, and the Open Meetings Act, and has done more than what is required under law to allow for public participation concerning MWL issues. The latter was affirmed by the New Mexico Court of Appeals concerning remedy selection. NMED continues to provide more opportunity for public comment and participation than is required by law.</p>
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<p>A, B, C, H, I, J, K, L, M, O, P, Q, R, U, V, W, X, Z, CC, DD, MM, RR</p>	<p>EPA OIG Investigation</p>	<p>Commenters accused the NMED of using political pressure to stop the U. S. Environmental Protection Agency (EPA) from issuing a report indicating that the MWL groundwater monitoring well network was defective. The comments are based on a report generated by the Office of the Inspector General (OIG).</p>	<p>R2</p>	<p>None of the older wells at the MWL, which were evaluated by the EPA technical team and include MWL-BW1, MWL-MW1, MWL-MW2, MWL-MW3, MWL-MW4, MWL-MW5 and MWL-MW6, are part of the monitoring well network under the LTMMP.</p> <p>The wells in question, some now abandoned, were not defective (see Response R1(A) and R10 of this document).</p> <p>NMED did not, nor could it, pressure EPA management to produce an evaluation of the MWL groundwater monitoring well network that agreed with NMED’s position. The OIG report states: “We found that one Oversight Review team member felt the team was pushed to agree with NMED’s position regarding the MWL monitoring wells.” NMED has no basis to evaluate the veracity of this claim or whether the perception of one anonymous EPA team member was justified. In any case, nothing in the OIG report alleges any improper actions or undue influence on the part of NMED, rather the report makes findings regarding purported shortcomings in EPA’s internal processes, over which NMED has no control.</p> <p>In the single meeting held between EPA and NMED technical staff concerning their review of groundwater monitoring at the MWL, EPA was specifically told by the NMED Hazardous Waste Bureau Chief that EPA should state whatever positions it held with regard to any aspect of groundwater monitoring at the MWL. NMED defends its own positions as necessary.</p> <p>The NMED previously addressed this issue in Response 19 for the CMI Report. NMED has since received several versions of the draft report prepared by EPA technical staff concerning monitoring wells at the MWL. NMED is unaware whether a final report was published. See also related Response R32 of this document.</p>
<p>A, B, F, H, I, J, K, L, M, O, P, Q, R, V, W, X, Z, CC, EE, HH, LL, RR</p>	<p>Timing of 5-Year Reviews and LTMMP</p>	<p>Commenters stated that the 5-year review is overdue by 2.5 years. Some commenters further stated that the NMED’s position that the first re-evaluation of the MWL was due 5 years after approval of the LTMMP would</p>	<p>R3</p>	<p>Preparation and submittal of the LTMMP is required by Section V of Module IV of the Permit for Sandia National Laboratories and the Final Order (through conditional approval of the Permit Modification for selection of the final remedy for the MWL). The Permit contains general provisions regarding the content of the LTMMP, states when the LTMMP is to be submitted to the NMED for approval, and requires that the Permittees provide a convenient method for public review of</p>

		<p>violate the New Mexico Hazardous Waste Act requirements for public hearings on major permit modifications and would inappropriately modify the Secretary's Final Order of May 26, 2005. Furthermore, any changes to the Final Order should be subject to public comment and an opportunity for a public hearing.</p>		<p>the LTMMP. These provisions have been met.</p> <p>The 5-year re-evaluation provision is found in paragraph 5 of the Final Order. This language is repeated nearly verbatim in the Permit provisions of Section V, Module IV. The Final Order is not being revised. Rather, NMED is interpreting a provision of the order that is ambiguous. On its face, the provision in paragraph 5 provides no indication of when the first 5-year report is due, nor does it contain any cross reference to other sections of the Final Order (or Permit) that might provide that information. Nothing in the Final Order specifies that the five year review period commences with the date of issuance of the order. No regulatory provisions are cited as the basis of the 5-year report provision.</p> <p>NMED's determination that the first 5-year re-evaluation of the MWL is due 5 years after approval of the LTMMP does not violate any requirement of the New Mexico Hazardous Waste Act. This interpretation is grounded in common sense and reason and is designed to accomplish the purpose of the 5 year review provision. That provision specifies that "the report shall include a review of the documents, monitoring reports, and any other pertinent data, and anything additional required by NMED." The mechanism for establishing what monitoring data will be the subject of the 5-year review is the approval of the LTMMP. It therefore follows that the first 5 year report should be due 5 years after approval of the LTMMP.</p>
<p>A, F, H, I, J, K, L, M, O, P, Q, R, V, X, CC, RR</p>	<p>Information has been withheld from the Public</p>	<p>The commenters state that significant information found in a report prepared by TechLaw in 2006 has been withheld from the public, leading to a false record being provided to the public for review. Thus, NMED denied public participation with regard to the Fate and Transport Model (FTM) by keeping the TechLaw report secret.</p>	<p>R4</p>	<p>NMED did not present a false record for the MWL to the public. This topic has been addressed previously in Response 13 for the MWL CMI Report. In that response, NMED identified four draft TechLaw comments that were not included in the NOD issued for the MWL CMI Plan on November 20, 2006, and the reasons why the four comments were not included in the NOD. See Response 13 for the MWL CMI Report for details.</p>

<p>A, V</p>         <p>V</p>	<p>Order of Required Submittals of Corrective Action Documents for the MWL (other than the 5-year Reviews)</p>	<p>(A) The commenters state that the Final Order required the submission of the LTMMP to follow submittal of the Fate and Transport Model (FTM), the Corrective Measures Implementation Plan (CMI Plan), and the Corrective Measures Implementation Report (CMI Report).</p>      <p>(B) Commenter states that public procedural rights were violated.</p>	<p>R5</p>	<p>(A) The Final Order does not specify the sequence in which the subject documents are to be submitted. However, the Permit requires that the CMI Plan be submitted no later than 180 days after the selection of the final remedy (therefore 180 days after the order was issued. Note that the order requires that the Fate and Transport model be included as a part of the CMI Plan). The Permit also requires that the CMI Report be submitted within 180 days after remedy implementation is complete. Additionally, the Permit requires that the LTMMP be submitted within 180 days after approval of the CMI Report.</p> <p>Early submittal of a document does not constitute a violation of the Permit or Final Order. However, in this case, submittal of the 2012 LTMMP, the subject of this response, followed exactly the sequence stated by the commenter as being the proper order of document submittal. See also Response R6 of this document.</p> <p>(B) The rights of the public to participate in remedy selection have not been violated. See Response R1(A) of this document. The regulatory pathway being followed for the MWL is that required under EPA guidance, the Facility’s Permit, and the Consent Order. With respect to public participation, the NMED has gone beyond the regulatory requirements.</p>
<p>A, F</p>	<p>September 2007 Version of the LTMMP</p>	<p>The commenters state that the 2007 version of the LTMMP was submitted prior to the submittal of the CMI Report, and that the early submittal was falsely claimed by the Permittees to have been at the request of the NMED.</p>	<p>R6</p>	<p>The 2007 version of the LTMMP was submitted prior to the submittal of the CMI Report, but was withdrawn by the Permittees on December 7, 2011. Thus, the 2007 version of the LTMMP is moot.</p> <p>The 2012 version of the LTMMP addressed by this response was submitted March 23, 2012, after completion of the CMI Report. See also Response R5 of this document.</p> <p>Contrary to commenters assertions, the NMED did request that the Permittees submit the LTMMP in advance of that required by the normal process. As NMED indicated in its letter to Citizen Action and Mr. Robert Gilkeson of February 13, 2009 (letter erroneously dated February 13, 2008), the 2007 version of the LTMMP was submitted earlier than it should have been because of specific requests made to the Permittees to do so, particularly from Citizen Action at the May 1, 2007, public meeting on the document <i>Sampling and Analysis Plan for Soil Gas Volatile Organic Compounds, Tritium, and Radon at the</i></p>



				<p><i>Mixed Waste Landfill</i> (SV SAP). Additionally, the NMED articulated many times during the public meeting held on the CMI Plan, which was also attended by Citizen Action, that it would be best to generate the LTMMP in its proper sequence, after remedy implementation had been completed. However, Citizen Action and other members of the public in the meeting opposed this approach. The Permittees early submission of the LTMMP was thus an attempt to address public concerns.</p>
A, F	Moisture Monitoring	<p>The commenters state that the 2006 TechLaw report concludes that the moisture monitoring system described in the CMI Plan would be installed too deep to measure the infiltration and percolation of water through the cover, and that this deficiency remains in the LTMMP.</p>	R7	<p>The October 10, 2008, NOD issued for the MWL CMI Plan noted that the existing deep soil moisture monitoring system could not be effectively used to measure the breakthrough of moisture through the landfill cover. However, after additional consideration, taking into account the depth of soil moisture measurements and soil properties, NMED is revising this earlier conclusion. Under the LTMMP, soil moisture measurements will be made at 1-foot intervals, starting at a relatively shallow depth of 4 feet. Because the soil properties (specifically grain size and hydraulic conductivity) of the cover are similar to those of soil adjacent to the landfill and occurring from the surface to 4-5 feet, one would expect that the soil moisture measurements taken from the range of 4-5 feet depth in the existing system would be reasonably representative of the soil moisture breaking through the cover.</p>
F		<p>The commenters also state that, in addition to the above, the soil moisture probes only monitor a small number of pits and trenches, and do not monitor for moisture continuously.</p>		<p>Because the site is located in an arid environment, breakthrough events at the MWL will occur rarely, and any moisture would migrate slowly through soil. Few stations are actually needed to monitor for moisture as the amount that infiltrates into and percolates through the cover is not expected to vary significantly across the cover. Thus, monitoring continuously beneath all or most of the pits and trenches for soil moisture is unnecessary.</p>
A, E, V, II, RR	Soil-Gas Monitoring	<p>(A) Commenters state that currently there isn't a detection monitoring program at the MWL for parameters such as tritium, PCE, and other vapor-phase constituents in the vadose zone, and that this situation is a violation of 40 C.F.R. § 264.98(a)(2). The commenters</p>	R8	<p>(A) The LTMMP establishes active soil-vapor monitoring for the MWL.</p> <p>The Permittees have not violated the regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. § 264.98 because these regulations apply to groundwater monitoring, not vadose zone monitoring. Additionally, the MWL, is a solid waste management unit rather than a hazardous waste management unit, and is not subject to any of the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R.</p>

