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FACT SHEET
FEBRUARY 14, 2014

**NOTICE OF INTENT TO APPROVE A CLASS 3 MODIFICATION
TO CHANGE THE PANEL CLOSURE DESIGN, ALLOW REPOSITORY
RECONFIGURATION OF PANELS 9 AND 10 AND ALLOW REVISION OF THE
VOLATILE ORGANIC COMPOUND (VOC) TARGET ANALYTE LIST AND OTHER
CHANGES TO THE VOC MONITORING PROGRAM AT THE
WASTE ISOLATION PILOT PLANT (WIPP)
CARLSBAD, NEW MEXICO**

Facility Name: Waste Isolation Pilot Plant

EPA Identification Number: NM4890139088-TSDF

GENERAL BACKGROUND

The New Mexico Environment Department (NMED) intends to issue a modification to the U.S. Department of Energy (DOE) and Nuclear Waste Partnership LLC (NWP), herein referred to as the Permittees, Hazardous Waste Facility Permit (Permit) to the Waste Isolation Pilot Plant (WIPP, or the facility) to manage, store, and dispose hazardous waste, and to close hazardous waste disposal units, in accordance with the New Mexico Hazardous Waste Act (HWA) and its implementing regulations. The NMED is charged with issuing a permit that will ensure that WIPP's hazardous waste operations are managed in a manner protective of human health and the environment. Prior to issuing a permit, the NMED is required by regulation to release a draft of the revisions to the permit for public comment. The NMED is also required to issue a fact sheet which serves two functions: 1) to facilitate public review of that draft permit; and 2) to provide the basis for any requirements not specified in state regulations.

The WIPP is a facility authorized by Congress for the disposal of transuranic (TRU) radioactive waste materials generated by atomic energy defense activities of the United States. The Permittees received a Permit from the NMED in 1999 to dispose of TRU mixed waste containers 2,150 feet below ground in a mined geologic repository within the Salado Formation. This Permit was renewed in 2010. The WIPP facility is permitted to accept hazardous waste that is managed by the DOE as contact-handled (CH) TRU mixed waste (transuranic mixed waste with

a surface dose rate not greater than 200 millirem per hour). The Permittees are also permitted to accept hazardous waste that is managed by the DOE as remote-handled (**RH**) TRU mixed waste (transuranic mixed waste with a surface dose rate of 200 millirem or greater). The containers of waste must undergo complete waste characterization by the generator/storage sites in compliance with requirements of the Permit prior to disposal.

The Permittees manage wastes that are regulated under the federal Resource Conservation and Recovery Act (**RCRA**), the New Mexico Hazardous Waste Act (Chapter 74, Article 4 NMSA 1978, or the HWA), and their implementing regulations. The draft Permit, when finalized, would allow the Permittees to continue hazardous waste management operations in much the same manner as those authorized by the existing Permit, such as: requiring generator/storage sites to implement applicable waste characterization requirements prior to the receipt of TRU mixed waste at the WIPP facility; conducting waste characterization audits at generator storage sites to ensure implementation of and compliance with applicable requirements; safely managing, storing, and disposing CH and RH TRU mixed waste upon receipt at the WIPP facility; performing required environmental monitoring of air and groundwater at and in the vicinity of the WIPP facility to ensure protection of human health and the environment; closing all permitted storage and disposal units following final receipt of waste; conducting required post-closure care activities after final closure of the WIPP facility; and complying with corrective action requirements related to any release of hazardous waste or hazardous constituents from the WIPP facility.

This fact sheet describes the general background for the draft Permit, including; a physical description of the WIPP facility, its hazardous waste activities, the draft Permit, how the public may be involved in the permitting process, and the technical and regulatory basis for permit requirements and conditions.

DESCRIPTION OF THE WIPP FACILITY

The Permittees are currently operating a hazardous waste facility under a Permit issued by the NMED authorizing the management, storage, and disposal of TRU mixed waste. TRU mixed waste is radioactive waste that is also a hazardous waste as defined by the HWA, and is thus subject to regulation by the NMED. The **DOE** owns the WIPP facility and the DOE Carlsbad Field Office and NWP co-operate the WIPP facility. These entities are collectively referred to as “Permittees” in the draft Permit and this fact sheet.

