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To: neelam.dhawan@state.nm.us  
From: Linda Nonno <lnonno@lanl.gov>  
Subject: Supplemental Information for SWMU 52-001(d)  
Cc: mcinroy@lanl.gov  
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Attached: C:\Documents and Settings\103484\Desktop\Supplemental Information for SWMU 52-001(d).doc;

Hi Neelam!

I had a little bit of extra time last week, so I started to try and wrap up some of the permit mod requests and NFA proposal loose ends that are still outstanding. For the March 1995 request for permit modification, LANL still owes NMED supplemental information for SWMU 52-001(d). We've assembled a fair amount of information and I've attached an electronic copy for your review. It contains a detailed background section to help refresh your memory about where we stand with this site. Let me know what you think.

I'll give you a follow-up phone call in a few weeks to check if you've had the time to look it over.

Thanks.

Linda

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## Supplemental Information for SWMU 52-001(d)

### Background

SWMU 52-001(d) was identified in the 1990 SWMU report (LANL 1990, 007514) as part of a group of four sites designated "UHTREX Waste Treatment." These sites are associated with the Ultra High Temperature Reactor Experiment (UHTREX), which was a helium-cooled nuclear research reactor constructed in the mid-1960s and operated from 1967 to 1968. The reactor and associated equipment were located in building 52-0001. The reactor was operated to conduct research and develop high-temperature, gas-cooled reactor technology and new nuclear fuels. After the reactor was shut down, the nuclear fuel was removed and the facility underwent decontamination and decommissioning (D&D) in 1989 so it could be used for other purposes. D&D activities included removing radioactively contaminated equipment from inside the building [including the equipment associated with SWMU 52-001(d)], decontaminating the inside of building 52-0001, and removing associated structures outside the main reactor building. Building 52-0001 currently houses offices and laboratories.

SWMUs 52-001(a, b, and c) consisted of equipment located outside the main UHTREX building (building 52-0001). SWMU 52-001(a) consisted of air filter banks located in a subsurface pit. The helium coolant from the UHTREX nuclear reactor circulated through these filters to remove fission-product particulates. The filters were removed and the pit decontaminated and backfilled in 1989. SWMU 52-001(b) was identified as the heat dump building (52-0015) and SWMU 52-001(c) as the heat dump pad (52-0016). These units contained fans and coils that were used to cool the helium secondary reactor coolant. These units were also removed in 1989. SWMU 52-001(d) was identified as the sump pump room, duct work, filters, and hot cells located within building 52-0001. Contaminated equipment was removed from building 52-0001 in 1989, and the interior of the building was decontaminated to allow other uses.

SWMUs 52-001(a–d) were proposed for no further action (NFA) in the 1992 RFI work plan for OU 1129 (LANL 1992, 007666). EPA reviewed the work plan and issued a notice of deficiency (NOD) (EPA 1993, 010023). EPA had no NOD comments on the NFA proposal for these sites and indicated that a Class III permit modification request should be submitted for these sites. These four sites were included in the Class III permit modification request submitted by LANL to NMED in March 1995 (LANL 1995, 045365). These sites were proposed for NFA under the current definition of NFA criterion 5 (the site was characterized or remediated in accordance with applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use).

NMED reviewed the permit modification request and issued a notice of determination (NMED 1996, 055815). In this notice, NMED determined that SWMUs 52-001(a, b, and c) were suitable for a Class III permit modification but that SWMU 52-001(d) was not. The NMED comment for SWMU 52-001(d) stated "Information based on sampling should be presented to indicate whether a release of hazardous constituents to the environment has occurred." LANL issued a response to the notice of determination (LANL 1997, 055510). LANL's response clarified that all equipment associated with SWMU 52-001(d) was completely contained within the building; thus, there was no potential for contaminants to have been released to the environment. No further comments on LANL's response were received from NMED. In February 2002, LANL withdrew some of the sites that had not been approved from the March 1995 Class III permit modification request (LANL 2002, 071447). SWMU 52-001(d) was not withdrawn from the request, but LANL indicated that supplemental information to support NFA of this site would be provided to NMED. The following is supplemental information related to the potential for releases to the environment from SWMU 52-001(d) to demonstrate this site is appropriate for NFA.

## Potential for Releases to the Environment

Historical documents associated with building 52-0001 were reviewed to identify hazardous materials present in the building and the potential for releases from SWMU 52-001(d). A general discussion of hazardous materials in the building is provided below, followed by more detailed discussion of the areas associated with SWMU 52-001(d) (i.e., sump pump room, ductwork, filters, and hot cells).

An evaluation of the hazards in building 52-0001 was presented in the 1988 D&D Project Plan for UHTREX (LANL 1988, 008728). The information in the D&D plan identified relatively few hazardous materials in the building. The most common hazardous material was lead bricks and shot, which had been used to provide radiation shielding. Other hazardous materials included asbestos insulation on piping and mercury in switches. All these materials were removed from the building during 1989 D&D activities.