<p>A, F, V, RR</p>		<p>further state that the WERC recommended active soil vapor monitoring be conducted at the MWL.</p> <p>(B) The commenters also state that the locations and number of proposed soil-gas monitoring wells are too few and too far away to adequately monitor soil gas releases from the landfill. Furthermore, the FLUTE™ or equivalent wells should be installed where the highest concentrations of tritium and PCE were detected beneath the pits and trenches. The commenters also state that it is essential to install monitoring wells at locations inside the MWL where large quantities of highly mobile tritium and solvent wastes are known to be buried.</p>	<p>§§ 264.91-264.100 . See Response R13 of this document.</p> <p>(B) This issue was previously addressed in Response 23 for the CMI Report and R26 for the SV SAP. As stated in Response R23, the original footprint of the MWL covers 2.6 acres. Soil-gas plumes will migrate chiefly along the path of least resistance. Because sediments with near horizontal orientation underlie the MWL, and most have hydraulic conductivities that are likely greater in the horizontal direction than the vertical direction, soil gas is expected to spread laterally as well as vertically through the vadose zone (for example, there are beds of sand and gravel that lie just beneath the MWL disposal trenches/pits where tritium vapor appears to be preferentially migrating). This was the case with the nearby Chemical Waste Landfill where geological conditions are similar and soil-gas concentrations prior to conducting soil-vapor extraction were once much higher on average than those found at the MWL. Any soil-gas plume at the MWL with concentrations high enough to pose an unacceptable risk to human health or the environment would spread laterally and would be detected by the deployment of a relatively small number of soil-vapor monitoring wells. Thus, it is not necessary to install soil-gas monitoring wells beneath all or most trenches and pits at the landfill.</p> <p>The soil-gas surveys conducted during the RCRA Facility Investigation (RFI) clearly indicated that the highest soil-gas concentrations of PCE and other volatile organic compounds are in the northern half of the unclassified portion of the landfill. The active soil-gas survey conducted under the SV SAP confirmed the RFI results (compare Figures 4.5-3 and 4.5-11 with 4.5-21 and 4.5- 27 in the Phase 2 RFI Report). Under the LTMMP, soil-vapor samples will be collected at 3 multiport wells and 2 single port wells located around the landfill, including wells that will target the northern half of the unclassified portion of the landfill. There will also be wells located adjacent to the acid pit area in the classified portion of the landfill.</p> <p>Soil and tritium flux sampling indicate that the highest levels of tritium contamination are located at the classified portion of the</p>
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<p>A</p>		<p>(C) The commenters state that the monitoring frequency is insufficient (beginning quarterly for 2 years, semi-annually for years 3 and 4, and annually thereafter). Even a quarterly frequency is too little.</p>	<p>landfill (see Figures 4.4-1, 4.4.-2, 4.4-3, 4.4-4, 4.6-1, 4.6-2, 4.6-3, 4.6-4, and Tables 4.6-2 and 4.6- 8 of the Phase 2 RFI Report). Under the LTMMP, surface soil samples will be collected and analyzed for tritium near the corners of the landfill, including the northeast corner of the unclassified area where some of the highest tritium levels have been observed.</p> <p>(C) The proposed monitoring frequencies are adequate as soil-vapor concentrations are not expected to vary significantly from monitoring event to monitoring event, especially given the low concentrations of vapors known to be present in the vadose zone. The quarterly monitoring to be conducted during the first two years will demonstrate whether this expectation holds true.</p>
<p>A</p>		<p>(D) Commenters state that the vadose zone models for the MWL are not based on actual data representative of the characteristics of the vadose zone beneath the dump. More specifically, predictions of radionuclide transport through the vadose zone do not consider potentially fast pathways in the vadose zone that may exist beneath the MWL such as soil fissures, cracks and fractures.</p>	<p>(D) There is no evidence that fissures, cracks, and fractures exist in the vadose zone beneath the MWL.</p>
<p>A</p>		<p>(E) The commenters state that the plans for air monitoring ignore the fact that NMED has not provided responses to public comment regarding the “soil gas hearings”. All of Citizen Action’s comments for soil gas provided to the NMED are incorporated herein by reference.</p>	<p>(E) Air monitoring under the LTMMP is not related to the report describing the results of the SV SAP and a hearing was not held on the SV SAP. The NMED held a public meeting on the SV SAP on May 1, 2007.</p> <p>The NMED responded to public comment on the SV SAP in February 2008 (the responses are available on NMED’s web site). The soil vapor (SV) Report, which followed the SV SAP, presents the results from implementing the SV SAP and, thus, is a monitoring report. Like typical monitoring reports, the factual data that the SV Report contains</p>

<p>S, U, V, W</p>		<p>(F) The commenters state that soil-gas sampling should be conducted at depths starting at 50 feet below the landfill and extending to the water table. Data from TA-V show higher levels of soil gas at depths below 50 feet compared to shallower depths. The soil vapor plume is old and has moved deeper into the subsurface closer to the water table.</p>	<p>is limited to the presentation of monitoring data. The data cannot be changed based on public comment. Thus, the SV Report (and other monitoring reports) was not subject to a formal comment period. This response was previously conveyed to Citizen Action and Mr. Robert Gilkeson by NMED's letter of February 13, 2009 (erroneously dated February 13, 2008). The SV Report is posted on NMED' web page for public inspection.</p> <p>To the extent that Citizen Action's comments on the SV SAP and SV Report apply to the LTMMP, NMED incorporates by reference all NMED responses to those comments.</p> <p>(F) This issue was in part addressed previously by NMED in Response 30 of the SV SAP.</p> <p>The MWL and the TA-V sites are different with respect to size, potential source areas, and the purpose of the soil-vapor sampling employed. The MWL is a 2.6 acre site with source areas confined to trenches and pits with known locations. Active and passive soil gas sampling was conducted at short horizontal and vertical distances from potential sources. Given that only small concentrations of vapor-phase contamination were found close to the potential source areas at the MWL, it is unlikely that significantly higher concentrations would be found at depth beneath the MWL. If soil vapor concentrations remain sufficiently low at the level of the waste (at 10 feet below original ground surface), and just below the waste (at 30 feet below original ground surface), there is no critical need to sample for soil gas at greater depths. Additionally, contaminants in vapor can migrate relatively quickly compared to aqueous transport of contaminants (for example, it was estimated that trichloroethene vapor migrated to the water table at the Chemical Waste Landfill in about 7 years). If a plume of soil vapor capable of causing groundwater contamination was sitting on the water table at the MWL, contaminants should have already been detected in the groundwater. However, no contamination has been detected.</p> <p>TA-V is a much larger site, encompassing 26.3 acres within the fenced</p>
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RR		(G) The commenters state that monitoring of the MWL must meet the requirements of 40 C.F.R. § 264.278 for unsaturated zone monitoring.	<p>area. The smaller area of research buildings at TA-V collectively encompasses about 12.4 acres, and there are several potential source areas near these buildings. The soil-gas wells at TA-V are located from about 315 to 410 feet apart, and were not located necessarily at specific known sources within TA-V, but instead, were purposely designed to determine whether or not a large plume of highly contaminated soil gas is generally located beneath TA-V that could contribute to further groundwater contamination.</p> <p>(G) The MWL is not subject to the regulations at 40 C.F.R. § 264.278, which apply to permitted land treatment units. The MWL is not a permitted unit or a land treatment unit. Nonetheless, the LTMMP establishes soil-vapor monitoring for the MWL (See R8(A)).</p>
A, E, F, H, I, J, K, L, M, O, P, Q, R, U, W, X, II, JJ, KK, OO, PP, QQ, RR	Groundwater Contamination	(A) Commenters claim that groundwater has been contaminated by releases from the MWL. Some indicated that contaminants include chromium, nickel, cadmium, tetrachloroethene (PCE), and nitrate.	<p>R9</p> <p>(A) The MWL is not a source of groundwater contamination as demonstrated by two decades of monitoring and by vadose zone data obtained during the Phase 1 and Phase 2 RCRA Facility Investigations. NMED previously responded to this issue in Responses R1, R42, R43, R46, R47, R48, R52, and R54 for the CMI Plan, and Response 12 for the CMI Report.</p> <p>The elevated nickel and chromium levels observed in groundwater samples obtained from wells MWL-MW1 and MWL-MW3 were derived from the corrosion of their stainless-steel well screens. Water samples collected from the new wells installed in 2008 demonstrate that nickel and chromium occur at background levels in the groundwater.</p> <p>Although tetrachloroethene (PCE) has been detected in soil gas beneath the MWL, the concentrations of PCE in the soil gas are too low to contaminate groundwater at levels that would result in concentrations above the water quality standard for PCE (0.005 mg/L).</p> <p>Although it appears that a release of cadmium at low concentrations occurs in soil beneath the west side of the landfill, cadmium is not a groundwater contaminant at the MWL. Water samples from groundwater monitoring wells installed in 2008 along the west boundary of the landfill continue to confirm that cadmium is not a groundwater contaminant.</p>

