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RETURN RECEIPT REQUESTED

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October 13, 2006

David Gregory
Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

David McInroy
Deputy Project Director
Environmental Services
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop M992
Los Alamos, NM 87545

RE: FINAL DECISION
REMEDY SELECTION FOR SOLID WASTE MANAGEMENT UNIT 16-021(c)
LOS ALAMOS NATIONAL LABORATORY, EPA ID #NM0890010515
HWB-03-021

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (the "Department") has carefully considered the remedy selection for the solid waste management unit ("SWMU") 16-021(c) at Los Alamos National Laboratory ("LANL"). The remedy was proposed by the Department of Energy and the University of California in the *Corrective Measures Study Report for Solid Waste Management Unit 16-021(c)-99*, dated November 2003. The Department issued a public notice with its intent to select a remedy on May 15, 2006, initiating a public comment period that ended on July 14, 2006. Based on the administrative record for this matter, and the comments received during the public comment period, and pursuant to Section VII.D.7 of the March 1, 2005 Compliance Order on Consent ("Order"), I hereby render a final decision selecting the following remedy:

- Soil removal and off-site treatment and disposal of contaminated soil and tuff at the outfall source area;
- Pressure injection of a clay-based grout into boreholes that intersect the surge bed and extension of the existing cap in the pond area; and
- Installation of permeable reactive barriers ("PRB") and storm water filters to treat the sediment, surface water, and alluvial groundwater. The Department will require the

installation of an initial PRB (i.e., pilot test) to determine its effectiveness before installing the remaining PRBs. The location of the initial PRB must be proposed in the Corrective Measures Implementation Plan ("Plan").

The Department of Energy and the Los Alamos National Security, LLC (collectively, the "Permittees") must submit the Plan for this remedy no later than May 13, 2007. The Plan must include the requirements set forth in Section VII.E of the Order. In addition, the Plan must include contingency procedures that must be implemented by the Permittees if the remedy set forth above fails to be protective of human health and the environment. In the event the Department determines that the remedy is effective, the Permittees shall submit a long-term monitoring and maintenance plan. The Permittees must follow all other requirements for corrective measures implementation and reporting as set forth in Section VII.E of the Order.

If you have any questions regarding this letter, please contact Darlene Goering of the Hazardous Waste Bureau at (505) 428-2542.

Sincerely,

Ron Curry
Cabinet Secretary

RC:dxg

cc: J. Bearzi, NMED HWB
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Draft Permit for the remedy selection of Solid Waste Management Unit 16-021(c)

S. CORRECTIVE MEASURES FOR SWMU 16-021(c)

1. The report, Corrective Measures Study Report for Solid Waste Management Unit 16-021(c)-99 (LA-UR-03-7627) dated November 2003, and Notice of Deficiency and Revision 1 (LA-UR-05-4379 and LA-UR-05-4381) dated June 2005 (LANL 2005), are incorporated herein by reference.

2. The remedy to be implemented by the Permittees for Solid Waste Management Unit 16-021(c) shall be defined as the following: soil removal at the outfall source area and transport of the excavated soil for off-site treatment and disposal; pressure injection of a clay-based grout into boreholes that intersect the surge bed at the settling pond location; and installation of permeable reactive barriers (PRB) to treat groundwater in the alluvial system coupled with stormwater filters for impacted springs. The Permittees shall install an initial PRB to determine its effectiveness before installing the remaining PRBs.

3. A Corrective Measures Implementation (CMI) Plan that incorporates the final remedies described in Section S.2 of this section shall be submitted by the Permittees for Solid Waste Management Unit 16-021(c) for the Administrative Authority's approval no later than May 13, 2007. The CMI Plan shall provide details on the design, construction, operation, maintenance, and performance monitoring for the selected remedy and a schedule for implementation. The CMI Plan shall, at a minimum, include:

a. A description of the selected remedies;
b. A description of remedy objectives;
c. An identification and description of the qualifications of key persons, consultants, and contractors that will be implementing the remedies;
d. Detailed engineering design drawings and systems specifications for all elements of the remedies;
e. A construction work plan;
f. An operation and maintenance plan;
g. The results of any pilot tests, such as grout injection pilot test;
h. A schedule for implementation of remedies; and
i. A schedule for submission to the Administrative Authority of periodic progress reports.
j. A description of contingency procedures that must be implemented by the Permittees if the remedy set forth in Section S.2 above fails to be protective of human health and the environment.

