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Date: JAN 12 2011  
 Refer To: EP2010-0539

James Bearzi, Bureau Chief  
 Hazardous Waste Bureau  
 New Mexico Environment Department  
 2905 Rodeo Park Drive East, Building 1  
 Santa Fe, NM 87505-6303

**Subject: Request for Extension of Date for Submittal of Material Disposal Area A Investigation/Remediation Report**

Dear Mr. Bearzi:

This letter requests an extension from the May 31, 2012, date for submittal of the Material Disposal Area (MDA) A Investigation/Remediation Report to a new date of December 20, 2013. This new date is based on a comprehensive assessment conducted by Los Alamos National Laboratory (the Laboratory) that evaluated our strategy and schedule to determine an achievable end date for remediation of the waste disposal units and underground storage tanks at MDA A. The schedule assessment considered the current progress, the field conditions impacting production and worker safety, the waste characteristics encountered to date, lessons learned from the current work at MDA B, and the sequencing of work to ensure a technically successful and efficient completion.

Introduction

MDA A is a complex site with two waste management areas: a central disposal pit and two eastern disposal trenches and two underground storage tanks used to store plutonium and americium aqueous solutions. The complexity of the remediation of the central pit and the two eastern trenches at MDA A is similar to the scope of work at MDA B. Uncertainties are associated with the historical disposal of radioactive, hazardous, and toxic materials and the potential risks to the public and site workers. The Laboratory must comply with a complex set of requirements, including the Compliance Order on Consent (Consent Order); the Clean Air Act, including radioactive National Emissions Standards for Hazardous Air Pollutants (rad-NESHAPs); and U.S. Department of Energy (DOE) regulations and orders.

During the cleanup of MDA A, the Laboratory must ensure that any potential risk to the public and site workers from exposure to radioactive waste is minimized. Accordingly, engineers and safety professionals from the Laboratory will incorporate the stringent safety and environmental protocols developed at MDA B into the remediation plan for the pit and trenches at MDA A to ensure these requirements are met.



The closure of the plutonium tanks at MDA A poses additional challenges. As addressed in the Investigation/Remediation Work Plan (IRWP), approved by NMED on November 13, 2009, the engineering, safety, and security aspects for the waste heel removal from the tanks are complex because of their configuration and the radioactive contents of the tanks. For example, the high level of radioactivity of the waste heel makes the storage and transportation of analytical samples problematic. Modifications must be made to one of the Laboratory's own analytical laboratories before the samples are collected. It is also necessary to evaluate the tanks' structural integrity as well as nuclear safety, safeguards, and security analyses before removal activities are initiated.

### Site History Summary

MDA A is an inactive subsurface legacy disposal site situated in Technical Area 21 (TA-21) on the eastern end of Laboratory on Delta Prime (DP) Mesa. Portions of MDA A are currently managed as a nuclear facility. The entire 1.25 acre is fenced and radiological controls are in place. Two types of waste streams were disposed of in separate areas at the site. Combustible and noncombustible radioactive solid wastes were disposed of in the central pit and the two eastern trenches, and radioactive (including plutonium) liquid wastes were stored in two underground tanks.

*Central Pit and Two Eastern Trenches* – There is very little documentation that details the types of chemicals and quantities of radionuclides in the pit and trenches. Available historical records are limited and, as with MDA B, this contributes to the need for enhanced safety controls. Radionuclides and possibly hazardous chemicals were disposed of in the eastern trenches from 1945 to 1946, and the combined volume is estimated to be approximately 28,000 ft<sup>3</sup>. The central pit received contaminated waste debris from 1969 to 1978, and its volume is approximately 500,000 ft<sup>3</sup>. The trenches and the pit are covered with 6 ft of clean soil.