A		(B) The commenters state that uranium is a potential contaminant based on information in the FTM.		<p>Nitrate occurs in the groundwater at the MWL at about 4 mg/L or at about half the New Mexico Water Quality Control Commission (NMWQCC) standard of 10 mg/L. There are no known nitrate sources in the MWL capable of causing significant groundwater contamination suggesting that the nitrate may originate from local septic systems. Regardless, the nitrate levels do not exceed the NMWQCC standard.</p> <p>(B) NMED addressed this issue previously at the time of the MWL Corrective Measures Study. Subsurface soil data for the vadose zone and isotopic analysis of water samples indicate that levels of uranium in the groundwater are representative of natural, background conditions.</p>
<p>A, B, C, D, E, F, H, I, J, K, L, M, O, P, Q, R, U, V, W, X, Z, BB, DD, II, JJ, KK, LL, RR</p> <p>A, F, U, RR</p>	Groundwater Monitoring	<p>(A) Commenters state that the groundwater monitoring wells are located in the wrong places and were constructed improperly to provide representative and reliable water samples.</p> <p>(B) The commenters state that wells MWL-MW7, MWL-MW8, and MWL-MW9 should be replaced because they purge dry, and thus, cannot yield reliable results. The commenter believes this is a violation of 40 C.F.R. §§ 264.97(a)(1), 264.97(a)(2), 264.97(a)(3), 264.97(d)(1), 264.97(e), 264.98(a)(3), 264.98(a)(4), 264.98(b), 264.98(c), 264.98(d), and 264.98(f).</p>	R10	<p>(A) Wells MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3 have been plugged and abandoned. Wells MWL-MW4, MWL-MW5, and MWL-MW6 still exist and will remain for now available for sampling groundwater should they be needed. NMED previously responded to this issue in Responses R29, R40, R45, R49, R50, and R53 for the CMI Plan and Responses 4, 6, 8, 11, 25, 26, 27, and 28 for the CMI Report.</p> <p>Readers are reminded that wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9 are the only wells proposed to make up the monitoring well network under the LTMMP. These wells are adequate for groundwater monitoring at the MWL. See also Responses R10(C), R10(E-G), R10(I-J), R10(O-T), R10(BB-CC) and R10(FF).</p> <p>(B) NMED previously addressed the issue concerning low yield wells purging dry in Responses R38 for the CMI Plan and Response 28 for the CMI Report. Wells MWL-MW8 and MWL-MW9 have purged dry for the last 3 years. MWL-MW7 used to purge dry, but has not since 2011. Unless a well cannot recover, there normally is no need to replace wells because they purge dry. Additionally, the Permittees have not violated the cited regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.97-264.98 because the MWL is a solid waste management unit and is not subject to any of the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document.</p>

<p>A, F, V, W, RR</p>		<p>(C) The commenters state that groundwater monitoring wells were not properly installed to locate and monitor the water table. Thus, the direction of groundwater flow is not reliably known, and an accurate map of the water table cannot be generated. The commenter believes this is a violation is 40 C.F.R. § 264.98(e).</p>		<p>(C) NMED previously addressed this issue in Response 25 for the CMI Report. An adequate water level map has been generated and is being updated using information from the wells in the monitoring well network which are screened across the water table and constructed in a similar manner. Additionally, the Permittees have not violated the cited regulation at 20.4.1.500 NMAC incorporating 40 C.F.R. § 264.98(e) because the MWL is a solid waste management unit and is not subject to the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document.</p>
<p>A</p>		<p>(D) The commenters state that the Permittees did not log the depth of the water table at well locations MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9.</p>		<p>(D) Initial depths to water are recorded on the well construction logs for each well (see Appendix H of the LTMMP).</p>
<p>A, F, W, RR</p>		<p>(E) The commenters state that no background wells are installed at locations hydraulically upgradient of the MWL, which is a violation of 40 C.F.R. §§ 264.97(a)(1) and 264.98(a)(4). The commenters also state that the background monitoring well (MWL-BW2) is east of the MWL at a location that is upgradient of only the southernmost portion of the MWL unclassified area, and thus, water samples from it do not represent background hydrochemistry for the northern area of the MWL where the largest inventory of wastes are buried in both the classified area</p>		<p>(E) The NMED previously responded to these issues, in part, in Response 26 for the CMI Report. The Permittees have not violated the cited regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.97-264.98 because the MWL is a solid waste management unit and is not subject to any of the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document.</p> <p>Additionally, only one background well is needed at the MWL to obtain groundwater representative of background conditions. MWL-BW2 is adequate as a background monitoring well. See also Response R32(#1) of this document.</p>

<p>A, F, V, RR</p>		<p>and the northern quadrant of the unclassified area.</p> <p>(F) The commenters state that groundwater monitoring wells, including a background well, have not been installed to monitor deeper groundwater within Ancestral Rio Grande (ARG) sediments which have a higher hydraulic conductivity compared to finer grained sediments located above them. The commenters also claim that the ARG represents the upper most aquifer at the MWL as defined by RCRA and the Consent Order. The commenters believe this is a violation of 40 C.F.R. §§ 264.95, 264.97(a)(2), 264.97(a)(3) and 264.98(b).</p>		<p>(F) The NMED previously responded to this issue in Response R40 for the CMI Plan and Responses 26 and R27 for the CMI Report. The Permittees have not violated the cited regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 2264.95, 264.97(a)(2), 264.97(a)(3) and 264.98(b) because the MWL is a solid waste management unit and is not subject to the specific groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See also Responses R13 and R32(#3) of this document.</p>
<p>A, F, V, RR</p>		<p>(G) The commenters state that the groundwater monitoring wells do not meet the design specifications for wells under Section VIII of the Consent Order, and that they should be replaced because they have failed to meet their intended purpose.</p>		<p>(G) The NMED previously responded to this issue in Response R39 for the CMI Plan. The 2008 wells meet the requirements for well installations under the Consent Order and have not failed to meet their intended purpose.</p>
<p>A, F, V, RR</p>		<p>(H) The commenters state that the groundwater monitoring network proposed in the LTMMP was not properly public noticed under the provisions of 40 C.F.R. § 270.42, Appendix I (C.1.a, C.4,</p>		<p>(H) The NMED previously addressed this issue in Response 4 for CMI Report. The cited regulations concerning permit modifications do not apply to the MWL because the permit is not being modified. The LTMMP was properly noticed as required under the Consent Order. The commenter provided comment during the notice period for the LTMMP in response to the notice. NMED did not need to public notice the decision to plug and abandon the cited wells; water levels</p>



<p>A, F, V, W</p>		<p>and C.5.a) and the Consent Order. The commenters also claim that NMED should have taken public comment on the decision to plug and abandon wells MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3.</p> <p>(I) The commenters state that the screen lengths (30 feet) of the newer groundwater monitoring wells are too long and violate the requirements of RCRA and the Consent Order.</p>	<p>were dropping below the screened intervals in the wells such that the wells could no longer serve as monitoring points.</p> <p>(I) The screen lengths are acceptable for a site where groundwater contamination does not occur and where the water table is dropping at a rate of approximately 0.8 feet per year. The NMED previously responded to this issue in Response 25 for the CMI Report.</p>
<p>A, F, V, W, RR</p>		<p>(J) The commenters state that groundwater monitoring wells should be placed along the southern boundary of the landfill, and that an acid pit especially requires monitoring. Wells should also be located on the western side of the landfill.</p>	<p>(J) Wells are located on western side of landfill. Because the direction of groundwater flow is not south, there is no need to construct wells on the southern boundary of the MWL. Due to the small size of the MWL and , in particular, the small size of the acid pit and the lack of evidence of significant releases from the acid pit, there is no need to place groundwater monitoring wells immediately adjacent to the acid pit. See also R32(#2).</p>
<p>A</p>		<p>(K) The commenters state that Section 3.5.2 of the LTMMP does not include appropriate language from the Consent Order because the section indicates that replacement wells are to have 30 ft screens.</p>	<p>(K) See Response R10(I) of this document.</p>
<p>A</p>		<p>(L) The commenters state that the LTMMP does not include language regarding the drilling technology to be used for replacement wells.</p>	<p>(L) The drilling technology for replacement wells is not specified in the LTMMP. The technology that would be employed must meet the performance standards of the Consent Order and EPA guidance should there be a need to replace a well under the LTMMP.</p>
<p>A</p>		<p>(M) The commenters state that</p>	<p>(M) The analytical suite for groundwater that is proposed in the</p>