4. A Remedy Completion Report for Solid Waste Management Unit 16-021(c) shall be submitted by the Permittees to the Administrative Authority for approval within 90 days after implementation of the remedies is complete. The CMI Report shall, at a minimum, include:

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

c. As-built drawings and specifications signed and stamped by a registered professional engineer;
d. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report; and
e. A certification, signed by a responsible Permittee official stating: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations".

5. The Permittees shall submit to the Administrative Authority progress reports during implementation of the remedies in accordance with a schedule approved in the CMI Plan for Solid Waste Management Unit 16-021(c). Each of the progress reports shall, at a minimum, include the following information.

a. A description of the work completed during the reporting period;
b. A summary of all problems, potential problems, or delays encountered during the reporting period;
c. A description of all actions taken to eliminate or mitigate problems, potential problems, or delays;
d. A discussion of the work projected for the next reporting period, including all sampling events; and
e. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period.

6. The Administrative Authority may require monitoring, maintenance, and physical and institutional controls based on the performance of the selected remedy. A long-term monitoring and maintenance plan, which includes all necessary physical and institutional controls to be implemented in the future, shall be submitted by the Permittees to the Administrative Authority for approval within 180 days after the Administrative Authority's approval of the CMI Report.

NEW MEXICO ENVIRONMENT DEPARTMENT'S RESPONSE TO PUBLIC COMMENTS ON THE PROPOSED CLASS 3 PERMIT MODIFICATION FOR REMEDY SELECTION AT SWMU 16-021(c)

Introduction: The New Mexico Environment Department (NMED) hereby responds to comments it received on the Class 3 permit modification for proposed remedy selection for solid waste management unit (SWMU) 16-021(c). NMED made available for public comment the Fact Sheet and the draft permit on May 15, 2006. NMED carefully considered the comments it received from interested members of the public and has made changes to the remedy based on these comments.

Comments on the proposed Class 3 permit modification for remedy selection at SWMU 16-021(c) were received from the following parties:

	Commenter
1	Joni Arends, Executive Director Concerned Citizens for Nuclear Safety 107 Cienega Street Santa Fe, NM 87501 (505) 986-1973 jarends@nuclearactive.org
2	Scott Kovac Nuclear Watch New Mexico 551 W. Cordova #808 Santa Fe, NM 87505 (505) 989-7342 scott@nukewatch.org
3	Sheri Kotowski Embudo Valley Environmental Monitoring Group P. O. Box 291 Dixon, NM 87527 (505) 579-4076 serit@cybermesa.com
4	Office of the Laboratory Counsel Environmental Safety and Health Practice Group Los Alamos National Laboratory P.O. Box 1663, Mail Stop A187 Los Alamos, NM 87545
5	National Nuclear Security Administration Los Alamos Site Office 528 35th Street, Mail Stop A316 Los Alamos, NM 87544

Comment #1

"We note that SWMU Unit 16-021(c) scored a 73.3 on the erosion matrix scoring (EMS) assessment. Table 2 of the Federal Facilities Compliance Agreement (FFCA) between the U.S. Department of Energy and the U.S. Environmental Protection Agency regarding storm water discharges from Solid Waste Management Units (SWMUs) at LANL, signed February 3, 2005. Further, there are approximately 333 active sites located within TA-16. Sixty-Day Notice Of Intent to Sue LANL for Violations of the Clean Water Act, dated May 23, 2006. Of those sites, 280 have been evaluated using the EMS assessment; 29 scored over 40 indicating a high potential to adversely impact water quality. Id." (Commenters 1, 2, and 3)

Response #1

No response required.

Comment #2

"In order for the public to comment effectively, the draft Permit must include provisions for the Permittees to provide hard copies of the following documents to all those who comment on the draft permit: (1) Corrective Measures Implementation (CMI) Plan as required in Section S3 of the draft Permit, and (2) progress reports as required by Section S5 of the draft Permit." (Commenters 1, 2, and 3)

Response #2

By law (Resource Conservation and Recovery Act, C.F.R. 270.42(c)(3)), the Permittees are required to "place a copy of the permit modification request and supporting documents in a location accessible to the public in the vicinity of the permitted facility." Currently, the Permittees are complying with this requirement. NMED makes available all of the supporting documents in its library and on its website. In 2007, NMED will have the complete administrative record for LANL on a server that will be accessible by the public. In addition to those documents submitted to NMED by the Permittees and those documents sent to the Permittees by NMED, the administrative record includes supporting documents from other sources (for example, other sites or the EPA). In the interim, NMED will promptly post the Corrective Measures Implementation Plan, progress reports, and all other documents related to this remedy selection on its web page at www.nmenv.state.nm.us/hwb/lanlperm.html.