The WIPP facility is located 26 miles southeast of Carlsbad, New Mexico in a remote desert area where there exists a 2,000-foot-thick salt bed. Openings have been mined 2,150 feet underground near the middle of the salt formation. The WIPP is a geologic repository mined within a bedded salt formation, which is defined in 20.4.1.101 NMAC (incorporating 40 CFR §260.10) as a miscellaneous unit. As such, Hazardous Waste Disposal Units (**HWDUs**) within the repository are eligible for permitting according to 20.4.1.900 NMAC (incorporating 40 CFR §270), and are regulated under 20.4.1.500 NMAC, (incorporating 40 CFR §264, Subpart X, Miscellaneous Units). As required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601), the Permittees shall ensure that the environmental performance standards for a miscellaneous unit, which are applied to the HWDUs in the geologic repository, will be met. The Disposal Phase of the WIPP Project consists of receiving CH and RH TRU mixed waste shipping containers, unloading and transporting the waste containers to the Underground HWDUs, emplacing the

waste in the Underground HWDUs, and subsequently achieving closure of the Underground HWDUs in compliance with applicable State and Federal regulations.

REGULATORY BACKGROUND

In 1976, RCRA was passed by the U.S. Congress to regulate the “cradle to grave” management of hazardous waste. RCRA was enacted as an amendment to the Solid Waste Disposal Act of 1965, and mandates the development of regulations governing the actions of owners or operators of facilities that generate, transport, treat, store, or dispose of solid and hazardous wastes.

On November 19, 1980, the RCRA regulations became effective, and it became unlawful under certain conditions to treat, store, or dispose of hazardous waste without having, or having applied for, a permit. For then-existing treatment, storage, or disposal facilities (**TSDFs**), the requirement to submit a permit application was satisfied by submitting the “Part A” portion of the application; the “Part B” portion could be submitted at a later time. The roles of these application parts are clarified in 20.4.1.900 NMAC (incorporating 40 CFR §§ 270.1(b) and 270.10).

On January 25, 1985, the United States Environmental Protection Agency (**EPA**) authorized the State of New Mexico to implement a hazardous waste program in lieu of the Federal RCRA program. The State’s authority for the program is the HWA, which: (1) authorizes the State’s Environmental Improvement Board to adopt hazardous waste management regulations; and (2) authorizes the NMED to implement and enforce regulations issued under the HWA. These regulations are known as the Hazardous Waste Management Regulations (**HWMR**). These regulations incorporate by reference pertinent sections of the Code of Federal Regulations (**CFR**) – 40 CFR Parts 260 through 270, 273, and 280 – and are codified in the HWMR, 20.4.1 NMAC. EPA has approved subsequent program revisions to the State’s hazardous waste program, including the authority to regulate the hazardous component of mixed waste and to implement the corrective action program under the HWA.

On October 30, 1992, Congress enacted Public Law 102-579, the “Waste Isolation Pilot Plant Land Withdrawal Act” (**LWA**). Among other things, the LWA specifies that the DOE “shall comply with respect to WIPP, with the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.)”. The LWA also established a limitation on the capacity of WIPP in Section 7(a)(3), where it states “The total capacity of WIPP by volume is 6.2 million cubic feet of transuranic waste.”

The HWA and HWMR require each person owning or operating an existing facility or planning to construct a new facility for the treatment, storage, or disposal of hazardous waste to have a HWA permit. Owners or operators of hazardous waste treatment, storage, or TSDFs are required to submit a comprehensive permit application covering all aspects of design, operation, maintenance, and closure of their facilities. The Permit Application consists of Parts A and B; Part A is a standard form that requires the name of the owner/operator, a list of the types of wastes managed, a facility layout diagram, and the activities requiring a permit. Part B is an extensive document submitted in a narrative, tabular, and schematic format that includes general information requirements for all hazardous waste management facilities, as well as unit-specific information.

The NMED regulation of mixed waste: The NMED regulates the Permittees under the New Mexico Hazardous Waste Act. That statute regulates “hazardous waste” which, by definition, does not include radioactive materials that are classified as source, special nuclear, or byproduct materials under the 1954 Atomic Energy Act (AEA). 74-4-3(M) NMSA 1978. These radioactive materials are regulated by DOE as authorized by Congress. Most of the waste received at the WIPP facility is “mixed waste” which contains substances that are hazardous and regulated under the HWA and are also radioactive and regulated under the AEA. Various court decisions have held that under the AEA, state efforts to regulate the radiological threats of mixed waste on human health and the environment are invalid. *See, e.g., Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Commission*, 461 U.S. 190 (1983). Thus, the NMED only regulates the hazardous component of mixed waste.

