The overburden storage area would be constructed about 900 ft (300 m) southeast of MDA H. The security fence would be constructed around the perimeter of the entire work area. All new support structures, including the staging area and the access road, would be located within the secure area. Controlled access gates would be located, as necessary, at the site perimeter.

Operations (Corrective Measure Options 4 and 5)

Implementation of corrective measure Options 4 or 5 could require the application of various administrative and engineering controls, periodic road control, and specialized equipment or other tools such as shaft and pit stabilization devices, blast shields, earthen berms, remote video surveillance, use of inert gases onsite, and radiation monitors. If an excavation and removal corrective measure option were selected, it would be necessary to first perform a DSA, as required by 10 CFR 830. The safety basis process under 10 CFR 830 requires that the scope of work be defined, the hazards associated with the scope of work be identified and analyzed, a DSA be prepared, and hazard controls be established to ensure protection of workers, the public, and the environment. The DSA provides for a systematic evaluation of natural and human-made hazards, and must evaluate normal, abnormal, and accident conditions. Hazard controls would be established through technical safety requirements, which include such things as design features, administrative controls, safety and operating limits, and limiting conditions.

Based on the DSA results, the use of one of two conceptual excavation and removal operational approaches, under corrective measure Option 4 or corrective measure Option 5, would be necessary:

- Conceptual Operational Approach A, removal of the waste inventory in the open air without the need for an inert atmosphere, or
- Conceptual Operational Approach B, removal of the waste inventory in an inert atmosphere.

For either corrective measure Options 4 or 5, the DSA would specify the dimensions of a required exclusion area surrounding the shafts to protect restoration workers and equipment. In addition to the exclusion area, the dangers of fire or an explosion during shaft excavation operations could be mitigated by the use of a computer-controlled, remotely operated, tracked hydraulic excavator for removal of potentially reactive materials, such as lithium hydride, HE, and pyrophoric uranium hydride waste material, present in certain, or possibly in all, of the MDA H waste disposal shafts. The computer-controlled tracked excavator could be coupled with a hydraulic manipulator. The manipulator arm, if used, would be mounted at the distal end of the excavator boom directly behind and to the side of the excavation bucket. This configuration would allow the excavator to remotely accomplish conventional excavation operations. The versatility and dexterity of the robotic manipulator would allow management of any sensitive waste objects once they were uncovered without placing personnel in direct contact with a potential hazard. The excavator would be controlled from a remote operator console located close to the trench for Conceptual Operational Approach A or outside the exclusion zone for Conceptual Operational Approach B. Both locations would be blast-shielded as necessary. The remote operator console, if needed, would receive and transmit data to and from the system via multiple radio frequency communication channels. Multiple on-board cameras would be used to facilitate remote operations, including excavation and robot manipulation.

The decision to proceed with waste removal in an inert atmosphere would be based on the results of the DSA; it is likely that this approach would be implemented initially. Inert conditions could be established just before shaft cap removal or at the onset of cap removal. In this scenario, operations would progress using remotely operated devices to push the shaft caps aside and to remove them from the area. At this point, a remote video camera would be used for the initial internal shaft observation and inspection. Remote sampling for vapors (using a "sniffer"[22]) and moisture monitoring would be conducted at the same time to determine the composition of gases and shaft environmental conditions. The results of the initial remote shaft inspection and remote sampling would be used to determine if conditions were safe for non-remotely operated work to proceed. Conceptual Operational Approach A (open air removal) would be implemented for as long as surveillance and sampling results indicated that this method would not pose an adverse risk to worker safety. The waste removal process could continue as determined appropriate with either remote waste handlers or non-remote waste handlers.

Waste handling operations could require possible relocation of utilities, including the water line supplying Areas G and L, and temporary closure of Mesita del Buey Road and Pajarito Road during the excavation and removal of HE and DU wastes. This closure may affect routine TA-54 operations and regular traffic flow on Pajarito Road and Mesita del Buey Road. Installation of sheet piling, shoring, and blast-proofing material would be required along approximately 200 ft (60 m) of Mesita del Buey Road to protect road users and the integrity of the road structure during excavation and removal operations. Piling could be extended up to 15 ft (4.5 m) above grade for security purposes and to act as potential blast shielding during excavation and removal operations.