Comment #3

"We object to the use of the industrial land use exposure scenario for the SWMU 16-021(c) human health risk assessment, which was approved by the Department on October 15, 1998. There have been several events at LANL that necessitate a re-evaluation of use of an industrial land use exposure scenario. Since the May 2000 Cerro Grande fire, more contaminants have left LANL property through surface water pathways. Because LANL has not conducted adequate surface water sampling, we do not know the extent of contaminant movement toward the Río Grande. Storm Water FFCA. Therefore, because of the large amounts of contaminants that may

be moving towards the Río Grande, the Department must take a precautionary approach to the proposed remedy and require cleanup to a subsistence farmer exposure scenario. Further, considering the amount of taxpayer funding which paid for LANL to conduct an Interim Measures cleanup of this area in 2000 and 2001, we demand that the Department order the most protective cleanup possible, which we believe would be based on the subsistence farmer exposure scenario.

We support a subsistence farmer exposure scenario for all cleanups at LANL. The subsistence farmer exposure scenario assumes that adults, pregnant women, children and grandchildren will live on the land, drink the water and eat locally grown food now and in the future. The subsistence farmer scenario is described in *Setting Cleanup Standards to Protect Future Generations: The Scientific Basis of the Subsistence Farmer Scenario and Its Application to the Estimation of Radionuclide Soil Action Levels (RSALs) for Rocky Flats,* a report by the Institute for Energy and Environmental Research. The full report may be found at http://www.ieer.org/reports/rocky/fullrpt.pdf. We request that the Department review this report and in the response to comments explain why it has chosen to adopt or not adopt a subsistence farmer exposure scenario for the proposed remedy. We also request that the report be place in the administrative record for this matter." (Commenters 1, 2, and 3)

Response #3

Under the Consent Order, consideration must be given to what the future use of the site will likely be, location of the site (e.g., is it in an industrial area), technical feasibilities to remediation, and to some extent, cost. This is re-iterated by EPA in that EPA directives indicate that future land use assumptions allow the baseline risk assessment and the feasibility study to focus on developing practicable and cost-effective remedial alternatives, and that these alternatives should lead to site activities which are consistent with the reasonably anticipated future land use (U.S. EPA, OSWER Directive No. 9355.7-04). Given this, residential land use (including farming) is not always the most plausible or appropriate land use alternative.

The SWMU 16-021(c) outfall is located in a technical area at LANL that has been used exclusively for industrial purposes since it was acquired in 1943. The Permittees state that the land use will remain industrial and the land ownership is not slated for transfer from DOE control. Based on the location of the SWMU 16-021(c) outfall, continued industrial use at the site is reasonable and appropriate.

Historic contamination from the outfall affects the canyon below the mesa where the outfall is located (Cañon de Valle) and possibly Martin Spring Canyon. The larger question is whether an industrial scenario is appropriate for Cañon de Valle and Martin Spring Canyon. These two areas are located within the LANL complex. Soil structure is not highly developed and underlying soil is comprised of tuff-like materials. Depth to groundwater is considerable, so use of groundwater as a source for local irrigation water is not likely. Surface water is present in the canyon mainly from the springs; however, flow rates are not sufficient for irrigation to sustain crops. Further, Cañon de Valle is narrow and neither canyon is easily accessed. Given the above, and the fact that LANL is an active facility with no near-term intentions of closing, it is unlikely that the canyon bottom areas would be used for industrial or residential uses. The most

plausible land use scenario is recreational. However, an industrial land use scenario is more conservative than a recreational scenario and was evaluated and deemed an appropriate land use. It is agreed that an industrial risk-based cleanup is the most plausible and, therefore, appropriate scenario for the 260 Outfall and associated areas. In addition, remediation to industrial levels is consistent with EPA guidance.

NMED has reviewed the aforementioned document and has placed it in LANL's administrative record.

Comment #4

"The Fact Sheet states, 'any corrective action proposed in the [Corrective Measures Study (CMS)] Report for remediation of contaminants in the springs and alluvial water will consequently remediate explosive compounds.' Fact Sheet, p. 6. Please explain in the response to comments how this result will occur." (Commenters 1, 2, and 3)

Response #4

The results of the industrial-trail user risk assessment indicate that risk associated with RDX, DNX, MNX, and TNT is less than 10^{-5}, which complies with the requirements of the Consent Order. These contaminants are present in site soil and waters but are not present at levels that would necessitate clean up. However, other contaminants (barium and manganese) are present in site waters that will be subject to remediation because the concentrations are greater than the WQCC standards. The proposed remediation of these contaminants is filtering of water from the springs coupled with treating water with permeable reactive barriers (PRBs) in the canyon bottoms. The water filters will contain a medium to treat explosive compounds. The PRBs will be designed with one medium to treat barium and one to treat explosive compounds. This proposed remedy will prevent contaminant migration to deeper groundwater zones and is designed to proactively protect the regional drinking water.