<p>A, RR</p>		<p>groundwater should be sampled and analyzed for a full analytical suite including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), tritium and RCRA trace metal suite.</p> <p>(N) The commenters state that groundwater should be sampled and analyzed for tritium using the low detection limits that can be achieved at the University of Miami.</p>	<p>LTMMP is adequate and targets the constituents most likely to migrate from the landfill to groundwater.</p> <p>(N) It is not necessary to analyze groundwater for tritium using such an extremely low minimum detectable activity (MDA). The MDA of the current method used for tritium analysis lies well below any level that would pose unacceptable risk to human health or the environment. See also Response R32(F) of this document.</p>
<p>A</p>		<p>(O) The commenters state that the LTMMP should include language stating that only Air Rotary Reverse Circulation Under Reamer (or sonic drilling) should be used to install wells, and that Air Rotary Casing Hammer (ARCH) should not be used within 50 ft above the predicted depth to the water table. The commenters also state that the LTMMP must provide for the installation of well screens in pristine formations that are not disturbed by drilling fluids, and even mud developed from natural clays in the formation. Additionally, the ARCH drilling method is no different from a method utilizing drilling muds.</p>	<p>(O) Regarding Air Rotary Reverse Circulation Under Reamer (or sonic drilling), see Response 10(L) of this document. The 50 feet limit for the use of ARCH drilling and pristine formations is not necessary because the sediments beneath the MWL contain some, and in many cases, abundant silt and clay particles. Once the saturated (water bearing) zone is reached by any drilling method, these natural fine particles will generate muddy conditions in the well, which is the primary reason why wells require development after installation has been completed.</p>
<p>A, W, RR</p>		<p>(P) The commenters state that no bentonite mud or organic</p>	<p>(P) NMED agrees that the use of drilling mud and organic drilling fluids should be avoided when installing groundwater monitoring wells.</p>

A		<p>drilling fluids or foams should be used to install wells.</p> <p>(Q) The commenters state that casing needs to be parked and telescoped down to a smaller casing size and advanced only with air and without a mist for drilling into the water table.</p>	<p>This issue was previously addressed by the NMED in Response R29 for the CMI Plan (See Response R29 for the CMI Plan for details).</p> <p>(Q) Replacement well borings will likely be drilled exclusively with air as the drilling fluid where possible. The use of potable water to assist with advancement of a boring where air is insufficient to address difficult drilling conditions will not be prohibited without reason. See Response R10(O and P) of this document.</p>
A		<p>(R)The commenters state that when the saturated zone is reached, drilling should be halted and water should be produced from the borehole until it cleans up and is suitable for sampling as determined by turbidity.</p>	<p>(R) The wells should be completed and developed prior to the collection of samples. A preliminary sample may be collected and analyzed prior to well development if there is concern about waste management issues related to waste water generated during development and purging, or in the unlikely event that perched water or groundwater at different levels in the saturated zone are encountered that is not being specifically targeted by the well under installation.</p>
A		<p>(S) The commenters state that that drilling should proceed with a careful watch on geologic formations, and water production. When encountering strata with good production of water, drilling should be stopped and sampling should take place before drilling continues.</p>	<p>(S) Geologic and hydrologic conditions should be carefully observed when any well is installed. See also Response R10 (R) of this document.</p>
A, F, RR		<p>(T) The commenters state that the downgradient groundwater monitoring wells are not located properly on the boundary of the landfill to serve as points of compliance pursuant to 40 C.F.R. § 264.95(b). The commenters believe this is a violation of 40 C.F.R. §§ 264.95, 264.97(a)(2),</p>	<p>(T) See Response R10(A). The wells located on the west side of the landfill are close enough to the boundary of the MWL to be effective for detection monitoring. The wells are placed at the toe of the cover, which eliminates the need to conduct work on the cover and risk damage to the vegetation and cause unnecessary erosion. Additionally, the Permittees have not violated the cited regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.95-264.98 because the MWL is a solid waste management unit and is not subject to the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document.</p>

A		264.97(a)(3) and 264.98(b).		
A, H, I, J, K, L, M, O, P, Q, R, V, X, RR		(U) The commenters state that the LTMMP in Section D-9 fails to identify which wells are downgradient or cross-gradient, and what is the direction of ground water flow.		(U) This information can be determined from Figure 2.1.2-2 on page 2-8 of the LTMMP.
A		(V) The commenters state that low-flow purging and sampling techniques should be used.		(V) The LTMMP contains provisions in Appendix F to conduct low flow sampling and well purging. The plan is considered adequate for the conditions encountered at the landfill.
A		(W) The commenters state that the LTMMP does not inform the public that NMED issued letters in 2007 that ordered the Permittees to avoid the use of drilling additives, and to only use PVC screens in the new monitoring wells installed in 2008.		(W) It is not necessary for the LTMMP to state that the NMED informed the Permittees to avoid the use of drilling additives, and to only use PVC screens when constructing the new wells. These conditions were met by the Permittees when the wells were installed in 2008.
A, RR		(X) The commenters state that the LTMMP in Section D-9 falsely claims that MWL-BW1 is a background well.		(X) MWL-BW1, now abandoned, served originally as the background well for the MWL monitoring well network. MWL-BW1 was adequate as a background well (see also Response R32(#5)). NMED previously addressed this issue in Response 6 for the CMI Report.
A		(Y) The commenters state that a detection monitoring program must be implemented to monitor for indicator parameters in the groundwater beneath the MWL, and at the point of compliance, pursuant to 40 C.F.R. §§ 264.98(a), 264.98(a)(3), and 264.98(a)(4). The same		(Y) Detection monitoring programs and compliance monitoring programs are implemented depending on whether or not hazardous constituents have been detected in groundwater. The MWL is not subject to either program because the MWL is a solid waste management unit and is not subject to the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document. NMED previously addressed this issue, at least generally, in Response R4 for the SV SAP and Response R39 for the CMI Plan.

<p>A, RR</p>		<p>commenter also states that SNL must establish a compliance monitoring program meeting the requirements of 40 C.F.R. §264.99.</p>		
<p>A</p>		<p>(Z) The commenters state that the monitoring program must include protocols for statistical tests to assess the presence or absence of hazardous constituents and indicator parameters in the groundwater beneath the MWL and at the point of compliance in accordance with 40 C.F.R. §§ 264.97(g), 264.97(h), 264.97(i), 264.98(c), 264.98(d), 264.98(f), 264.98(f)(1), 264.98(f)(2), 264.98(g), 264.98(g)(1), 264.98(g)(2), 264.98(g)(3), 264.98(g)(4), 264.98(i).</p>		<p>(Z) The LTMMP does not need to include protocols for statistical tests in accordance with the regulations cited by the commenter, because the MWL is a solid waste management unit and is not subject to the groundwater monitoring regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.91-264.100. See Response R13 of this document. Nonetheless, some statistical methods will be applied when evaluating data exceeding a trigger level, if any, in accordance with Section 5.1.4 of the LTMMP.</p>
<p>A, F</p>		<p>(AA) The commenters state that a NMED letter of July 2, 2007, prohibits use of the mud rotary method for installing replacement monitoring wells.</p> <p>(BB) The commenters state that the Notice of Disapproval (NOD) issued on November 24, 2006, directed the Permittees to install monitoring wells inside the MWL where high levels of contaminants were discovered in the earlier RCRA Facility Investigations. Furthermore, It</p>		<p>(AA) NMED's letter of July 2, 2007, prohibits use of the mud rotary drilling method for installing the replacement monitoring wells for MWL-MW1 and MWL-MW3. The Permittees have met this requirement.</p> <p>(BB) The NOD is dated November 20, 2006. The requirement in the NOD does not apply to groundwater monitoring. The requirement was for soil-gas monitoring.</p>

<p>F, V</p>		<p>is essential to install monitoring wells at locations inside the MWL where large quantities of the tritium and solvent wastes are known to be buried.</p> <p>(CC) The commenters state that the downgradient wells have water levels near or less than 4 ft above the bottom of their well screens and thus the wells are no longer useful for groundwater monitoring. The 4-ft limitation on water height above the bottom of the well screen is presumably based on a SNL report that suggested that a water height less than 4 ft makes it generally impossible to properly purge and sample a well.</p>		<p>(CC) As long as water can flow into a well that is representative of formation water, the well can serve as an effective sampling location.</p>
<p>W, RR</p>		<p>(DD) The commenter states that well MWL-MW4 is not being sampled under the LTMMP, is being improperly used to determine the elevation of the water table, and has little value with respect to detecting contamination at the water table.</p>		<p>(DD) MWL-MW4 is not a part of the well network under the LTMMP, thus, groundwater at this well will not be sampled routinely. The upper screened interval of MWL-MW4 is similar to the screened intervals of the 2008 wells. It is therefore acceptable to use water level measurements from the upper screen interval of MWL-MW4 to construct water table maps. See also Response R32 (A) of this document.</p>
<p>W</p>		<p>(EE) The commenter states that monitor wells MWL-MW7, MWL- MW8, and MWL-MW9 produce highly aerated groundwater samples.</p>		<p>(EE) Groundwater at the MWL contains relatively high levels of dissolved oxygen as a result of natural conditions. The levels of dissolved oxygen are typical for groundwater in the Kirtland Air Force Base area, where the Facility is located.</p>
<p>W, RR</p>		<p>(FF) The commenters state that groundwater flows north and that there are no wells located on</p>		<p>(FF) Groundwater does not flow north. See Response R32(B) of this document.</p>