Conceptual Operational Approach A (Open Air)

If Conceptual Operational Approach A were implemented, one main conveyor line could extend from the MDA H shafts to an area where personnel could safely inspect and manage the excavated wastes. A conveyor system for Conceptual Operational Approach A would likely be located in the open air, but would be tented for security purposes and moisture control (even if the items removed are considered non-pyrophoric, moisture on the conveyor belt would cause potential work-related mechanical problems that could result from freezing or wet waste items). A "top pick" removal (removal of shaft contents by crane through the top of the shaft) was considered for Conceptual Operational Approach A but was dismissed in favor of removing waste laterally in 5 ft- (1.5 m-) lifts; lifting HE waste from the top could potentially result in a 60 ft- (18 m-) drop of the HE with sparking and resulting fire due to the open air atmosphere in the shaft.

Conceptual Operational Approach A could be implemented by first excavating two trenches parallel to the shafts and on both sides to a depth of 3 to 5 ft (0.9 to 1.5 m) using standard scraper and bulldozer operations to allow access to the waste in the shafts. The trenches would be located close to the shafts but would not breach the shaft or shaft contents (estimated proximity to the side of the shaft would be 18 to 24 in. (45 to 60 cm). Proximity of the scraper to the shaft could be adjusted to account for sample results and shaft contents. After the trenches were dug, the shaft area could be tented. Tenting would act as a security enclosure and would provide moisture protection for the opened shafts; moisture, especially rain, could react adversely with

[22] "Sniffers" are devices that obtain air samples for identifying hazardous vapors.

some waste materials in the disposal shafts resulting in fires or other detrimental site effects. Tenting, if used, would remain in place for moisture control and security reasons with open sides for ventilation until the shaft wastes had been completely removed.

Conceptual Operational Approach A would allow for the excavation of all nine shafts simultaneously. The waste in the shafts would be uncovered by removing the surrounding tuff in 3- to 5-ft (0.9- to 1.5-m) increments. The exposed 3 to 5 ft (0.9 to 1.5 m) of waste would then be removed as it is uncovered; then the tuff surrounding the next 3 to 5 ft (0.9 to 1.5 m) of the shaft would be removed and the next layer of waste would be uncovered and removed. Removal of the shaft waste contents would continue by systematically removing the shaft contents down to the newly created grade level, then repeating the scraper operation in 3 to 5 ft (0.9 to 1.5 m) increments in proximity to the shafts all the way to the bottom of the shafts. The tuff adjacent to the shafts would be excavated to a final depth of about 62 ft (18.6 m) below ground surface. The complete footprint of the excavation would measure about 260 ft (78 m) by 120 ft (36 m) by 62 ft (18.6 m) at the bottom of the shafts, as indicated in Figures 9 and 10.

This approach's excavation method would be the construction method of benching 5 ft (1.5 m) horizontally for every 15 to 20 ft (4.5 to 6 m) of depth. This method of excavation has been performed at other LANL excavations into mesa tops such as trenching in Area G and would allow for entrapment of surface slough and rocks, while minimizing the surface disturbance. Utilization of this method of excavation would minimize the surface disturbance. It is expected that the surface disturbance would be restricted to about 15 ft (4.5 m) on either side of the shafts; the total surface disturbance is expected to be about 290 ft (87 m) by 150 ft (45 m) as indicated in Figures 9 and 10. This method of excavation would be subject to approval from the LANL Project Engineer and would depend on the condition of the tuff at the MDA H site.

The wastes removed from the shafts would be conveyed by standard construction conveyer equipment to the sorting and declassification area and checked first for hazard (radiation level, fire, and explosion potential) then sorted for security purposes. The material requiring declassification (shapes and forms) could be shredded or crushed, as appropriate, to declassify these items as well as to reduce the waste volume.

Conceptual Operational Approach B (Inert Atmosphere)

Conceptual Operational Approach B would require the use of an inert atmosphere during waste removal from the individual disposal shafts to minimize the potential for spontaneous ignition of uranium hydride during excavation. An effectively inert atmosphere could be provided by flooding a shaft with liquid nitrogen. Liquid nitrogen would displace oxygen in the shaft so that excavation activities could be performed in an atmosphere that would inhibit spontaneous reactions of uranium hydride. A tented enclosure that would contain robotic lifting equipment would be installed over the top of the shaft. As excavation proceeded, pumping of the liquid nitrogen would be constant, but at a low level, to create a slight positive pressure within the tented enclosure. This method of operation would not necessarily maintain an oxygen-free atmosphere, but would provide an atmosphere with a low enough level of oxygen to manage the possibility of unwanted reactions with oxygen. Conceptual Operational Approach B would first be implemented with a "lower risk" shaft as identified by site disposal records to "prove out" the operation. Work would then proceed to "higher risk" shafts.