Comment #5

"The Fact Sheet also states, 'the corrective actions taken to remediate all of these contaminants will be viewed as source control for the regional aquifer, an important aspect of any future remedy undertaken for the regional groundwater.' Fact Sheet, p. 6. We note that the regional groundwater is used for drinking water. Therefore, we strongly urge the Department to require cleanup for all media to the New Mexico Water Quality Control Commission standards, or if there are none, the Environmental Protection Agency health advisory levels for drinking water. Further, adopting a subsistence farmer exposure scenario will require a recalculation of the proposed media cleanup standards (MCS)." (Commenters 1, 2, and 3)

Response #5

In compliance with the Consent Order, the proposed cleanup levels for this remedy are either an existing standard (New Mexico Water Quality Control Commission [WQCC]) or were calculated based on the results of the risk assessment. The proposed cleanup levels for the soil in the outfall

source area were calculated and are based on an industrial cleanup scenario. Recontamination of sediment in this area is highly unlikely because the outfall will be removed during this corrective action. Also, see response #3.

The proposed cleanup levels for canyon springs, alluvial groundwater, and surface water are WQCC standards (see page 7 of the Fact Sheet). According to the Consent Order, the Permittees have the option to establish site-specific cleanup goals under certain circumstances (see Section VIII of the Consent Order). The cleanup goals that were established will achieve NMED's target risk level of 10^{-5} for human health or a hazard index of one. Any remedy necessitated by contamination detected in the regional groundwater will be addressed by the groundwater corrective measures study.

Comment #6

"We are question why the proposed MCSs for the outfall source area for TNT is 135 parts per million (ppm), whereas the site MCS is 36.9 ppm. Fact Sheet, pp. 6-7. If the remediation is to provide source control for the regional aquifer, then the Department must explain in the response to comments why there are different cleanup standards for TNT." (Commenters 1, 2, and 3)

Response #6

Site-specific screening action levels (SALs) were calculated for RDX and TNT and are 36.9 and 135 mg/kg, respectively. The Permittees propose to use the minimum of the two SALs (36.9 mg/kg) as the cleanup level because both constituents are attributed to both cancer and noncancer risks. The use of the lower cleanup level is more conservative and will be more protective.

Comment #7

"Please explain in the response to comments why the proposed MCS for barium 'is based on protecting surface water and groundwater from contamination at the point of withdrawal.' What is the point of withdrawal? What is the regulatory basis for the point of withdrawal? Please explain in the response to comments how the point of withdrawal provides source control for regional aquifer." (Commenters 1, 2, and 3)

Response #7

The proposed MCS for barium in sediment is a WQCC standard, with which compliance will be measured by how much barium is leached from the sediment. The results of the risk assessment for the alluvial sediment indicate that the risk is acceptable. However, the risk to groundwater from contaminants in sediment has not been assessed. The proposed MCS is intended to be protective of groundwater.

The Permittees proposed WQCC regulations as cleanup levels at this site. The applicable WQCC regulation states that "[t]he vadose zone shall be abated so that water contaminants in the vadose zone shall not be capable of contaminating ground water or surface water, in excess of the standards in Subsections B and C below, through leaching, percolation or as the water table

elevation fluctuates." It continues to say that [g]round-water pollution at any place of withdrawal for present or reasonable foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to conform to the following standards." (20.6.2.4103 NMAC) At this site, the point of withdrawal for surface and ground water will be any point that is or can be a drinking water well location. The point of withdrawal is not intended to provide source control for the regional aquifer. Rather, it is intended to act as a monitoring location to determine if further remediation is necessary.

(The following statement prefaced comments #8 through #16.)

"In order to protect groundwater supplies, the draft Permit must include the following specific conditions:"

Comment #8

"The Permittees must be required to investigate the source for the contaminants in Martin Spring. Fact Sheet, p. 4." (Commenters 1, 2, and 3)

Response #8

All other sources of contamination and the extent of these sources will be investigated as part of the Cañon de Valle Aggregate Area, S-Site Aggregate Area, and Upper Water Canyon Aggregate Area investigations. These work plans are due to be submitted to NMED on September 30, 2006, September 30, 2007, and August 31, 2010, respectively.