<p>W</p> <p>Z</p>		<p>the northern boundary of the MWL to monitor the groundwater.</p> <p>(GG) The commenter starts that a 2011 SNL groundwater map is not a competent engineering document.</p> <p>(HH) The commenter is concerned that SNL would be doing the sampling and that SNL is not a neutral party.</p>		<p>(GG) NMED did not have any technical staff at the meeting where this comment was recorded. However, water level maps included in groundwater reports for the MWL correctly represent ground water flow.</p> <p>(HH) Under RCRA, the facility (in this case, Sandia) is responsible for sampling the groundwater. The NMED has the right to collect split samples, and occasionally does, primarily through work done by the NMED DOE Oversight Bureau.</p>
<p>A</p> <p>A</p> <p>A</p>	<p>Consent Order</p>	<p>(A) The commenters state that Section III.W.1 of the Consent Order requires long-term monitoring for any solid waste management unit (SWMU) to be addressed in the Permit.</p> <p>(B) The commenters also state that the LTMMP should include requirements found in the Consent Order for groundwater monitoring.</p> <p>(C) The commenters also state that the LTMMP wrongly asserts that the authority to require groundwater monitoring under Module IV of the Permit was transferred to the Consent Order.</p>	<p>R11</p>	<p>(A) The draft SNL Permit contains provisions to incorporate long-term monitoring plans for SWMUs. Once the draft Permit is finalized and it becomes effective, provisions for long-term monitoring and maintenance will be enforceable under the new Permit.</p> <p>(B) The LTMMP substantially meets the requirements of the Consent Order..</p> <p>(C) Requirements for groundwater monitoring were transferred to the Consent Order (see Consent Order Section III.W.1) until such time that long-term controls are implemented. See also Response R11(A).</p>
<p>A</p>	<p>Classification of MWL as a Dump</p>	<p>The commenters state that the MWL should be referred to as a dump because it is unlined and has no provisions for leachate collection and detection.</p>	<p>R12</p>	<p>The MWL is a SWMU where land disposal occurred. The MWL is unlined and has no provisions for leachate collection. The moisture monitoring system to be implemented under the LTMMP will establish a means of leachate detection; however, it is unlikely that significant leachate will be generated because of climatic conditions at the site,</p>

				protection offered by the cover, and the immobility of most of the waste in the landfill. Should the moisture trigger level be exceeded, the Permittees will be required to address the situation (see Sections 5.1 and 5.2.3.2 of the LTMMP).
A, E, F, U, V, W, Z, II	Classification of the MWL as a Regulated Unit	(A) The commenters state that the MWL should be considered a regulated unit, and thus, is subject to the groundwater monitoring requirements of 40 C.F.R. § 264.90-100 instead of the corrective action requirements for SWMUs found at 40 C.F.R. § 264.101. The commenters also state the MWL is subject to the requirements for a post-closure care permit under 40 C.F.R. § 270.1(c), and that the LTMMP cannot be a final remedy because it does not meet the regulations for closure and post-closure of permitted units.	R13	(A). The MWL is not a regulated unit, and thus, is not subject to the regulations at 20.4.1.500 NMAC incorporating 40 C.F.R. §§ 264.90 – 264.100. The MWL is a SWMU subject to corrective action pursuant to 20.4.1.500 NMAC incorporating 40 C.F.R. § 264.101. This issue was previously addressed by the NMED in Response R39 for the CMI Plan, Response 30 for the CMI Report, and Responses R4 and R6 for the SV SAP.  The EPA designated the MWL as a SWMU prior to delegating the NMED corrective action authority for RCRA subtitle C.
E, II		(B) The commenters claim that the MWL is an “isolated regulated unit” subject to 40 C.F.R. § 264.90(f)(1).		(B) The MWL is not a regulated unit.
RR		(C) The commenters state that the MWL should have had a RCRA permit to operate and that it operated illegally. The commenters claim that the Permittees were obligated to conduct record keeping, and meet manifest requirements, and install liners and leachate collection systems.		(C) The MWL is a SWMU (see R13(A)). Disposal of radioactive waste at the MWL from 1982 to 1988 did not require a RCRA permit, nor was such disposal subject to RCRA waste management provisions.



A	Transmittal Letter and Certification Statement	The commenters state that the LTMMP was not submitted with a transmittal letter and certification statement.	R14	The comment is incorrect. A transmittal letter and certification statement was submitted with the LTMMP. They are available on the NMED's web site at <a href="http://www.nmenv.state.nm.us/HWB/snlperm.html">http://www.nmenv.state.nm.us/HWB/snlperm.html</a> .
A	Notice of Deficiency and Response to Public Comment on Soil-Vapor Sampling and Analysis Plan	The commenters state that the NMED currently has a Notice of Deficiency issued for the soil cover and must, but has not yet, responded to citizen comments regarding soil-gas testing. These issues must be resolved prior to submission of the LTMMP.	R15	<p>There is no outstanding Notice of Deficiency issued for the MWL cover for the CMI Plan or Report. The cover, as built, was approved on October 14, 2011, through approval of the MWL CMI Report.</p> <p>The soil-gas testing, part of the work described in the SV SAP, was approved on September 26, 2008. The only comments received on the SV Report were from Citizen Action and Mr. Robert Gilkeson. See Response R8(E) of this document.</p>
A	Soil Monitoring	The commenters state that the Permittees are now backing out of monitoring soil at ant nests and other animal burrows for gross alpha and beta.	R16	<p>As part of the conditional approval for the CMI Plan, NMED did not require that soil at animal burrows, including ant nests, be sampled and analyzed for gross alpha and gross beta.</p> <p>The primary radionuclides of concern, other than tritium, are gamma emitters and are best monitored using gamma spectroscopy. The LTMMP contains provisions for the sampling and analysis of animal burrows using gamma spectroscopy.</p>

<p>A</p> <p>A</p> <p>A</p>	<p>Surface Pathway for Contaminant Migration</p>	<p>(A) The commenters state that the surface pathway is still not adequately studied.</p> <p>(B) The commenter further states no analysis has been performed concerning surface ponding at the MWL and the effect that soil cover construction/compaction activities have had for fracturing the underlying surface of the landfill and buried containers.</p> <p>(C) The commenters also state that high intensity, seasonal thunderstorms have not been taken into account that could cause fractures in the shallow vadose zone.</p>	<p>R17</p>	<p>(A) Comment R17(A) is not related to the LTMMP. The issue was previously addressed by the NMED in Responses R13, R34, R35, and R59 for the CMI Plan and Responses R22, R23, and R46 for the SV SAP.</p> <p>(B) The landfill cover is sloped to promote runoff of precipitation that is deposited on the cover; thus, significant ponding of surface water will not typically occur. To ensure that storm water controls are maintained in the future, cover and storm water diversion structures are to be inspected and maintained under the LTMMP. Regarding fractures, see Response R8(D) of this document. Regarding buried containers, NMED previously addressed this issue in Response R22 for the SV SAP and Response R13 for the CMI Plan. See also Response R42 of this document.</p> <p>(C) See Response R8(D) of this document.</p>
<p>A, F, V, LL, RR</p>	<p>“Moats Evaluation”</p>	<p>(A) The commenter states that the LTMMP should not be released for review by the public until the same public review process has been provided for the “Moat’s Evaluation”.</p>	<p>R18</p>	<p>(A) The comment does not apply to the LTMMP.</p> <p>The comment refers to NMED report: <i>Evaluation of the Representativeness and Reliability of Groundwater Monitoring Well Data, Mixed Waste Landfill, Sandia National Laboratories</i>. The report was prepared to augment NMED’s responses to public comment on the CMI Plan.</p> <p>Groundwater data obtained from the older, now abandoned monitoring wells at the Mixed Waste Landfill (MWL) were generally reliable and representative of formation water quality as discussed in the cited NMED report. These wells are not included in the network to be monitored under the LTMMP.</p> <p>There is no regulation requiring NMED to seek public comment on its</p>

RR		(B) The commenters argue that the authors of the report used the hydraulic conductivity value that is often specified for landfill liners (10E-7 cm/s) as representative of the groundwater flow velocity in the AF facies.		<p>responses to public comment. (Such a requirement would create an endless loop of comment and response.) The NMED report was prepared solely to support response to public comment on the MWL CMI Plan, for example, Response R29 for the CMI Plan. Response R29 contains only a brief summary of the report, and, thus directs readers to the report where details to support the NMED’s position are found. Referencing the report, rather than including its entire content in the Response to Comments, allowed readers to review a summary if they were not interested in reading the full report, and kept the length of the responses to a reasonable level.</p> <p>(B) Hydraulic conductivity and velocity are not equivalent physical parameters, even though they are expressed as having the same unit of measurement. Additionally, the NMED authors merely noted the hydraulic conductivity reported by Goering and others for the AF facies. The hydraulic conductivity value noted was not used to support any conclusions about the quality of hydrochemical data, the topic of the NMED report.</p>
A	Air Monitoring	The commenters state that air monitoring should include tritium gas.	R19	Tritium present in the air would be associated with moisture in the air. Air monitoring for tritium is not practicable because the atmosphere at the MWL does not contain sufficient moisture to analyze the moisture for its tritium content.
A	Burrowing Owls	The commenter states the LTMMP should provide information as to whether nesting areas for the burrowing owl were identified and investigated for activity prior to preparing the subgrade for the cover.	R20	<p>The landfill was inspected by the Permittees prior to installation of the subgrade. No burrowing owls were observed. Inspection for burrowing owls will continue with implementation of the LTMMP.</p> <p>Additionally, NMED staff have not observed burrowing owls at the MWL during numerous visits to the site.</p>
A	False Information Concerning Free Liquids	The commenter states the LTMMP presents false information by stating that “Disposal of free liquids was not allowed at the MWL.”	R21	In general, liquid wastes were not disposed of in the landfill; however, it is common knowledge that some liquids were disposed of in the landfill such as the reactor coolant water discharged to Trench D (which is mentioned in the LTMMP). Regardless, the function of the LTMMP is not affected by any such statements concerning free liquids.
A	Freedom of Information	The commenter states that for proper review of the LTMMP,	R22	The information apparently requested by the commenter concerns correction action taking place Facility-wide, and is not specific to the