*Plutonium Tanks* – Aqueous plutonium residues were discharged into two 50,000 gal. underground storage tanks from 1945 to 1947. These two tanks are located on the west end of the site and are covered by 18 in. of soil, an 8-in. reinforced-concrete slab, and 3 to 5 ft of overburden soil. Each tank is 12 ft in diameter and 63 ft in length. Liquid wastes containing plutonium-239/240 and americium-241 were to be stored until improved chemical-recovery methods could be developed. From 1975 to 1981, much of the liquid fraction of the waste was pumped from the tanks through access holes cut in the concrete and the tops of the tanks. Work was halted when the pumps began to remove sludge, leaving a heel of liquid and sludge in the bottom of each tank. All pipes and access holes were covered in 1985 and backfilled.

*Regulatory Summary* – On September 1, 2008, the Laboratory submitted to the New Mexico Environment Department (NMED) a corrective measures evaluation (CME) of potential remedies at MDA A. In the CME, the Laboratory recommended removing the two plutonium tanks and their contents and closing the central pit and two eastern trenches in place with an engineered cover. The Laboratory also recommended long-term monitoring and maintenance of the site. Subsequently, the Laboratory agreed to NMED's request to implement a more conservative approach of waste removal at the central pit and eastern trenches. Based on this approach, the Laboratory sent a letter to NMED on April 16, 2009, requesting to withdraw the CME report and seeking permission to submit an IRWP for the complete removal of the inventory at MDA A. NMED agreed to this approach on May 4, 2009.

The Laboratory submitted the IRWP to NMED on June 15, 2009. The IRWP included a schedule for completing all activities associated with waste removal to industrial standards (consistent with the intended future land use) and disposal to support the submittal of the Investigation/Remediation Report in April 2014. On July 28, 2009, NMED issued a notice of disapproval that accepted the construction component of the plan but required additional justification for the proposed completion date. On September 30, 2009, the Laboratory submitted a revised IRWP to NMED, with a revised completion date of December 2013. The Laboratory based this new date on a number of factors, including nuclear operational safety and engineering requirements for the plutonium tanks. On November 13, 2009, NMED issued an approval with modifications for the IRWP, which directed the Laboratory to submit the Investigation/Remediation Report by May 31, 2012.

### Current Status of Remediation

The Laboratory has made significant progress on the investigation and prerediation activities at MDA A. Recently completed activities include the following:

- The design and construction of caissons that enabled safe access (July 2010) to the two plutonium tanks.
- A detailed sampling campaign of internal atmosphere from the top of the plutonium tanks.
- An initial laser survey and radiological assessment of the interior of the plutonium tanks to evaluate the volume of the waste heel and provide the first characterization data of the radionuclide content and activity level of the waste.
- The segregation and downgrading, as appropriate, of the DOE radiological hazard status of MDA A to ensure appropriate safety measures are maintained while facilitating future field and removal activities.

Additionally, the Laboratory is currently conducting conceptual engineering for the remedial approaches for both the pit and trenches and the plutonium tanks. The preliminary air-emission modeling to comply with the U.S. Environmental Protection Agency (EPA) rad-NESHAPs requirements is also underway.

### Impacts to MDA A Schedule

As noted above, the Laboratory's assessment for the completion of remediation activities at MDA A took into account numerous factors, including the current progress, the field conditions, the waste characteristics, the lessons learned from current work at MDA B, and the sequencing of work. Based on these factors, the requested revised schedule (1) incorporates lessons learned from MDA B, (2) includes additional engineering and safety work associated with the remediation of the plutonium tanks, and (3) builds in schedule efficiencies following the completion of work at MDA B.

*Incorporation of MDA B Lessons Learned* – MDA A is similar to MDA B in terms of the challenges associated with the historical disposal of radioactive and hazardous wastes and field conditions that could impact production and the health and safety of site workers and the public. The management teams for these two projects have been in continual communication, and lessons learned have been regularly integrated into MDA A's implementation strategy for the removal work at the central pit and two eastern trenches.

The following unanticipated issues at MDA B apply to the development of the revised schedule for MDA A:

- The potential higher levels of radionuclide and chemical contamination that may be encountered during excavation require stringent safety and environmental protocols.
- The lower excavation rate experienced at MDA B resulted in a significant extension to the MDA B fieldwork schedule.