Comment #9

"The Permittees must be required to investigate the maximum concentration of barium found in surface water upstream of the Building TA-16-260 drainage. Fact Sheet, p. 5." (Commenters 1, 2, and 3)

Response#9

Surface water, sediment and alluvial groundwater upstream of the Building TA-16-260 drainage will be investigated as part of the Cañon de Valle/Water Canyon Investigation Work Plan. This investigation will include all SWMUs upstream from the Building TA-16-260 drainage. This work plan was submitted to NMED on September 29, 2006.

Comment #10

"The waste at MDA P has been removed, however, increasing concentrations of barium have been found below MDA P. The Permittees must be required to investigate the source of the increasing concentrations of barium. Fact Sheet, p. 5." (Commenters 1, 2, and 3)

Response #10

The increasing concentrations of barium in surface water below MDA P may indicate that MDA P was a source of barium to the alluvial system in Cañon de Valle. The closure activities at MDA P were completed in the Spring of 2002, during which waste and underlying contaminated tuff were removed. The corrective measures proposed by the Permittees for SWMU 16-021(c) are meant to capture and treat any residual contamination from MDA P. In addition, the lateral extent of these corrective measures includes the canyon alluvial system downgradient of MDA P because the source of contamination is not clearly distinguishable between SWMU 16-021(c) and MDA P. The easternmost PRB will be located downgradient of MDA P and will treat any spring water, surface water and alluvial groundwater potentially contaminated with barium that may have originated from MDA P.

Comment #11

"Component 2: Settling Pond and Surge Bed. The Fact Sheet states, 'The effectiveness [of the horizontal grout barriers] will be dependent on successfully determining the extent of the contaminated surge bed.' How will the Department and the Permittees determine the extent of the contaminated surge bed? Please explain in the response to comments why the Department chose the grouting alternative over excavation.

In order to protect the regional aquifer, we support excavation of the settling pond and surge bed. In fact, the justification for excavation for Component 1: Outfall Source Area is explained in the Fact Sheet as 'complete removal is considered the most protective of human health and the environment because it eliminates the possibility of future exposure and eliminates further environmental degradation. Complete removal of contaminated soil is also effective at achieving the MCSs established as part of the CMS.' Fact Sheet, p. 7. Further, excavation will provide better source control over the long-term and will be 'protective of human health because of potential contaminant migration to the regional aquifer.' Fact Sheet, p. 10." (Commenters 1, 2, and 3)

Response #11

NMED will require the Permittees to drill a minimum of three boreholes in the area of the known contaminated surge bed to determine its thickness and lateral extent. The locations will be based on results from previous borehole logs. Each borehole will be field screened for explosive compounds. The Permittees will use laboratory analytical data to confirm the absence or presence of contamination.

The reasons why NMED choose the grouting alternative over excavation are stated in pages 8 and 9 of the fact sheet. To summarize, NMED proposes to select *in-situ* grouting of the surge bed over excavation of the surge bed because grouting will achieve attainment of the cleanup standards with little impact to the surrounding ecosystem. As stated in the fact sheet, current vegetation will not need to be removed and the area surrounding the surge bed will be minimally impacted by the presence of heavy equipment. NMED believes the character and function of the local habitat should be changed as little as possible through the course of remediation. The potential ecological effects from excavation will be much greater. The use of explosives in the drainage channel would potentially alter the nature of the local habitat (many trees would be

destroyed) and would have negative effects on the threatened and endangered species that nest and forage in the surrounding area. Both alternatives would be effective at reducing or eliminating contaminant concentrations in the vadose zone and contaminants migrating into groundwater. Both remedies are considered effective contaminant source control. Both remedies will take approximately the same amount of time to implement, if the time needed for permitting for the excavation alternative is not accounted for. However, the adverse ecological impacts of excavating the surge bed make this alternative unfavorable.

Comment #12

"The Fact Sheet states the remedy for Component 3: Springs and Alluvial System 'would be effective in the long-term if the media in the PRBs are properly maintained.' The draft Permit requires that the long-term monitoring plan be submitted 180 days after the Department's approval of the CMI Report, which is submitted 180 days after completion of the implementation of the remedies. We believe that the long-term monitoring and maintenance plan must be part of the Corrective Measures Implementation (CMI) Plan, as required in S.3 of the draft permit. Waiting over a year to address the long-term monitoring and maintenance issues does not allow changes in the design and implementation to reflect possible reduction in the long-term monitoring and maintenance requirements. The Department should require the Permittees take a precautionary approach and provide the long-term monitoring and maintenance plan in the CMI Plan." (Commenters 1, 2, and 3)