Congress has addressed the interplay between the AEA and RCRA. Congress has said that source, special nuclear, or byproduct materials are not solid waste (42 USC § 6903(27)) and that RCRA shall not apply to activities or substances that are subject to the AEA to the extent that such application is “inconsistent with the requirements of” the AEA (42 USC § 6905(a)). EPA and DOE have concluded that a RCRA permit may regulate the hazardous component of mixed waste. *See*, EPA, State Authorization to Regulate the Hazardous Components of Radioactive Mixed Waste under the Resource Conservation and Recovery Act, 51 Fed. Reg. 24504 (July 3, 1986) and EPA, Clarification of Interim Status Qualification Requirements for the Hazardous Components of Radioactive Mixed Waste, 53 Fed. Reg. 37045 (Sept. 23, 1988). The EPA reviewed Nuclear Regulatory Commission regulations to identify inconsistencies between RCRA and AEA-based regulations. “No inconsistencies were identified as a result of this comparison although RCRA was more prescriptive in some instances and differences in stringency were observed. Differing or more stringent requirements do not necessarily constitute inconsistent requirements.” (53 Fed. Reg. at 37048). Only in case of direct conflict with AEA requirements must a RCRA permit cede to the AEA.

PERMIT ADMINISTRATIVE HISTORY

The NMED issued the first hazardous waste facility permit to the Permittees on October 27, 1999. It became effective 30 days later on November 26, 1999 for a fixed term not to exceed ten years. During the ten year term of the Permit, the Permittees submitted over 100 modifications to the Permit, either as notification of minor modifications that did not require the NMED approval or public comment (Class 1 modifications that are generally editorial, administrative, or informational in nature), or as requests for major modifications that required the NMED approval and public comment (Class 2 and Class 3 modifications that are more substantial changes). Some Class 3 modifications also included public hearings. On November 30, 2010, the Permit was renewed for the Permittees. Since that time, the NMED has received numerous Class 1 modifications and has issued final determinations on six Class 2 modifications. The NMED has not issued any Class 3 final determinations since the renewal.

WIPP PERMIT ORGANIZATION

The Permit and draft Permit are comprised of Parts (1-8) and Attachments (A-O). Attachments G1 and G2 also have appendices. The Parts contain conditions that the NMED requires the Permittees to comply with while storing and disposing TRU mixed waste, conducting air and

groundwater monitoring, closing units, conducting post-closure care activities after closure of the facility, and conducting certain corrective actions, if necessary. The Permit Parts are established to ensure compliance with the HWA and HWMR, and are derived from applicable regulatory requirements, the Permittees' commitments, or requirements established by the NMED to ensure adherence with the regulations to protect human health and the environment as provided at 20.4.1.900 NMAC (incorporating 40 CFR §270.32(b)(2)). The Permit Attachments contain more detailed descriptions including various monitoring plans.

Each draft Permit Part and Attachment is briefly described below. Parts 1, 4, 6, 7 and Attachments A1, A2, A4, B, D, E, G, G1, G1 Appendix A, G1 Appendix B, G2, H, H1, J, N, N1 will change as a result of this modification. Attachments G1 Appendix G, G1 Appendix H and N1 will no longer apply and will be removed. These portions of the Permit are the subject of the modification and are the only portions considered to be opened in this proceeding per 20.4.1.900 NMAC (incorporating 40 CFR §270.41).

Part 1: *General Permit Conditions* contains permit conditions that apply to all hazardous waste management units, most of which are based on mandatory permit conditions set forth in 20.4.1.900 NMAC (incorporating 40 CFR Part 270). Part 1 was last modified on October 1, 2012.

Part 4: *Geologic Repository Disposal* contains permit conditions the Permittees must follow when disposing TRU mixed waste in underground HWDUs at the WIPP facility. It addresses the requirements for managing these units in accordance with 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart X). Part 4 was last modified on November 1, 2012.