Based on the safety envelope and criteria set forth in the DSA, a remotely operated system could be designed to remove the waste through the tops of the shafts. Unlike Conceptual Operational Approach A, potential sparking and fire due to reaction of the HE with oxygen in the atmosphere would not be a concern in the inert atmosphere provided by Conceptual Operational Approach B. Shaft contents would be removed from one shaft at a time to allow for a tented enclosure over the top of the shaft being excavated. The tented enclosure would be applied over only the MDA H shaft area and the remote-handling, hydraulic telescopic arm used to remove small items (under 660 to 1,100 pounds [lb] [300 to 500 kilograms (kg)]). Protruding from the top of the tented enclosure could be a cable attached to a small crane to lift heavier items. The lift cable and crane would likely be positioned outside the tented enclosure. The crane boom would be directly over the tented enclosure to allow for removal of heavier items. There would be no internal combustion equipment operating within the tented enclosure.

Excavation would be performed by non-sparking remote handling robotics with a tool set that could include “grabbers,” “sniffers,” remote video, and various other sampling devices. Remotely operated telescopic arms with grabbers are rated to lift 1,000 lb (450 kg) vertically. Crane lifting would be used for greater than 1,000-lb (450-kg) lifts of individual shaft waste items. “Sniffers” would also be used onsite.

Excavated materials containing uranium hydride would be maintained under stable conditions until they could be allowed to react under controlled conditions. These items would be packaged within the inert atmosphere inspection station, as described previously, into sealed containers that would be transferred to an appropriate disposal location. Excavated items that would not be likely to pose a safety hazard could be transferred out of the inert atmosphere and into the sorting and declassification facility for disposition. For Conceptual Operational Approach B, an item would not be exposed to open air until the item had been identified and its attributes (such as radioactivity and material type) were known. Prior to direct human interface, the tools on the conveyor would be used to measure the density of the object, perform a remote video scan for identification, measure radiation levels (if any), and identify any other attributes needed for positive object identification.

Even Conceptual Operational Approach A would have the capability to move excavated material to the inert atmosphere inspection station if the material could not be positively identified at shaft side. If it became necessary to manipulate an item (for example, flip it over to verify its identity), that procedure would be performed within an inert atmosphere until any potential hazard had been identified and mitigated. It is expected that the bulk of this material would be non-hazardous and would be packaged for waste recycling (LANL 2003).

When the excavation was completed under either Conceptual Operational Approach A or Conceptual Operational Approach B conditions, soil samples would be taken and a “sniffer” would be lowered down to the bottom of the shaft to identify the presence of any residual gases, such as tritium. It is possible that a few more feet of the shaft soils and rock would be removed based on the results of testing at the bottom of the shaft. This material would be removed, classified by waste type, packaged, and disposed of according to waste classification and according to the corrective measure chosen.

Waste Management Common to Corrective Measure Options 4 and 5

Approximately 50,000 cubic yards (yd^3) (38,000 cubic meters [m^3]) of material (soil and tuff overburden) would be removed from the MDA H excavation site and transported by truck over the new access road to the overburden storage area, located within approximately 900 ft (300 m) of the excavation site (see Figure 9). The overburden material would be placed on a thick plastic liner laid over the ground's surface at the storage area to prevent any possible cross contamination with the site soil and periodically sprayed with liquid stabilizers ("tackifiers[23]") to suppress dust emission. While being stored at this location, the overburden material would be sampled and analyzed to determine whether the overburden material was contaminated. Contaminated material would be segregated and managed as appropriate.