The MDA A schedule was revised to include the additional radiological protocols currently employed at MDA B:

- Real-time monitoring of the dig face and the excavator buckets before the contents are placed in a waste bin will be required.
- Samples will be collected and analyzed in a field laboratory from buckets that reach an established operational radiological threshold before the waste is placed in a waste bin.

As our experience has shown from MDA B, these waste-processing steps take more time than was originally factored into the excavation schedule. The actual excavation rates at MDA B, after the implementation of the additional radiological protective measures, are approximately 44 yd<sup>3</sup> per shift, or nominally about one-third of the rate needed to meet the earlier directed May 2012 completion date for MDA A. These “as performed” production rates from MDA B, when applied to the MDA A, have caused the schedule to be substantially lengthened to allow the time required to excavate, sort, characterize, and package the wastes.

*Plutonium Tanks* – The newly acquired characterization data from the initial laser survey and radiological assessment of the interior of the plutonium tanks have led to a comprehensive review of the original schedule for remediation. Because this survey showed the radionuclide content of the waste heels has a significant activity level, the schedule described below reflects the time necessary to implement rigorous engineering, safety, and security protocols at every step in the closure process.

The activity and form of the unique MDA A tank waste has necessitated the Laboratory’s in-house radiological and analytical facility to implement a number of process and work control modifications before further analyses can occur. These modifications are scheduled to be completed in February 2011, and the waste heel samples will be collected in March 2011. Analyses are scheduled to be completed by June 2011. Other scheduled work on the tanks for 2011 includes engineering measurements and an evaluation of the tanks’ structural integrity as well as nuclear safety, safeguards, and security analyses.

Treatability studies must be performed on this unique waste before engineering alternatives are analyzed. Once the preferred alternative has been identified, the final engineering design will be developed. The final design will be used to draft the technical specifications to procure a specialty subcontractor to remove and treat the waste. This phase of the project is planned to conclude by October 2012, with the award of the subcontract.

Once the subcontract resources are in place, operating procedures are developed, and the final configuration of the nuclear safety basis documents is completed, the rad-NESHAPs

preconstruction application will be submitted to EPA Region 6. The report addressing the tank removal process will be submitted to NMED in December 2012 (i.e., not less than 90 days before the tank removal process is implemented). An operational readiness review will then be completed by April 2013, followed by the work to remove, treat, and package the waste heel material. After the waste heel material has been successfully removed, the nuclear safety status of the tanks will be reduced to a radiological level of control, allowing the removal and disposal of the tanks to be integrated into the final stages of the schedule to remove the pit and trenches.

The newly acquired characterization data have enabled a comprehensive evaluation of the Laboratory's work scope and schedule for the remediation of the plutonium tanks at MDA A. This evaluation has resulted in the need to extend the schedule for the plutonium tanks to ensure that adequate safety and technical work protocols are appropriately designed and implemented. The tank remediation work described above will take place concurrently with waste removal activities at the pit and trenches, so all the MDA A remediation work will align with the proposed December 2013 date.

*Schedule Efficiency and Follow-on to MDA B Completion* – An additional factor in the revised schedule for MDA A is the proposed reuse of equipment from the MDA B project. As stated in the Laboratory's November 30, 2010, MDA B extension request, the completion date for excavation activities at MDA B is June 28, 2011. The decontamination and evaluation of equipment and materials will begin shortly thereafter. The disassembly, transfer, and reassembly of reusable items and the procurement and assembly of new items are anticipated to be completed at MDA A by April 2012, with the construction of the infrastructure necessary to support the excavation work. Additional time will be needed for subcontractor mobilization, training, and readiness, so excavation is scheduled to start in June 2012. The revised schedule also includes the time needed to conduct the confirmation sampling, laboratory analysis, and potential hotspot removals to meet cleanup standards by a targeted completion date of September 2013.