	Request	the Permittees must answer numerous questions from a Freedom of Information Act request sent by the commenter in November 2006.		MWL.
A	Soil Conditions	(A) The commenters state that the LTMMP does not consider the time frame for the soil cover to return to natural soil conditions. The commenters further state that the LTMMP does not consider the effect on releases from the MWL during the period that the soil cover is returning to natural soil conditions and once the natural conditions are achieved.	R23	<p>NMED assumes that the comment concerns a reduction over time in density of soil used to construct the cover.</p> <p>Any reduction in soil density would not be expected to significantly impact the cover’s ability to limit the migration of moisture into and through the cover. In this case, the hydraulic properties of the soil cover are not highly dependent on its density. Instead, the cover is designed to retain water and subsequently slowly lose the water through evapotranspiration, preventing downward percolation of water under normal circumstances. Furthermore, there is no reason to believe that the monitoring systems to be deployed on or through the cover would be adversely impacted by a reduction in density of the soils used to construct the cover.</p>
A, F, N	Comment Period for the LTMMP should be extended	(A) The commenters state that the public comment period for the LTMMP should be extended because the period overlaps with those for the SNL draft Permit and the Kirtland Air Force Base Permit, which places an unreasonable burden on the public because the documents are large and references are incomplete. One commenter (N) stated that a time extension should be granted because New Mexico should not be impacted by the MWL in the future and that the landfill should be excavated.	R24	<p>(A) The comment period was extended 30 days from November 13, 2012, to December 13, 2012, and extended again for another 60 days until February 11, 2013.</p> <p>The commenters do not explain what is meant by their claim that “references are incomplete.” The public comment period was extended beyond the period required by regulation, and beyond NMED’s typical comment period, which is typically 15 days longer than required.</p> <p>The Secretary believes 150 days to comment on the document has been adequate time. See Response R1 of this document regarding excavation of the landfill.</p>
T, FF, GG		(B) The commenters state that the public comment period		(B) The comment period was extended (see R24(A) above). See also Response R32 of this document.

U		<p>should be extended because they need time to review a draft EPA report recently received concerning groundwater monitoring wells at the MWL.</p> <p>(C) The commenter states that a time extension for public comment should be granted until such time that a hearing on the MWL is completed.</p>		<p>(C) The LTMMP is not a document subject to the public notice requirements of 20.4.1.900 and 901 NMAC. See Response R1(A) of this document.</p>
F	Incorporate by reference comments on MWL CMI Report	The commenters incorporate by reference all comments made by Citizen Action on the MWL CMI Report.	R25	To the extent that said comments apply to the LTMMP, the NMED incorporates by reference all NMED responses to Citizen Action’s comments concerning the MWL CMI Report.
B, RR	Fate and Transport Model	The commenter states that the FTM is a “Black Box” with codes that cannot be verified.	R26	<p>This issue was previously addressed in Response 13 for the MWL CMI Report.</p> <p>The “black box” issue concerned a lack of certain details in the FTM Report regarding the modeling methods (codes) used, data quality objectives, quality assurance, details regarding specific inputs and outputs for modeling runs, sensitivities of input parameters, and bias. The Permittees later addressed these issues to the satisfaction of NMED in the Permittee’s response to the 2006 NOD submitted on January 19, 2007.</p>
B	Authorization to Construct Cover	The commenter states that SNL and NMED did not have the authority to approve the landfill cover.	R27	NMED is authorized under the New Mexico Hazardous Waste Act, the New Mexico Hazardous Waste Management Regulations, and through authority granted by the EPA to administer correction action under RCRA Subtitle C. Thus, the NMED does have full authority to approve the cover placed over the MWL.
B, H, I, J, K, L, M, O, P, Q, R, X, RR	Location of MWL relative to planned community of Mesa del Sol.	The commenter states that the MWL is one mile from a park and residential homes planned for the Mesa del Sol community. One group of commenters (RR) argued that the LTMMP does not consider risks to children, and low income and minority	R28	<p>The MWL does not pose a threat to the Mesa del Sol community or any parks that would be located in that community. It does not pose a threat to citizens including children, low income or minority populations. As mentioned in Response R1(A) of this document, the cover will maintain a low and thus acceptable level of risk to the public, workers, and the environment.</p> <p>The MWL will be monitored to ensure that the remedy remains</p>

		populations.		protective of human health and the environment. Sampling and analysis will be conducted for a wide range of potential contaminants and media. The scope of monitoring, sampling and analysis, quality control, frequency, triggers, and the technologies to be utilized are detailed in the LTMMP.
G	Include local and other government agencies and local boards as stakeholders in reporting requirements	<p>The commenter would like the LTMMP to include more direct reporting to local agencies, including but not limited to the Water Utility Authority - Water Resources, Planning and Engineering Division; Bernalillo County Public Works Department – Water Resources Section; and the City of Albuquerque Environmental Health Department. The commenter states that these local agencies are involved with water quality protection activities on a day-to-day basis and should be included as stakeholders in the long-term stewardship of the MWL.</p> <p>More specifically:</p>	R29	The NMED considers the Water Utility Authority, Bernalillo County, the City of Albuquerque, and the Water Protection Advisory Board to be stakeholders in all matters concerning the MWL.
G		<p>(A) Section 4.8 should be revised such that required elements for reporting as outlined in this section be provided to the agencies listed above for regular review and opportunity for input as stakeholders. This will provide the agencies the ability to make informed decisions and advise their elected and senior leadership, as well as provide</p>		<p>(A) The annual reports are to be provided to the NMED. The NMED will make these reports available to the public, including the aforementioned stakeholders, by posting the reports on the NMED’s web page as required by the Final Order. NMED considers all public comment received (but is not obligated to respond in writing to comment received outside of formal comment periods).</p>

<p>G</p> <p>G</p>		<p>opportunity for input by the Albuquerque-Bernalillo County Water Protection Advisory Board (WPAB), another local body providing advice to elected officials on water quality matters.</p> <p>(B) Section 4.8.2 should be revised such that the LTMMP specifically states that a draft version of the report will be directly provided to the City/County/Water Authority and input and concerns by local agencies will be addressed and incorporated within the final report.</p> <p>(C) Section 5.1 should be revised such that local agencies are contacted as part of the trigger evaluation process. A discussion/subsection should be added to describe the process for notifying local agencies of trigger evaluations. Section 7 should be revised such that local agencies identified above are included in the notification procedures at the same time NMED is notified.</p>		<p>(B) The Permittees are not required to submit draft reports, even to the NMED. Although the Permittees are free to share draft reports with stakeholders, NMED does not require Permittees to release draft reports to stakeholders.</p> <p>(C) The notifications are to be provided to the NMED, which has the oversight responsibilities and authority for corrective action under RCRA. As with annual reports, the NMED will make the notifications, if any, available to the public (including the aforementioned stakeholders) by posting them on the NMED’s web page.</p>
<p>U, W</p>	<p>NMED employees fired or ridiculed</p>	<p>The commenter states that NMED officials/scientists have been fired, and in some cases, publicly ridiculed for expressing findings that have been ignored but are true.</p>	<p>R30</p>	<p>NMED has not fired any employee for their views or actions on the MWL.</p>