The wastes would be sorted for classification, decontamination, recycling, and packaging for ultimate disposal at an onsite (corrective measure Option 4) or permitted offsite (corrective measure Option 5) location according to the corrective measure chosen for implementation. Potential risks to workers would be minimized by the use of appropriate PPE in areas of material sorting, declassification, characterization, and packaging. Level B respiratory protection (air supplied by either air tanks strapped to each worker or by an air line supply to workers) could be required during certain waste handling operations. Engineering controls may be substituted for the need to use of Level B respiratory protection. Any classified waste removed from MDA H could undergo a declassification review and potential object reshaping by milling, crushing, shredding, or other methods before it could be recycled or disposed. After completion of shaft excavations, the recyclable overburden material would be hauled back to MDA H and used as backfill. It is estimated these activities would result in the transport of approximately 5,000 10-yd^3 (7.6-m^3) truckloads of material back and forth over the newly constructed access road. It is projected that the majority of the overburden material would be returned to the excavation site. However, any of the overburden characterized as LLW, hazardous waste, or mixed waste (an estimated total of about 5,000 yd^3 [3,800 m^3] for these waste types) would be subject to appropriate disposal requirements. The selection of treatment or disposal locations under both corrective measure Options 4 and 5 would depend on the waste characterization results and radioactive content of the waste. Wherever practical, waste minimization techniques (such as decontamination and recycling of metal) would be applied to the removed wastes. Recycling within the DOE complex, including LANL, would be performed to the extent feasible. The estimated amount of metal from the MDA H shafts that could be recycled or disposed of in the DOE complex, including LANL, is approximately 129,000 lbs (58,050 kg).

There are about 5,000 lb (2,250 kg) of HE in the MDA H inventory. Under both corrective measure Options 4 and 5, the HE would be removed from the shafts, segregated, and packaged in billets. A 50-lb (22.5-kg) billet of HE measures about 1 ft × 1 ft × 1.5 ft (0.3 m × 0.3 m × 0.45 m). There would be about 100 (about 5.5 yd^3 [4.2 m^3]) of these billets transported to TA-16 at LANL for deactivation through flashing (burning) (TA-16 contains existing operations including burn pads used for burning residual HE materials.) After flashing, any residual ash would be sampled, analyzed to ensure that no detonable HE remains, packaged, and sent to Area G for storage and final disposition. Depending on the nature of the HE waste, there may be no ash

[23] Tackifiers are chemical dust suppressants often added to water that act to disperse the chemicals, then evaporate after application. The chemicals that are left behind bind the soil particles together into larger particles that are less easily blown in the air.

remaining after flashing. The HE waste would be transported to TA-16 at night in a vehicle used specifically for this purpose. If a decision were made to excavate HE at MDA H, then a study would be prepared on the waste quantity of HE to transport, hours of transport, safeguards and security, and other relevant considerations.

The time to design, implement, and complete corrective measure Options 4 or 5 is estimated to be approximately 48 months. Both corrective measure options would require about six months design and 40 months implementation time. Corrective measure Option 4, complete excavation with maximal offsite disposal of wastes, would cost about $51,906,000. Corrective measure Option 5, complete excavation with maximal onsite disposal, would cost about $48,602,000. These costs would be refined when a preliminary design package is completed. The design package would be based on the results of the DSA for MDA H. Although corrective measure Options 4 and 5 would be complex and expensive to implement, excavation of the materials disposed of in the MDA H shafts would result in removal of the source of contamination, thus eliminating any future potential exposure and transport of contaminants. Complete removal of all wastes from the MDA H shafts and the residual material in the surrounding tuff would impose no requirements for long-term maintenance or monitoring because, upon completion of excavation and removal activities, no wastes would remain at MDA H. The following subsections contain special features of each of the excavation and disposal corrective measure options.

At the conclusion of implementing an excavation and removal corrective measure option, the surface of the MDA H site would be restored to its original condition, as much as practicable. The existing topsoil (separate from the overburden) at the site would have been removed and stored separately for reuse on the site after backfilling was complete. The stored overburden material would be used to backfill the excavation area. The overburden material would be brought in and compacted as the hole was filled up. Additional clean soil would need to be brought onsite to backfill the excavated area. The stored topsoil would then be placed over the compacted overburden. When the excavated area had been backfilled and compacted, the site would be regraded and revegetated with native grasses and herbaceous plants. An appropriate native seed mix would be used for revegetation. The area would be watered as necessary to establish the vegetation.