Response #12

As stated in the fact sheet, the remedy for SWMU 16-021(c) consists of separate remedies for three components. The Corrective Measures Implementation Plan (Plan) will be submitted to NMED May 14, 2007. It is necessary to initiate the Plan, allow the selected remedy to operate, and determine if the cleanup objectives are being met before determining long-term monitoring and maintenance activities. The Permittees will perform monitoring of the PRBs, including quarterly sampling of the alluvial groundwater for the first three years. As stated in the fact sheet (page 12), the Permittees will evaluate the remedy to determine if contingency procedures must be implemented. If and when NMED determines the remedy is proving effective, it will require a long-term monitoring plan.

Comment #13

"There were many lessons learned in the planning, design and installation of the permeable reactive barrier (PRB) in Mortandad Canyon. We are very concerned that without diligent enforcement by the Department and oversight by the Department of Energy that the mistakes with the Mortandad Canyon PRB will be repeated. Based on the failure of the PRB installed in Mortandad Canyon, we do not believe that the Department can state that the PRB 'remedy would be protective of human health and would prevent further environmental degradation because it would decrease the contaminant concentrations potentially migrating toward deeper groundwater.' Fact Sheet, p. 10.

Therefore, if the Department approves the installation of four permeable reactive barriers (PRBs) 'to treat surface water, alluvial sediment (through natural flushing), and alluvial groundwater,' then we strongly urge the Department to require the Permittees under the Corrective Measures Implementation (CMI) Plan to design and install **one** PRB closest to the discharge point as a pilot study. Fact Sheet, p. 10. As the Department and the Permittees are concerned with the ecological harm the proposed remedy may cause, we strongly urge the Department to require a pilot study for one PRB. By taking a precautionary approach, if the pilot study for one PRB does not work, less ecological harm will be done than by installing four PRBs.

Further, there is a need to discover whether the calcium sulfate barrier will work for the barium contamination. The pilot study would provide that opportunity. If it does not work, then again, there will be less ecological harm done in the canyon." (Commenters 1, 2, and 3)

Response #13

Given the uncertainties of the granular activated carbon as a medium for treating explosives compounds in a PRB and the calcium sulfate as a medium for barium, NMED agrees that a pilot study of the PRB system is warranted. NMED will require the Permittees to install an initial PRB to determine its effectiveness before installing the remaining PRBs.

NMED made its decision to choose the PRB alternative as a corrective measure based on its use at many other sites around the country where PRBs are being used effectively. NMED views the success of these other PRBs as a reasonable and appropriate justification for choosing this alternative. Information from the design, installation, and ultimate structural failure of the Mortandad Canyon PRB will be used to avoid similar failures at SWMU 16-021(c). As stated in the fact sheet (page 11), unlike the Mortandad Canyon PRB, these PRBs will be designed to extend the width and depth of the alluvium and will be located upstream of identified areas of infiltration. The Mortandad Canyon PRB was designed with two media cells (out of four) that did not extend the total depth of the excavated area, leaving room for uncompacted fill material to be placed on top. The Mortandad Canyon PRB used a funnel and gate system to direct groundwater to the media. NMED did not approve the Mortandad Canyon PRB design or oversee the monitoring of the PRB. The final PRB design for this remedy will be approved by NMED as part of the Corrective Measures Implementation Plan.

Comment #14

"We object to the statement 'blasting [for implementing an excavation remedy] could have negative effects on threatened and endangered species that nest and forage in the surrounding areas, specifically the spotted owl that nest in Cañon de Valle.' Fact Sheet p. 9. First, LANL conducts many open detonation activities, i.e., blasting, in that area at least on a weekly basis. Second, LANL has adjusted its schedule for threatened and endangered species in the past and we support that policy. However, if the Department chose the more protective excavation remedy for the cleanup of the springs and alluvial system, restrictions could be placed on when the remediation work would be done in order mitigate the impacts to threatened and endangered species." (Commenters 1, 2, and 3)

Response #14

NMED disagrees that blasting in the area behind the TA-16-260 building will not have a negative impact on the surrounding habitat. NMED considers blasting as the most destructive proposed method that can achieve the cleanup levels. *In-situ* grouting will achieve similar results but without the destruction of habitat. More importantly, *in-situ* grouting is only one element of a three part remedy designed to protect the regional drinking water. Contingencies to address failure for each element of the remedy will be addressed in the CMI Plan.