Part 6: *Closure* contains permit conditions the Permittees must follow for closure of hazardous waste management units. All permitted units are required to have and comply with an approved closure plan, in accordance with 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart G). Part 6 has remained unchanged since the renewal on November 30, 2010.

Part 7: *Post-Closure Care* contains permit conditions the Permittees must follow for post-closure care of the underground hazardous waste disposal units. Part 7 has remained unchanged since the renewal on November 30, 2010.

Attachment A1: *Container Storage* contains a description of the container storage units, the TRU mixed waste management facilities and operations, and compliance with the technical requirements of 20.4.1.500 NMAC. Attachment A1 was last modified in October 2013.

Attachment A2: *Geologic Repository* contains a description of the underground HWDUs, descriptions of the geologic repository design, construction, and processes, including maintenance, monitoring, and inspection requirements. Attachment A2 was last modified in October 2013.

Attachment A4: *Traffic Patterns* contains a description of access to the facility, traffic patterns in and around the Waste Handling Building, and underground traffic flow. Attachment A4 was last modified in October 2013.

Attachment B: *Hazardous Waste Permit Application Part A* contains the current Part A application, identifying the U.S. EPA Hazardous Waste Numbers (waste codes) authorized to be managed at each permitted hazardous waste management unit. It also includes a list of current environmental permits, maps, figures, and photographs of the WIPP facility. Attachment B was last modified in October 2013.

Attachment D: *RCRA Contingency Plan* satisfies the requirements in 20.4.1.500 NMAC (incorporating 40 CFR §§264.51 and 264.52). The contingency plan describes the actions facility personnel will take in response to fires, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituents to air, soil, or surface water at the facility. The plan describes arrangements with local first responders, lists qualified emergency coordinators, lists emergency equipment, and includes an evacuation plan. Attachment D was last modified in October 2013.

Attachment E: *Inspection Schedule, Process and Forms* satisfies the requirements in 20.4.1.500 NMAC (incorporating 40 CFR §264.15(b)(1)) that the “owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.” Attachment E was last modified on December 21, 2012.

Attachment G: *Closure Plan* satisfies the requirements in 20.4.1.500 NMAC (incorporating 40 CFR §264.110 through §264.116). The closure plan describes the closure performance standard for both the container storage units and the underground HWDUs, the anticipated maximum waste inventory, the schedule for closure, closure activities, and describes the notices required for disposal facilities. Attachment G was last modified in October 2013.

Attachment G1: *WIPP Panel Closure (WPC) Description and Specifications* provides the detailed closure plans for the underground HWDUs. Attachment G1 was last modified on April 15, 2011.

Attachment G1 Appendix A: *Technical Specifications* provides the technical specifications for the WPC design. This is a new section, replacing the former Appendix G1-G.

Attachment G1 Appendix B: *Design Drawings* provides the design drawings for the WPC. This is a new section, replacing the former Appendix G1-H.

Attachment G2: *Waste Isolation Pilot Plant Shaft Sealing System Compliance Submittal Design Report* provides the detailed closure plans for the entire underground repository. Attachment G2-A provides the material specifications, Attachment G2-B describes the shaft sealing construction

procedures, and Attachment G2 Appendix E provides the detailed design drawings. Attachment G2 was last modified in October 2013.

Attachment H: *Post-Closure Plan* satisfies the requirements in 20.4.1.500 NMAC (incorporating 40 CFR §264.117 through §264.120). The post-closure plan describes the activities required to maintain the WIPP facility after completion of facility closure and the post-closure notices required for disposal facilities. Attachment H has remained unchanged since the renewal on November 30, 2010.

Attachment H1: *Active Institutional Controls During Post-Closure* describes the design of a system to control access to the disposal site and implement maintenance and remedial actions pertaining to the site access controls. It also addresses the scheduling process for control of inspection, maintenance, and periodic reporting related to long-term monitoring. Attachment H1 was last modified on November 1, 2012.

Attachment J: *Hazardous Waste Management Unit Tables* lists the hazardous waste management units at the facility and their associated capacities. The Attachment includes three tables: 1) Table J-1 shows the Waste Handling Building (WHB) Container Storage Unit; 2) Table J-2 shows the Parking Area Container Storage Unit and; 3) Table J-3 shows the Underground Hazardous Waste Disposal Units. Attachment J was last modified on April 15, 2011.