2.4.2.1 Corrective Measure Option 4: Complete Excavation with Maximal Offsite Disposal

Corrective measure Option 4 of the Proposed Action would be to implement complete excavation of all wastes from MDA H followed by offsite disposal of the inventory of MDA H at DOE or commercially available disposal sites to the maximum extent practicable. Waste shipped offsite would be packaged to meet U.S. Department of Transportation (DOT) shipping requirements and TSD-specific waste acceptance criteria and permit conditions before shipment and disposal could occur. Most nonradioactive, hazardous wastes could be disposed of at a number of permitted commercial hazardous waste disposal facilities. However, a portion of the hazardous waste at MDA H has the potential to be radioactively contaminated mixed waste and could, therefore, be disposed of only at facilities licensed to manage mixed radioactive and hazardous waste up to an authorized limit. Several TSD facilities may be appropriate for one or more categories of waste that can be anticipated in the MDA H inventory. Whenever possible, the closest site permitted to accept a given waste type would be chosen. Some waste types could be shipped offsite from LANL to appropriately licensed commercial facilities for disposal. An above ground engineered disposal cell facility near Clive, Utah, about 826 mi (1,330 km) from LANL, is permitted to receive and treat a variety of wastes, including LLW. The Utah facility can be accessed by State and Federal highways or rail. All shipments would be made via commercial truck carriers from LANL.

All waste requiring offsite disposal would be transported via Pajarito Road. It is estimated that a total volume of about 1,500 yd^3 (1,140 m^3) of excavated material and an additional 5,000 yd^3 (3,800 m^3) of overburden material would require transportation on public roads to offsite recycle facilities or offsite disposal sites. A total of 187,000 lbs (84,150 kg) of LLW DU and an additional 94,000 lbs (42,300 kg) of LLW of other radionuclides could be shipped offsite from LANL for disposal at the Nevada Test Site (NTS) or an appropriately licensed commercial facility such as the above ground engineered disposal cell facility near Clive, Utah. A portion of the lithium compounds, plastics, and graphite (an estimated total of 74,000 lbs [33,300 kg]) could be hazardous waste and may require disposal offsite in a hazardous waste permitted disposal unit.

2.4.2.2 Corrective Measure Option 5: Complete Excavation with Maximal Onsite Disposal

Corrective measure Option 5 of the Proposed Action would be the complete excavation of waste at MDA H followed by the disposal of LLW at Area G within LANL's TA-54 to the maximum extent practicable and the disposal of hazardous waste at an offsite DOE or permitted commercial RCRA-regulated landfill. The excavation of waste would be the same as that described for corrective measure Option 4. Disposal, however, would be split between LLW disposal at Area G and offsite disposal of RCRA-regulated wastes. A total of 187,000 lbs (84,150 kg) of LLW DU, an additional 94,000 lbs (42,300 kg) of LLW of other radionuclides, and about 5,000 yd^3 (3,800 m^3) of overburden waste could be disposed of at Area G.

Corrective measure Option 5 would also include treatment of hazardous and mixed wastes onsite at LANL. It is expected that the hazardous wastes present in the MDA H shafts would be only characteristic hazardous waste or hazardous waste based on the RCRA characteristics of ignitability, corrosivity, reactivity, and toxicity. Additionally, it is expected that this hazardous waste could be defined as "debris"[24] under RCRA. As such, mixed wastes meeting the definition of debris could be treated onsite under this approach to remove the RCRA hazardous characteristic. After treatment, it is expected that these wastes would meet RCRA land disposal restriction treatment standards and would no longer be subject to management and disposal as hazardous waste under RCRA. Therefore, disposal at a RCRA-regulated disposal unit may not be required. After treatment, the formerly mixed wastes could then be managed as LLW and disposed of at Area G. For example, HE-contaminated DU wastes would be sent to TA-16 to be "flashed," and then sent to Area G for disposal. Nonhazardous DU wastes would go directly to Area G. Residuals could be disposed of as LLW or as nonhazardous solid waste, as appropriate. Hazardous wastes could be treated to meet RCRA land disposal restrictions by removing the hazardous characteristics and subsequently disposed of as LLW at Area G. It is not expected that any radioactive waste would be sent offsite for treatment before disposal.

[24] Debris is defined as solid material exceeding a 2.4 in. (60 millimeters [mm]) particle size that is intended for disposal and that is a manufactured object; or plant or animal matter; or natural geologic material (40 CFR 268).

Some reactive wastes, such as lithium hydride and HE (discussed previously), could be deactivated so that there would be no regulated hazardous residuals requiring disposal. There are about 4,340 lb (1,953 kg) of lithium hydride in the MDA H waste inventory. Lithium hydride could be reacted in controlled conditions with water to form hydrogen gas and dilute lithium hydroxide, which could be discharged to the LANL sanitary wastewater treatment system. Although this lithium hydride treatment capability does not currently exist at LANL, a portable unit could be brought onsite as part of the corrective measure implementation. A portion of the lithium compounds, plastics, and graphite (an estimated total of 74,000 lbs [33,300 kg]) could be hazardous waste and may require disposal offsite in a hazardous waste permitted disposal unit, unless treatment at LANL is successful in removing the hazardous waste characteristics.