#### Investigation/Remediation Report

As outlined above, the revised schedule for MDA A supports the completion of excavation by June 2013. Following the termination of excavation activities, confirmatory samples must be collected in accordance with the approved MDA A IRWP. Given the unanticipated field conditions that may be encountered during excavation activities, it may be necessary to perform more than one round of confirmatory sampling. Therefore, approximately 3 months has been included in the schedule to (1) collect all confirmatory samples, (2) send the samples to an off-site analytical laboratory, (3) receive the analytical results from the off-site laboratory, (4) evaluate the data to determine whether cleanup standards have been met or additional excavation is required, (5) excavate additional materials, and (6) resample and analyze such that the fieldwork for removing the waste should conclude by September 2013.

The engineering, safety, and security work needed to facilitate waste removal from the plutonium tanks, the removal of the waste heels from the tanks, and the subsequent removal and disposal of the tanks will take place concurrently with the excavation of the central pit and two eastern trenches at MDA A.

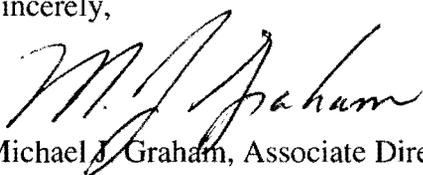
The final December 20, 2013, MDA A Investigation/Remediation Report (see the attached conceptual schedule) will address removal of both the pit and trenches waste as well as the disposition of the plutonium tanks.

### Extension Request

The Laboratory requests an extension to December 20, 2013, to submit the MDA A Investigation/Remediation Report. The Laboratory has reworked the schedule in the September 30, 2009 IRWP to incorporate the additional time required to (1) implement the stringent safety and environmental protocols currently in use at MDA B; (2) remove wastes using the lower excavation rate currently in use at MDA B, which includes the performance of multiple rounds of confirmatory sampling; and (3) utilize equipment from the MDA B project. This requested schedule change also includes the concurrent closure of the two plutonium tanks. The final Investigation/Remediation Report will detail all remedial work performed at MDA A.

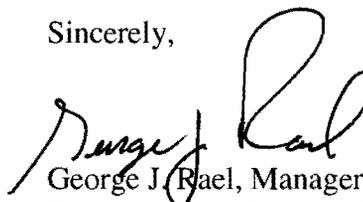
Thank you for your consideration of this matter. If you have any questions, please contact Paul Huber at (505) 412-7673 (huberpr@lanl.gov) or Ed Worth at (505) 606-0398 (eworth@doeal.gov).

Sincerely,



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Los Alamos National Laboratory

Sincerely,



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### MDA-A Conceptual Schedule

ID	Task Name	Start	Finish	2010				2011				2012				2013				2014	
				Q1	Q2	Q3	Q4	Q1	Q2												
1	General's Tanks Characterization – Field Investigation, Waste Sampling & Analysis	1/18/2010	6/30/2011	█																	
2	Pit/Trenches Safety Basis Development, Engineering, & Planning	1/18/2010	12/30/2011	█																	
3	General's Tanks Studies & Engineering, Safety Basis Development, & Subcontractor Procurement	11/1/2010	10/28/2011					█													
4	General's Tanks Work Controls, NESHAPS Notification, Tank Removal Process Report, Training, Mobilization, & Readiness	8/1/2011	4/12/2013									█									
5	Pit/Trenches Procurement, Develop Work Controls, Training, Mobilization, & Readiness	12/1/2011	6/1/2012									█									
6	Pit/Trenches Waste Removal Field Operations	6/4/2012	9/30/2013													█					
7	General's Tanks Removal	4/15/2013	10/15/2013													█					
8	Investigation/Remediation Report Preparation	6/3/2013	12/19/2013													█					
9	Submit Investigation/Remediation Report	12/20/2013	12/20/2013																	◆	
10	Site Restoration & Completion of Waste Shipment	1/6/2014	3/31/2014																	█	