Attachment N: *Volatile Organic Compound Monitoring Plan* describes the monitoring plan for VOC emissions from mixed waste that may be entrained in the exhaust air from underground HWDUs during disposal. The purpose of VOC monitoring is to ensure compliance with the geologic repository environmental performance standards which are established through VOC limits specified in Permit Part 4. Attachment N was last modified in October 2013.

TYPE AND QUANTITY OF WASTES WHICH ARE STORED AND DISPOSED

Disposal is limited to defense-generated TRU and TRU mixed wastes. Mixed transuranic waste has a hazardous component and a radioactive component, consisting of elements with atomic numbers greater than that of uranium (element 92). Generally, TRU mixed waste consists of clothing, tools, rags, residues, debris, soil and other items contaminated with radioactive elements, mostly plutonium, and hazardous components consisting of RCRA-listed heavy and toxic metals, RCRA-listed organic residues (non-liquid), and RCRA-listed inorganic and organometallic compounds.

The total capacity of WIPP by volume is 6.2 million cubic feet of TRU waste as mandated by the Waste Isolation Pilot Plant Land Withdrawal Act enacted as public law in 1992.

The criteria for establishing a waste as a hazardous waste are provided in 20.4.1.200 NMAC (incorporating 40 CFR Part 261). A waste is considered hazardous if it meets the definition of a solid waste described in 20.4.1.200 NMAC (incorporating 40 CFR §261.2); is not exempted by 20.4.1.200 NMAC (incorporating 40 CFR §261.4); and exhibits any of the characteristics of hazardous waste identified in 20.4.1.200 NMAC (incorporating 40 CFR Part 261, Subpart C); or is listed in 20.4.1.200 NMAC (incorporating 40 CFR Part 261, Subpart D).

Hazardous waste types, or “streams,” may be of uniform physical composition (*i.e.*, homogeneous) or of dissimilar or diverse composition (*i.e.*, heterogeneous). Homogeneous waste contains only one material, substance, or waste, and when a sample of the waste is collected, it is representative of the entire waste stream. Heterogeneous waste contains multiple components that differ in density, specific gravity, or other physical properties, are located in different places within the waste, or are discrete and different articles. Heterogeneous wastes (*e.g.*, debris) do not lend themselves to representative sampling and analysis.

EPA hazardous waste numbers with the prefixes, "U", "F", "P", and "D", identified at 20.4.1.200 NMAC (incorporating 40 CFR Part 261, Subparts C and D), apply to TRU mixed waste streams managed at the WIPP facility. Specifically: (1) D codes denote the characteristics of ignitability (D001), corrosivity (D002), reactivity (D003), and toxicity (D004- D043); (2) F codes signify wastes from non-specific sources; and (3) P and U codes denote discarded commercial chemical products, off-specification species, container residues, and spill residues thereof, with the P codes signifying acutely hazardous wastes and the U codes signifying toxic wastes. Wastes with the characteristics of ignitability, corrosivity or reactivity (D001, D002, and D003) are explicitly prohibited from management, storage, or disposal at the WIPP facility. The existing Permit identifies the EPA hazardous waste numbers that are acceptable at the WIPP facility.

PERMITTED UNITS

The existing Permit authorizes the following waste management activities by the Permittees:

Storage of TRU mixed waste in containers not to exceed the listed maximum capacities in the following units:

Waste Handling Building Unit Total – 6,854 ft³ (194.1 m³)

CH Bay Storage Area – 4,800 ft³ (135.9 m³)

CH Bay Surge Storage Area – 1,600 ft³ (45.3 m³)

Derived Waste Storage Area – 66.3 ft³ (1.88 m³)

Total CH TRU Waste – 6,466.3 ft³ (183.1 m³)

RH Bay – 156 ft³ (4.4 m³)

Cask Unloading Room – 74 ft³ (2.1 m³)

Hot Cell – 94.9 ft³ (2.7 m³)

Transfer Cell – 31.4 ft³ (0.89 m³)

Facility Cask Loading Room – 31.4 ft³ (0.89 m³)

Total RH TRU Waste – 387.7 ft³ (11.0 m³)

Parking Area Unit – 8,863 ft³ (251 m³)