2.5 Alternatives Considered but Dismissed

Other options were considered in the CMS Plan (LANL 2001b) and the CMS Report (LANL 2003) but were eliminated based on site conditions, waste characteristics, or technical feasibility. UC staff at LANL evaluated 26 candidate corrective measure technologies potentially appropriate to MDA H site conditions and waste types (Figure 12 [1], [2], and [3]). These technologies fall into four general categories:

- Containment (surface and subsurface barriers),
- Treatment in place (biological and physical treatments used to reduce the mobility or toxicity of wastes, or to increase their stability without removing the wastes from their disposal location),
- Excavation and removal (vertical shaft excavation or trench excavation), and
- Excavation and treatment (neutralization, thermal treatment, cement stabilization, and debris removal).

Of the 26 technologies evaluated, 13 were eliminated. Technologies retained (designated "potentially applicable technologies" in column 5 of Figure 12) after the screening evaluation were combined into preliminary corrective measure options. RCRA guidance and Module VIII of the LANL's Hazardous Waste Facility Permit require that corrective measure options be developed based on site conditions (including contaminant inventory), design of the disposal units, environmental setting, corrective measure objectives, and the viability of the corrective measure technologies. Based on these five criteria, corrective measure options were developed and presented in the MDA H CMS Plan (LANL 2001b) and the CMS Report (LANL 2003), and are thus analyzed in this EA.

The eliminated technologies either are not feasible to implement, or rely on technologies that would be unlikely to perform satisfactorily, or would not achieve the desired result within a reasonable timeframe. The corrective measure options that were eliminated from further consideration were not considered reasonable alternatives to meet the DOE's stated purpose and need for action and are not carried through the analysis provided in this EA.

2.6 Related Actions

2.6.1 Final Site-Wide Environmental Impact Statement for the Continued Operation of the Los Alamos National Laboratory (SWEIS)

The Final LANL SWEIS (DOE 1999a) was issued early in 1999. A Record of Decision (ROD) (DOE 1999b) was issued in September 1999, and a Mitigation Action Plan was issued in October 1999 (DOE 1999c). The SWEIS explained that environmental restoration at LANL was being performed by a LANL organization established by DOE in 1989 to assess and remediate potentially contaminated sites that either were or still are under LANL control. In addition, the SWEIS (p. 2-9) includes the information that in 1996, the DOE Office of Environmental Management (EM) initiated a complex-wide strategy to accelerate site cleanup and enhance performance of the cleanup program. Known as *Accelerating Cleanup: Paths to Closure* Report (DOE 1998) (previously known as "2006 Plan"), it includes input from all major field sites, including LANL, to support EM's program planning process.

The SWEIS (5-78) (vol. III, app. F, section F.6.6) included an analysis of impacts for specific waste management operations and transportation impacts of the various SWEIS alternatives at levels that were greater than are currently being forecast as needed in the foreseeable future. The analysis of these five corrective measure options considered in this EA is therefore bounded by the analysis of LANL operations in the SWEIS. This EA tiers from the SWEIS and a reanalysis of LANL operations per se will not be provided in this EA. Any points of difference from the effects attributed to the remediation of MDA H will, however, be included in the Section 4 analysis of effects within this EA.

2.6.2 Final Waste Management Programmatic Environmental Impact Statement (WM PEIS)

The WM PEIS (DOE 1997), issued in May 1997, studied the potential nation-wide impacts of managing four types of radioactive waste (LLW, mixed LLW, TRU, and high-level radioactive waste[25]) and hazardous waste generated by defense and research activities at 54 sites around the United States. The ROD for the treatment and disposal of LLW and mixed LLW was issued on February 25, 2000 (65 FR 10061), and the ROD for the treatment of non-wastewater hazardous waste was issued on August 5, 1998 (63 FR 41810). The WM PEIS includes preferred alternatives for locations of treatment, storage, and disposal of each of the waste types analyzed. DOE uses the WM PEIS in deciding how to configure needed treatment, storage, and disposal, depending on waste type.

[25] High-level radioactive waste is the highly radioactive waste resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from the liquid waste that contains fission products in sufficient concentrations, and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation (DOE Order 435).

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