U, V, W	Increased Tritium levels	The commenters state that tritium levels have increased 10 fold at the landfill indicating additional releases have occurred.	R31	<p>The LTMMP discusses proposed monitoring rather than results.</p> <p>This issue has been previously addressed by the NMED in Response 9 of the MWL CMI Report.</p> <p>Some soil samples collected in 2008 exhibited tritium levels that were higher than those observed in 1995 because they were collected closer to the disposal areas containing tritium sources. The tritium levels detected in 2008 do not indicate that a new release of tritium has occurred, and more importantly, do not represent a threat to human health or the environment. Thus, further investigation of tritium is unwarranted based on the 2008 sampling results.</p> <p>Additionally, the NMED does not have the authority to regulate tritium, a radioactive substance.</p>
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<p>V, W, DD, FF, GG, LL</p>	<p>EPA Region 6 Draft Report</p>	<p>The commenters state that EPA technical staff agreed with Citizen Action’s concerns that the groundwater monitoring well network at the MWL was inadequate. More specifically, commenters (T and V) argue that EPA agreed with them that the network is inadequate because of the reasons specified below.</p>	<p>R32</p>	<p>The EPA Region 6 report cited by the commenters is an unfinished draft document and may contain opinions that are not representative of the final position of the EPA. NMED was provided information, including multiple versions of the draft report, indicating that the EPA technical team involved in the review of the groundwater monitoring network had not reached consensus on many issues. This lack of consensus is evident by nearly four dozen e-mails and at least ten versions of the draft document generated over a period of about nine months. Further evidence is found in the last draft of the document, dated December 12, 2007, in which 11 of the 19 major issues discussed by EPA in the draft report are denoted as issues where EPA should “Continue further discussion with NMED”. Especially for these 11 issues, it seems apparent that the EPA technical team had not reached consensus, and was concerned about whether their draft conclusions were correct. Their concern was justified as some of EPA’s draft conclusions are erroneous. Had EPA finalized their report based on a more complete review of the facts, the Agency likely would have agreed with NMED on all or nearly all of the 19 issues.</p> <p>Of the eight remaining issues, the draft report suggests that EPA would have agreed with the NMED on seven of the issues, and had no position on the other. More specifically, the draft report suggests EPA would have agreed with the NMED that:</p> <ol style="list-style-type: none"> <li>1. Only one background well is needed and it should be located in the alluvial fan strata, the uppermost aquifer under RCRA;</li> <li>2. No wells are needed within the MWL at hot spots due to the landfill’s small size (2.6 acres);</li> <li>3. Additional wells are not needed in the deeper Ancestral Rio Grande strata;</li> <li>4. The source of chromium and nickel in wells MWL-MW1 and MWL-MW3 is likely corrosion of the stainless steel screens in these wells;</li> <li>5. The original background well, MWL-BW1, provided reliable and representative water samples even though the well was cross-gradient;</li> <li>6. MWL-MW3 should be replaced because of the corrosion of its well screen and dropping water levels; and</li> <li>7. Well MWL-MW6 should be maintained for the purpose of</li> </ol>
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				<p>water level measurements.</p> <p>EPA took no position on the regulatory status of the MWL as a SWMU, but offers the comment that “The decision to treat the MWL as a SWMU was originally made by the EPA in 1993 before this site’s regulatory responsibility passed to the NMED in 1996. For EPA to revisit that decision at this late date would serve no useful purpose since we believe the site has received adequate attention through the corrective action process.” See also Response R13 of this document.</p> <p>The draft EPA report concludes, in part, “Based on our review, we have determined that NMED’s overall actions and decisions for administration of the authorized program have been technically sound and consistent with applicable RCRA requirements. We have also found no evidence to indicate that the MWL poses an imminent or substantial danger to citizens or groundwater supply.”</p> <p>NMED also notes that the scope of the EPA’s review as presented in the draft report did not include a review of subsurface drilling data and other data concerning releases of contaminants to the vadose zone. Nor did the report mention that the older wells (MWL-BW1, MWL-MW1, MWL-MW2, MWL-MW3, and MWL-MW4) were installed under EPA as the lead regulatory agency responsible for oversight of the landfill at that time (none of the EPA team that generated the draft report was involved with the MWL at that time). Nonetheless, any criticism expressed by EPA concerning these older wells should be considered criticism of their own decisions regarding the original well network at the MWL.</p> <p>As mentioned above, the EPA did not review the voluminous quantity of vadose zone data for the landfill, which show that no releases of contaminants have occurred at the MWL that pose unacceptable risk to human health or the environment. NMED considers this to be a significant omission in their review effort in that the EPA team likely would have agreed with the NMED on most, if not all, of the 11 issues for which the team could not reach consensus.</p> <p>In the rest of this response, NMED will address each of the public comments in more detail. The NMED’s response will be based on the</p>
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<p>T, FF, GG, RR</p> <p>T, FF, GG,</p>		<p>(A) Monitoring well MWL-MW4 should be plugged and abandoned and replaced with a new well;</p>	<p>most recent version of the draft EPA report, dated December 12, 2007, under the assumption that the most recent draft would be that closest to containing the final positions of the EPA.</p> <p>(A) The draft EPA reports states that further discussion was needed with NMED. MWL-MW4 is not part of the monitoring well network under the LTMMP. EPA was concerned that waters within the two aquifers (alluvial fan and ancestral Rio Grande strata) could be mixing if the packer in the well did not seal properly, the well may not be screened at the water table, and because of its position within the landfill, the well cannot be used to indicate horizontal movement of contamination.</p> <p>Well MWL-MW4 was installed under the oversight of the EPA. Contrary to EPA’s opinion in the draft report, there is only one aquifer, which consists of alluvial fan strata overlying ancestral Rio Grande strata; both units are hydraulically connected. Because the units are hydraulically connected, there is nothing preventing the mixing of groundwater between the units. However, because the groundwater has not been contaminated by the MWL, any mixing of the groundwater is not a concern.</p> <p>The water level in the upper screened interval of the well is lower than that of the other older wells at the MWL, which are now abandoned, because of the vertical gradient of the groundwater. The upper screened interval of MWL-MW4 is similar to the screened intervals of the 2008 wells. It is therefore acceptable to use water level measurements from the upper screened interval of MWL-MW4 to construct water table maps. The well has other value in that it provides information on head and water quality distribution with depth.</p> <p>NMED does not understand the meaning of EPA’s statement that the well cannot be used to indicate horizontal movement of contamination, thus NMED cannot respond to this statement other than to say that groundwater has not been contaminated by the MWL.</p>
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RR		(B) Monitoring wells are needed on the north side of the MWL;		<p>(B) The draft EPA reports states that further discussion was needed with NMED. EPA recommends that at least one well be installed north or northwest of the MWL because groundwater flow may be influenced by the pumping of city wells in the future.</p> <p>Groundwater at the MWL does not flow north., The commenters previously argued that the older wells installed on the northern side of the MWL were of no value. Regardless, wells MWL-MW1 and MWL-MW2, prior to being abandoned, were located on the northern boundary of the landfill. Contamination was not detected in water samples collected from these wells.</p>
T, FF, GG		(C) A new monitoring well made of PVC should be installed close to the location of the plugged and abandoned well MWL-MW1 to provide conclusive results as the source of high concentrations of nickel detected in the well;		<p>(C) None of the wells under the LTMMP is constructed with nickel-bearing materials. The nickel contamination was the result of the corrosion of stainless steel screen in this now abandoned well. See Response R32(#4) of this document. There is no evidence that chromium and nickel have been released from the landfill. See also Response R9(A) of this document.</p>
T, FF, GG, RR		(D) Well MWL-MW5 requires replacement because it is unclear if grout was fully removed from the screened interval or formation, which could prevent representative water samples from being collected from the well.		<p>(D) The draft EPA reports state that further discussion was needed with NMED. MWL-MW5 is not part of the monitoring well network under the LTMMP. Grout intruding into the screen of well MWL-MW5 was successfully removed as NMED discussed in Response 17 of the CMI Report. More details are found in NMED's report:  <i>Evaluation of the Representativeness and Reliability of Groundwater Monitoring Well Data, Mixed Waste Landfill, Sandia National Laboratories.</i></p>
T, FF, GG		(E) Groundwater samples should be analyzed for tritium with the Low Level Electrolytic Enrichment (LLEE) Method utilizing a detection limit of about 0.3 pCi/L because tritium		<p>(E) NMED does not have the authority to regulate radionuclides at DOE facilities; tritium is a radionuclide. Additionally, the draft EPA reports states that further discussion was needed with NMED. The current level of detection for tritium analysis that is employed at the MWL is adequate to ensure protection of human health and the environment. It is unnecessary to</p>

<p>T, FF, GG</p>		<p>is a mobile constituent and is a good tracer for contamination.</p> <p>(F) Groundwater samples should be collected with a low-flow sampling method. Wells that purged dry prevent the collection of reliable and representative samples, especially for solvents and metals.</p> <p>In addition, one group of commenters state that monitoring well deficiencies identified by EPA in its draft report encompass:</p>		<p>require the Facility to analyze for tritium using LLEE method. In addition, the draft EPA report states "...it is unlikely that a significant amount of tritium contamination will reach the deep aquifer at this point."</p> <p>(F) The draft EPA reports states that further discussion was needed with NMED. The purging and sampling methods employed at the MWL are low flow methods.</p> <p>Wells sometimes purge dry, and there are EPA guidelines on how to sample such wells. Groundwater at MWL wells that have been purged dry is sampled following these EPA guidelines. Because the guidelines were followed, the samples are considered to be reliable and representative with respect to this matter. NMED previously addressed this issue in its response R37 for the CMI Plan and R28 for the CMI Report.</p>
<p>V</p>		<p>(G) Lack of a background monitoring well;</p>		<p>(G) The EPA draft report did not state that there is no background well at the MWL. See also Response R32(#1) of this document.</p>
<p>V</p>		<p>(H) Improper sampling methodology,</p>		<p>(H) See Response R32(F).</p>
<p>V</p>		<p>(I) Improperly located wells and well screens;</p>		<p>(I) The wells that are apparently referenced in the comment are not part of the well network under the LTMMP. Regarding well locations for wells MWL-MW1 and MWL-MW2, see Response R32(B) of this document. MWL-MW3 was located close enough to the landfill boundary to be effective; the well was located on the other side of the landfill perimeter road. All of these wells have been abandoned.</p> <p>Regarding location of the upper screen for MWL-MW4, see Response R32(#1) of this document.</p>

V		(J) Corroded well screens,		<p>EPA states that the screen for MWL-MW5 intersects both alluvial fan and ancestral Rio Grande strata.</p> <p>(J) All of the wells that are apparently referenced by the comment are not part of the monitoring well network under the LTMMP. The EPA report indicated, based on a video footage, that the well screen for MWL-MW1 was corroded, MWL-MW3 showed less corrosion, and MWL-MW2 and MWL-BW1 showed minimal corrosion. Each of these wells has been abandoned.</p>
V		(K) A foot-long hole in PVC casing at one well;		<p>(K) Well MW1-MW3 is not part of the monitoring well network under the LTMMP. According to the draft EPA report, video footage indicated that a one-foot hole had developed in the casing for well MWL-MW3 at 40 ft. The well has been abandoned.</p>
V		(L) There is a large amount of grout in the screen of one well;		<p>(L) See Response R32(D).</p>
V		(M) Wells are too distant from the MWL boundary;		<p>(M) The only well that the draft EPA report concludes should be moved closer to the landfill boundary is MWL-MW3 (now abandoned). Well MW1-MW3 is not part of the well network under the LTMMP. See Response R32(I) of this document.</p>
V		(N) Low water levels in wells;		<p>(N) All of the wells apparently referenced by this comment are not part of the monitoring well network under the LTMMP. EPA states that wells MWL-BW1, MWL-MW1, and MWL-MW3 should be replaced, in part, because water levels have dropped since the wells were installed. The wells have been replaced.</p>
V, RR		(O) Wells are cross gradient or upgradient and cannot detect contamination;		<p>(O) All of the wells apparently reference by this comment are not part of the monitoring well network under the LTMMP. The EPA report states that wells MWL-MW1 and MWL-MW2 should be replaced because they are generally cross-gradient or upgradient to the direction of groundwater flow. These wells were installed under EPA's oversight of the MWL, and have been replaced with wells located near the western boundary of the landfill.</p>