Parking Area – 6,734 ft³ (191 m³)

Parking Area Surge Storage – 2,129 ft³ (60 m³)

Management and disposal of TRU mixed waste in containers not to exceed the listed maximum capacities in the following underground units:

Panel 1 (filled): CH – 370,800 ft³ (10,500 m³)
Panel 2 (filled): CH – 635,600 ft³ (17,998 m³)
Panel 3 (filled): CH – 603,600 ft³ (17,092 m³)
Panel 4 (filled): CH – 503,500 ft³ (14,258 m³), RH – 6,200 ft³ (176 m³)
Panel 5 (filled): CH – 562,500 ft³ (15,927 m³), RH – 8,300 ft³ (235 m³)
Panel 6 (filled): CH – 510,900 ft³ (14,468 m³), RH – 7,500 ft³ (214 m³)
Panel 7: CH – 662,150 ft³ (18,750 m³), RH – 22,950 ft³ (650 m³)
Panel 8: CH – 662,150 ft³ (18,750 m³), RH – 22,950 ft³ (650 m³)

PERMIT MODIFICATION REQUEST SUMMARY AND BASIS FOR THE DRAFT PERMIT

The NMED's issuance of the draft Permit is in response to the Permittees' modification request dated March 18, 2013. The foundation for the draft Permit is the current Permit as of February 2014 and includes changes from the Class 1 Permit Modification Notification received on February 10, 2014.

The modification was submitted by the Permittees, in accordance with the WIPP Permit Part 1, Section 1.3.1. (20.4.1.900 NMAC (incorporating 40 CFR §270.42(d))).

Changes proposed by the Permittees in their PMR are indicated in the draft Permit as redline/strikeout with a white background. Changes proposed by the NMED are indicated in the draft Permit as redline/strikeout with gray background.

The Permittees proposed the following changes to the Permit (briefly summarized). Following the brief summary, there is a more detailed summary that includes comments made by members of the public during the initial comment period.

PMR Item 1: Modifications to the WIPP Panel Closure

The currently approved WIPP Panel Closure (**WPC**) consists of a 12-foot long concrete block explosion isolation wall and a 26-foot long concrete monolith. Explosion isolation walls have been constructed in WIPP waste Panels 1, 2, and 5, but no concrete monoliths have yet been constructed. The explosion walls were originally designed to resist a postulated methane deflagration due to a buildup of methane gas within a waste panel, but are now considered by the Permittees to be no longer needed. The Permittees' proposed modification would replace the current design with two barrier systems, either two standard steel bulkheads or one standard steel bulkhead and one block wall, if a block wall was previously constructed in the panel, and emplacement of a minimum of 100 feet of run-of-mine (**ROM**) salt between the two barriers.

It is important to note that on December 3, 2013 the EPA issued a notice to the Federal Register proposing to approve a DOE planned change request to implement a Run-of-Mine Panel Closure System at the WIPP and to amend the WIPP Compliance Criteria to allow an EPA-approved panel closure other than the currently-required Option D design. *See*, EPA, Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant's Compliance With the

Disposal Regulations; Panel Closure Redesign, 78 Fed. Reg. 72612 (December 3, 2013). As mentioned in previous sections of this Fact Sheet, the NMED oversees the RCRA Hazardous Waste Permit of the WIPP. The EPA regulates other aspects of WIPP. The EPA reviews the potential impacts of the panel closure system on the long term performance of the WIPP disposal system after the repository is filled and closed while this PMR concerns the closure of the underground HWDUs known as panels (partial closure) for 40 CFR 264.112. The proposed EPA rule is not directly tied to this RCRA PMR action.