According to engineering drawings of building 52-0001, two sumps are located in the building's sump pump room (room 303). One sump, constructed of reinforced concrete, is used to collect sanitary wastewater from toilets, sinks, and floor drains located in the nonradiological areas of the building. The second sump, constructed of reinforced concrete with a stainless-steel liner, collected the radioactive liquid waste generated throughout the building. Neither sump contains drains. Sanitary wastewater is pumped from the sanitary waste sump using a sewage ejector into a drainline, which formerly was connected to a septic system [SWMU 52-002(a)]. Currently, the drainline is connected to the Sanitary Waste Water System at TA-46. The second sump (no longer active) collected low-level radioactive wastewater from floor drains, floor sinks, and wall drains located within the radiological areas of the building. A submersible pump was used to pump wastewater from this sump to neutralization tanks and a pump station [AOC 52-003(a)] located outside the building. From there, the wastewater was pumped through a buried waste line [AOC 52-003(b)] to TA-50. The equipment in the sump pump room associated with the operation of the reactor was removed during D&D activities in 1989. The remaining equipment was radiologically decontaminated.

Ducts were used to control air flow through radiological areas within the building. Air from the reactor and fuel handling areas was sent through the filter banks [SWMU 52-001(a)] before being discharged through a 100-ft-tall stack (structure 52-007) located outside the building. Air from the secondary containment area surrounding the reactor was sent through high-efficiency particulate air (HEPA) filters before being discharged through the 100-ft-tall stack. Air from the hot-cell areas was sent through HEPA filters before it was discharged from the building. The stack and associated ducting were removed during D&D activities in 1989.

The hot-cell facilities consisted of room 211 (the cell operator area), room 212 (the transfer lock), and room 213 (the transfer cell). The hot cells contained remotely operated hoists and manipulators that were used to remove fuel and other materials from the reactor area. The hot cells were constructed of thick, reinforced concrete to provide radiation shielding. Some hot-cell areas were also lined with steel. During D&D activities in 1989, equipment was removed from the hot-cell rooms, and the rooms were radiologically decontaminated. Room 211 is now used as an office area, and rooms 212 and 213 are used as an experimental area and laboratory space.

## Conclusions

Based on the design and operation of the facilities and equipment associated with SWMU 52-001(d), historical releases of contaminants to the environment would not have occurred. These facilities and equipment were located within a building that housed a nuclear reactor and that was designed specifically to prevent uncontrolled releases (e.g., constructed of several-foot-thick concrete walls). Liquid wastes generated in the building were collected by the sanitary or liquid radioactive waste sumps before they were discharged from the building. These discharges went directly to other SWMUs [i.e., SWMUs 52-002(a), 52-003(a), and 52-003(b)]. Thus, any releases outside the building would be associated with these other SMWUs. Any airborne releases inside the building would have been captured by the ventilation system and treated by filtration before they were discharged to the atmosphere. The equipment inside building 52-0001 associated with SWMU 52-001(d) was decontaminated or removed during D&D activities in 1989.

Based on the considerations described above, SWMU 52-001(d) is appropriate for NFA under the current definition of NFA criterion 3 (no release to the environment of hazardous waste has occurred, nor is likely to occur in the future). Also, any releases from the liquid waste system outside the building would be associated with other SWMUs and investigated as those SWMUs. Therefore, sampling of SWMU 52-001(d) is not necessary to support the NFA determination.

## References

- EPA (U.S. Environmental Protection Agency), June 15, 1993. "Notice of Deficiency for RFI Work Plan Operable Unit 1129, Los Alamos National Laboratory (LANL), NM0890100515," U.S. Environmental Protection Agency letter to J.C. Vozella (DOE-LAAO Acting Chief) from W.K. Honker (EPA Region 6), Dallas, Texas. (EPA 1993, 010023)
- LANL (Los Alamos National Laboratory), September 12, 1988. "UHTREX Decommissioning Project, Project Plan," draft, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1988, 008728)
- LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. IV of IV (TA-51 through TA-74), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007514)
- LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1129," Los Alamos National Laboratory document LA-UR-92-800, Los Alamos, New Mexico. (LANL 1992, 007666)
- LANL (Los Alamos National Laboratory), March 1995. "Request for Permit Modification, Units Proposed for NFA," Los Alamos National Laboratory document LA-UR-95-767, Los Alamos, New Mexico. (LANL 1995, 045365)
- LANL (Los Alamos National Laboratory), March 1997. "Response to Notice of Determination for Requests for Permit Modification: Units Proposed for No Further Action, March and September 1995," Los Alamos National Laboratory document LA-UR-97-763, Los Alamos, New Mexico. (LANL 1997, 055510)

LANL (Los Alamos National Laboratory), February 11, 2002. "Withdrawal of Solid Waste Management Units (SWMUs) from the March 1995, September 1995, and September 1996 Requests for Permit Modification (LA-UR-95-767, LA-UR-95-3319, and LA-UR-96-3357, Respectively)," Los Alamos National Laboratory letter (ER2002-0110) to J. Young (NMED-HWB) from J.A. Canepa (ER Program Manager) and M. Johansen (DOE-LASO), Los Alamos, New Mexico. (LANL 2002, 071447)

NMED (New Mexico Environment Department), December 10, 1996. "Notice of Determination Requests for Permit Modification Units Proposed for No Further Action March and September 1995," New Mexico Environment Department memorandum to T. Taylor (DOE), and H. Jansen (EM/ER) from R.S. Dinwiddie (NMED-HRMB), Santa Fe, New Mexico. (NMED 1996, 055815)