Comment #15

"The 'contingency procedures that must be implemented by the Permittees if the remedy set forth in Section S.2 above fails to be protective of human health and the environment,' as set forth in Section S.3.j. The draft permit does not include a timetable for implementation for the contingency procedures. However, the Fact Sheet states 'if the contaminant concentrations do not appear to be attaining the MCS after the third year, the Permittees will be required to identify contingency procedures for the alluvial system.' Fact Sheet, p. 12. Therefore, the three-year time limit must be included in the draft Permit." (Commenters 1, 2, and 3)

Response #15

An operation and maintenance plan will be required as part of the corrective measures implementation. As part of the operation and maintenance plan, the Permittees are required to include a schedule that details the frequency of each operation and maintenance task, which includes sampling of the monitoring wells. The plan will also include contingency procedures that will be implemented if the corrective measure is not achieving the cleanup goals in the three-year timeframe. The plan, including the required timeframe, will be approved by NMED and will become an enforceable part of the Consent Order.

Comment #16

"Any wells drilled for monitoring the effectiveness of the remedy must be drilled with the air rotary drilling method." (Commenters 1, 2, and 3)

Response #16

The proposed monitoring of the effectiveness of the PRBs will be performed with shallow monitoring wells. The drilling for the shallow monitoring wells will be done using the hollow-stem auger method. This method is best suited for drilling shallow overburden wells. During drilling with this method, the Permittees will not use any fluids or air to advance the boreholes or to remove cuttings. The air rotary method is not appropriate because the injection of air has the potential to alter the natural properties of the subsurface contaminants and groundwater geochemistry. The air rotary method may also interfere with obtaining groundwater samples that are representative of in-situ conditions.

Comment #17

"Support for Proposed Remedy: Los Alamos National Laboratory (LANL) supports the remedies proposed by the 'Intent to Public Notice Remedy Selection for the SWMU 16-021(c)' and believes that these remedies will be protective of human health and the environment. The additional remedies proposed by NMED (e.g. removal of the TA-16-260 trough and further ecological characterization and potential soil removal) represent a reasonable addition to the recommended remedies." (Commenters 4 and 5)

Response #17

No response required.

Comment #18

"The Consent Order Applies: LANL has a significant concern with the Hazardous Waste Bureau's (HWB) proposed permit action for the remedy selection. LANL followed the specific requirements in the Compliance Order on Consent (Consent Order) Section VII.D.7 for remedy selection. HWB proposes instead to incorporate six specific corrective action requirements for SWMU 16-021(c) into Module VIII of the Los Alamos National Laboratory Hazardous Waste Facility Permit No. NM0890010515 (Permit). LANL is committed to expeditious and timely corrective action and has demonstrated this commitment through compliance with the extensively negotiated Consent Order. The HWB's Fact Sheet, however, requires LANL to comply with both the Permit and the Consent Order, which is contrary to our agreement and the specific language of the Consent Order. LANL objects to NMED's failure to follow Consent Order requirements for remedy selection in this case. Section III.W.1 of the Consent Order states that NMED has determined that *'all corrective action ...shall be conducted solely under this Consent Order and not under the current or any future Hazardous Waste Facility Permit...'* (emphasis added), and any exceptions were specifically noted. Section III.W.4 states *'[t]he renewed Permit, and any future modifications, renewals, or reissuance of the Permit, will not include any corrective action requirements, nor any other requirement that is duplicative of the Consent Order.'* The Consent Order provides the legally required framework for completion of corrective action." (Commenters 4 and 5)

Response #18

NMED agrees that the corrective action requirements for the remedy at SWMU 16-021(c) will be included in the Facility's Module VIII of its Hazardous Waste Permit and will be conducted as part of the Consent Order. Currently, NMED has not modified the Facility's Hazardous Waste Permit to remove the corrective action requirements. As stated in Section III.W.3.a of the Consent Order, NMED supports the permit modification. NMED is in the process of modifying the permit so that all corrective action will be conducted under the Consent Order, except the four categories of corrective action to be conducted under the permit which are listed in Section III.W.1 of the Consent Order.