PMR Item 2: Repository Reconfiguration of Panels 9 and 10

The WIPP facility was originally designed to accommodate a total of ten HWDUs, called panels. Each panel consists of seven disposal rooms. Panels 1 through 6 are now filled with waste. During the term of the current Permit, disposal of TRU mixed waste can occur only in the HWDUs designated as Panels 6 through 8. Remote-handled TRU mixed waste disposal began in Panel 4, with Panels 4, 5 and 6 now full to accessible capacity for RH TRU mixed waste and Panels 1 through 6 full for CH TRU mixed waste. The current Permit allows for the concept of disposal of TRU mixed waste in the areas designated as Panels 9 and 10, although Panels 9 and 10 have yet to be designed. The concept of Panels 9 and 10 were never developed as “panels” in the sense of designed Panels 1 through 8. Instead, Panels 9 and 10 were conceived as modified access drifts that were to be converted for waste disposal as the WIPP facility got closer to maximum capacity. The current Permit, during its 10-year term (2010-2020), authorizes the excavation of Panels 6 through 8, design and additional excavation is needed for Panels 9 and 10, and the disposal of waste in Panels 1 through 8. Rather than designing the conceptual plan for Panels 9 and 10, the Permittees are, in this PMR, proposing to relocate Panels 9 and 10 directly south of Panels 4 and 5 and will be identified as Panels 9A and 10A. These proposed Panels 9A and 10A will have identical dimensions to the existing panels and the Permit will eliminate any reference to the previous conceptual plan involving Panels 9 and 10. Therefore, the Panels available to receive waste for disposal are Panels 6 through 8 as previously approved, and will include proposed Panels 9A and 10A.

PMR Item 3: Revise VOC Target Analyte List and Other Changes to the VOC Monitoring Program

The modification provides for the following changes:

- Addition of one compound and removal of four compounds from the VOC target analyte list, Table 4.4.1;
- Revision of the method used for determination of compliance with the environmental performance standards;
- Establishment of room-based action levels in Table 4.6.3.2 for the revised target analyte list;
- Establishment of alternative remedial actions in lieu of closing an active room should risk action levels be reached;
- Elimination of the requirement to sample and report threshold exceedances for VOCs in closed disposal rooms that are not immediately adjacent to an active TRU waste disposal

room. This effectively limits the VOC Room-Based Monitoring Program to active and immediately adjacent rooms only;

- Other minor VOC Monitoring Program clarifications and updates.

These changes will allow the Permittees to add tentatively identified compounds (**TICs**) to the target analyte list more quickly, making the Permit more effective in protecting human health. Rather than identifying a Concentration of Concern (**CoC**), Table 4.6.2.3 will list the actual EPA risk factors for each VOC. The calculation method for determination of the total risk is specified in Attachment N, Section N-3e(1). Additionally, each additional target compound will require a room-based concentration limit. The calculation method used to derive these limits for any TIC is simple, referenced and explained in the PMR, and is based on the risk factors listed in Table 4.6.2.3. This is the same method used for the original 1999 permit.

DESCRIPTIONS OF PROPOSED CHANGES

Item 1

This modification request proposes to amend the closure plan in the Permit, found in Attachment G, by revising the panel closure system. These proposed changes include the following:

Revision of the panel closure system (**PCS**) design.

The existing and approved PCS requires emplacing a 12-foot explosion-isolation wall made out of solid concrete blocks and emplacement of a 26-foot monolith composed of Salado Mass Concrete (**SMC**). The proposed PCS, also termed the WIPP Panel Closure (**WPC**), is made up of two barriers and emplacement of a minimum of 100 feet of ROM salt between the two barriers. The barriers are either two standard bulkheads or one standard bulkhead and one block wall. ROM salt is salt that results from mining of other parts of the underground (e.g., new HWDUs). It is not processed by further crushing or screening.

Revision to some panel closure design requirements.

Seven of the design requirements specified in Permit Attachment G, Section G-1e(1) are proposed for deletion or revision. Five of the requirements are revised as follows:

1. The panel closure system shall contribute to meeting the environmental performance standards in Permit Part 4, Section 4.6.2. by mitigating the migration of VOCs from closed panels

The Permittees allege that the proposed WPC will slow down the migration of VOCs from closed panels and thus contribute to compliance with applicable VOC environmental performance standards. It is important to note that the proposed WPC cannot by itself, achieve compliance with VOC standards. This is because the WPC will not be able to mitigate VOC migration from the active panel. Therefore, compliance with VOC performance standards will be achieved through mitigation of VOC migration from closed panels with the WPC and management of waste emplacement activities in the active panel. Mitigative measures are implemented as needed based on Repository VOC Monitoring results collected at VOC Station A. The requirement is revised to clarify that the WPC can and will only contribute to compliance.