V		(P) Use of drilling muds that hide evidence of contamination;		(P) The wells in the network under the LTMMP were not installed using drilling mud. The EPA report does not state that any well at the MWL will screen evidence of contamination because of the use of drilling mud during well installation.
V		(Q) Well screens that are causing cross contamination of strata;		(Q) See Response 32(A).
V		(R) Detection wells are not at the point of compliance;		(R) See Response R32(M).
V		(S) Need to use Low Level Electrolytic Enrichment (LLEE) method for tritium analysis;		(S) See Response R32(E).
V, RR		(T) Questionable data on groundwater velocity in the alluvial fan and ancestral Rio Grande strata at the landfill, including rejection of the calculated horizontal groundwater velocity of 0.17 ft/day.		(T) This issue is not addressed by the LTMMP. The average linear velocity of groundwater in the alluvial fan strata has been calculated by SNL as approximately 0.17 feet per year. NMED believes this value is underestimated. SNL also calculates the average linear velocity of groundwater in the ancestral Rio Grande strata as 18.5 feet per year. Both values are within the expected range for the typical lithologies comprising the units. More accurate estimates of groundwater velocity (such as could be acquired via pumping tests) are not needed for the MWL because there is no groundwater contamination present at the landfill.

W	Plutonium and depleted uranium	The commenter states that the MWL contains 119 drums of plutonium-bearing waste and tons of depleted uranium. He believes that this waste will migrate to groundwater in the future.	R33	<p>Plutonium and uranium are not hazardous wastes or hazardous constituents; NMED is not authorized to regulate radionuclides at DOE facilities.</p> <p>The commenter is correct that, according to the inventory of waste contained in the landfill, the MWL contains plutonium-bearing waste and tons of depleted uranium. However, the total mass of plutonium disposed of in the landfill is believed to be small.</p> <p>Analytical laboratory results for subsurface soil and groundwater samples demonstrate that there has been no release of plutonium or uranium from the MWL.</p> <p>These constituents will only migrate in the presence of water. Because infiltration and percolation of water through the landfill will be significantly reduced by the hydraulic properties of the cover, it is highly unlikely that uranium or plutonium will be released or that a mechanism exists that would allow such a release to migrate 460 feet through the vadose zone to groundwater. Additionally, plutonium is unlikely to reach groundwater because there is probably not sufficient mass of plutonium in the waste to migrate such a distance.</p>
W	Cesium has been released from the landfill	The commenter states that cesium has been released from the landfill.	R34	Cesium (Cs-137) is not hazardous wastes or hazardous constituents; NMED is not authorized to regulate radionuclides at DOE facilities. Results of the Phase 2 RFI and groundwater monitoring for more than 30 years demonstrate that cesium has not been released from the landfill.
V	Remedy not consistent with other mixed waste landfills	The commenters state that other mixed waste landfills have been closed by excavation or complete encapsulation with liners, leachate detection, and active vapor extraction. The remedy for the MWL should be consistent with those of other DOE mixed waste landfills in New Mexico and should provide for an equivalent type of leak detection as if the landfill was an	R35	<p>Each landfill must be evaluated on a case by case basis. See also Response R1(A) of this document.</p> <p>Regarding leak detection, the LTMMP contains provisions for monitoring for leaks. See also Response R7 of this document.</p>



		engineered RCRA landfill.		
W	Final remedy selected by SNL	The commenter asserts that the decision to not excavate the MWL was made by SNL.	R36	For every SWMU or Area of Concern subject to remediation, the responsible facility is required to recommend its preferred final remedy as part of the associated Corrective Measures Study report. This was done for the MWL. However, the NMED, after consideration of public comment, selects the final remedy, which may or may not be the remedy preferred by the facility. In the case of the MWL, the final remedy was selected by the NMED Secretary by means of the Final Order issued on May 26, 2005.
V	MWL not included as SWMU in SNL Permit	The commenter states that the MWL needs to be included as a SWMU in the facility's hazardous waste operating permit as are other SWMUs.	R37	The commenters previously argued that the MWL should be reclassified as regulated unit. Regardless, the MWL is listed as a SWMU (as all other SWMUs) in the Facility's hazardous waste operating permit.
V, RR	Fate and Transport Model not subjected to public comment	The commenter states that the Fate and Transport Model prepared for the MWL is a major document, but was not subjected to public comment.	R38	The Fate and Transport Model (actually titled <i>Probabilistic Performance-Assessment Modeling of the MWL at Sandia National Laboratories</i> ) is found in Appendix E of the MWL Corrective Measures Implementation (CMI) Plan. NMED held public comment periods for the Plan from December 9, 2005, to February 7, 2006, and from May 25, 2006, to June 8, 2006. The commenters collectively provided five sets of comments on the CMI Plan on February 7, June 7, and June 8, 2006, which included comments on the Fate and Transport Model.
W	Large quantity of waste in acid pit area	The commenter claims that a 1993 report by NMED staff states that large quantities of waste were disposed of in the acid pit in the southeast corner of the landfill. More specifically, the commenter purports to quote from the report that "Between '59 and '62, chemical wastes were disposed in Pit 1, also known as the Acid Pit, located in the southeast corner of the MWL."	R39	The text in the 1993 report (NMED/DOE/AIP-94/3) actually states "Between 1959 and 1962, chemical wastes were disposed in Pit 1, located in the southeast corner of the classified area, which is the oldest part of the MWL."  The authors of the report did not state that large quantities of waste were disposed in the acid pit in the southeast corner of the landfill because the quantity of waste was not known to them.
W	Cost analysis of excavation	The commenter states the LTMMP must include a cost	R40	Estimated costs to excavate the MWL are found in the Corrective Measures Study Report.

<p>W</p>	<p>Untrue that disposal locations were not available for mixed waste.</p>	<p>analysis to excavate the MWL. The commenter states that the facility did not tell the truth when they indicated that disposal locations were not available for excavated mixed and radioactive waste. The commenter argues that WIPP and a mixed waste facility in Utah could have received for disposal all waste excavated from the landfill.</p>	<p>R41</p>	<p>Disposal options of this type of waste are typically limited and sometimes unavailable. For example, there are treatment requirements found in 40 C.F.R. Part 268 that must be met before mixed waste can be disposed of, and because mixed wastes are radioactive, that places significant limitations on where and how treatment can be accomplished. Additionally, very few facilities are even available that can treat mixed waste. Furthermore, there are restrictions at mixed waste disposal facilities regarding what can be accepted for disposal at their facilities and that are related to the type of hazardous component and the type and radioactive level of the radioactive component of a mixed waste. There are also storage prohibitions for mixed waste that limit how long that waste can be accumulated before it must be shipped for treatment and disposal.</p> <p>To treat and dispose of mixed waste excavated from the MWL in a manner legally consistent with the regulations would pose a significant challenge. Because the MWL inventory is incomplete, and therefore not all waste types are known, it is possible that some of the waste disposed of in the landfill would not have a legal alternative for treatment and disposal.</p>
<p>W</p>	<p>Untrue that radioactive and mixed waste too dangerous to excavate</p>	<p>The commenter states that is untrue that the landfill cannot be excavated now due to the danger of radiation to people.</p>	<p>R42</p>	<p>NMED believes that the radiological hazard of waste buried in the MWL significantly exceeds the chemical hazard posed by the waste.</p> <p>Contrary to the comment, the risk assessment prepared under the MWL Corrective Measures Study predicts that the radiological risk to workers would be unacceptable if an excavation alternative was selected.</p> <p>Robotic equipment and site controls could limit radiation exposure to workers and the public if the landfill was to be excavated. However, as long as the waste in the landfill remains buried, the waste does not pose unacceptable risk to human health or the environment because of the shielding provided by the cover.</p>

W	Degrading Containers	The commenter states that containers are degrading and releasing waste.	R43	<p>This issue was previously addressed in Response R13 for the MWL CMI Plan, and R22 of the Soil Vapor SAP.</p> <p>NMED believes that many of the steel containers within the MWL have or will eventually rust. Any liquids within the containers could migrate from the landfill if conditions are appropriate. However, this does not necessarily mean that any release would pose a risk to human health or the environment. It also does not mean that the landfill would need to be excavated to mitigate a release. Due to the uncertainty associated with the inventory, NMED recognizes that continued monitoring is necessary to ensure protection of human health and the environment. The results of monitoring will be used to screen for any unexpected releases, should any occur.</p>
NN, OO, PP, QQ	Spanish Interpreter	The commenters request the NMED include a Spanish interpreter at a meeting on the MWL LTMMP. They assert they have a right to a Spanish translator under the Solid Waste Act (74-9-22).	R44	<p>The MWL is not regulated under the New Mexico Solid Waste Act. It is regulated under the New Mexico Hazardous Waste Act and the New Mexico Hazardous Waste Management Regulations.</p> <p>An interpreter was present at the meeting held on the LTMMP on October 16, 2012. NMED extended the public comment period twice for a total of 90 additional days.</p>