Comment #19

"Permit Modification Authority: HWB's Fact Sheet states that the proposed permit action is authorized under 20.1.4.900 NMAC, incorporating 40 CFR §270.42, which allows a facility to request a permit modification. Fact Sheet at 15. LANL did not request a permit modification for remedy selection, and the proposed modification is not subject to §270.42. This is a regulator-initiated permit modification and is subject to the limits of 40 CFR §270.41; NMED's proposed modification falls outside the narrow limits of the applicable regulatory section, and NMED lacks the authority to make the proposed modifications to LANL's permit." (Commenters 4 and 5)

Response #19

NMED disagrees with this comment. The Permittees submitted a corrective measures report to NMED in November 2003. In the report, the Permittees evaluated several remedy alternatives and proposed a preferred remedy. NMED evaluated all of the information and determined that there was adequate information to support NMED's remedy selection decision-making process, as is required in Section N of Module VIII of the Permittees' Hazardous Waste Permit. The selected remedy consists of implementing several types of technologies at the Facility, one of which has not been performed at the Facility before. NMED considers the selection of and direction to implement a remedy a "substantial" alteration to the Facility and thus considers remedy selection a Class 3 permit modification, in accordance with 40 C.F.R. §270.42(d)(2)(iii). Further, NMED considers the submittal of a corrective measures report as a request for a permit modification.

Comment #20

"Remedy Selection Process: In drafting the Consent Order, the parties negotiated all aspects of corrective action, including an extensive remedy selection process that contains detailed requirements, processes, and time-lines to select and approve the final remedy for numerous sites. These processes include the submittal of the Corrective Measure Implementation Plan (CMI) (Section VII.E), Remedy Completion Reports (Section VII.E.6), and progress reports (Section VII.E.5). Section VII.D.7 requires that, at the end of these processes, NMED must select a final remedy by issuing a Statement of Basis and following the public participation requirements of 40 CFR §270.41. The Consent Order does not require LANL [or NMED] to modify the permit to incorporate the requirements and documents associated with the remedy selection process. The proposed modification for SWMU 16-021(c), however, directly conflicts with and undermines the Consent Order, and will hamper timely and effective clean-up efforts." (Commenters 4 and 5)

Response #20

NMED agrees that the Consent Order does not require LANL or NMED to modify the permit to incorporate the requirements and documents associated with the remedy selection process. However, 40 C.F.R. §270.42(d)(2)(iii) does require a permit modification to incorporate the requirements that are part of remedy selection and implementation. See also response #19.

Comment #21

"Duplicative and Conflicting Requirements: The requirement that LANL comply with both the Consent Order and the Permit subjects LANL to conflicting and duplicative requirements. For example, under Sections VII.E.2 and VI.F.2 of the Consent Order, LANL must submit a CMI Plan within 90 days of final remedy selection, or at a later time specified by NMED. Section XII of the Consent Order requires submittal of the CMI Plan within 90 days of final remedy selection. The proposed permit modification, however, provides 180 days for submittal of the plan, in conflict with the Consent Order. The 'CMI Report' required by the permit modification duplicates the Consent Order requirement to submit a 'Remedy Completion Report,' contains substantially identical elements, and is submitted for the same purpose and at the same time (e.g., after remedy completion). The Consent Order addresses progress reports at Section VII.E.5 and contains provisions identical to NMED's proposed permit condition for progress reports at C.5. There are numerous provisions in the Consent Order that pertain to long-term monitoring. The only provision of the Consent Order that allows long-term monitoring to be incorporated into the permit is not applicable here, so the proposed permit conditions for periodic monitoring should not be part of the permit. Section III.W.1 provides that the Consent Order is the sole enforceable mechanism for corrective action with four exceptions, including 'the implementation of the controls, including long-term monitoring, for any SWMU on the Permit's Corrective Action Complete With Controls list.' HWB has no legal authority to subject LANL (or any other facility) to duplicative potentially conflicting requirements for corrective action under the New Mexico Hazardous Waste Act and its regulations." (Commenters 4 and 5)

Response #21

NMED disagrees with several of these statements. According to Section VII.E.2 of the Consent Order, NMED has the discretion to assign a submittal date for the Corrective Measures Implementation Plan in the written approval of the Corrective Measures Report. NMED will provide that date in the written notice of approval and remedy selection.

The CMI Report referred to in the proposed permit modification is equivalent to the Remedy Completion Report. According to Section VII.E.6.a, the Remedy Completion Report must be submitted to NMED within 90 days after completion of the remedy. The proposed permit modification will be changed from 180 days to 90 days to reflect this requirement.

Finally, NMED disagrees with the statement that NMED "has no legal authority" to subject LANL to "duplicative requirements." Overlapping authorities and dual requirements are not uncommon in federal and State environmental laws and regulations. In this case, until the permit modification referenced in response #18 is final, some dual requirements exist. However, the requirements of the permit and those of the Consent Order are not in conflict, or even potentially in conflict. Moreover, NMED is in the process of modifying the permit so that most corrective action will be conducted under the Consent Order, as explained in Response #18.