2. The panel closure system may require minimal maintenance per 20.4.1.500 NMAC (incorporating 40 CFR 264.111)

The proposed PCS may require some minimal maintenance to the accessible (outside) bulkhead during the initial part of its operational life. Minimal maintenance may include reinforcing and replacement of bulkhead components (such as flexible flashing) or it may consist of installation of a new bulkhead in front of the previous bulkhead. The NMED also requested and reviewed the Panel Closure Bulkhead Maintenance Procedure. The requirement is also changed to reference the applicable regulatory citations (20.4.1.500 NMAC (incorporating 40 CFR 264.111)). Changing this design requirement allows for maintenance to be performed, as necessary, on the accessible bulkheads of the WPC and in compliance with the procedure.

3. The panel closure system shall address the expected ground conditions in the waste disposal area.

The proposed change would require the PCS (i.e., the WPC) to address the expected ground conditions instead of the most severe ground conditions expected. This is appropriate because the WPC does not interact with the Disturbed Rock Zone (DRZ) like the existing design does.

4. The panel closure system shall be built of substantial construction and non-combustible material except for flexible flashing used to accommodate salt movement

This requirement is changed to specify substantial construction material because the design requirement "IIIb" currently identified in the Permit is an obsolete designation for construction standards. The design requirement "IIIb" meant that it is to be built to generally accepted national design and construction standards. These national design and construction standards for a closure in an underground mine (based on Mine Safety and Health Administration) specify substantial construction. This change states the requirement directly without depending on the obsolete nomenclature.

5. A Quality Assurance/Quality Control (QA/QC) program shall verify material properties and construction.

Existing language requires the QA/QC program to be established during construction but some material properties and construction specifications may need to be verified prior to construction. The requirement is revised to remove the restriction that a QA/QC program shall verify material properties and construction specifications only during construction.

In addition, two requirements are proposed for deletion:

1. The PCS (WPC) shall perform its intended function under the conditions of a postulated methane explosion.

This requirement is deleted because the methane monitoring data collected for Panels 3 and 4 indicate that the previously postulated explosion is not credible during the performance life of the WPC.

2. Thermal cracking of concrete shall be addressed

This requirement is deleted because the Salado Mass Concrete that was the subject of the thermal cracking will not be part of the new WPC design and therefore, this requirement will no longer be necessary.

Deletion of the hydrogen and methane monitoring

The Hydrogen and Methane Monitoring Plan (Permit Attachment N1) is proposed for deletion, including any associated references and citations. Affected Permit sections are: Permit Part 4, Section 4.6.5 and Permit Attachment N1. The plan is no longer required for several reasons most significantly because sufficient data has been obtained and presented that demonstrates that explosive levels of hydrogen and methane will not accumulate in either Panel 3 or 4 in the time for the postulated explosion. These data were included in the administrative record and are available for review.

Revision to clarify applicability of ongoing disposal room VOC monitoring (Permit 4 and Attachment N)

Changes being proposed are editorial and are included to clarify that ongoing disposal room VOC monitoring will be required for all panels, not just Panels 3 through 8, until final panel closure, unless explosion-isolation walls are installed in a panel.

Revision to the panel closure schedule in Table G-1

Table G-1 was updated to reflect current actual and anticipated dates. Note 2 was revised to be consistent with Permit Attachment A2 which defines closure start as the point when ventilation is blocked using chain link and brattice cloth or bulkheads. Consolidation of Notes 5 and 6 is an editorial change.

Editorial corrections to Permit text regarding panel closure

Editorial changes regarding panel closure include approximately 24 changes that delete language such as information that no longer applies, clarification that ongoing VOC monitoring will be required for all panels unless an explosion isolation wall exists, and deletion of sections that pertain to hydrogen and methane monitoring which is proposed for deletion by this PMR. A complete list of editorial changes with an explanation of each change can be found in the full PMR Appendix A – Table of Changes.

Public Comment Regarding Item 1

During the public comment period, the NMED received various comments on Item 1 of the PMR. One comment requested “quantitative data as well as qualitative and engineering analysis of the comparative performance of the explosion-isolation walls and bulkheads”. Under the newly proposed design, the inbye bulkheads or the existing concrete block walls will have a primary functional purpose of isolating personnel from emplaced waste during the construction

of the panel closures. If approved, the previous purpose of “explosion isolation” will no longer be applicable. Extensive hydrogen and methane monitoring data from the filled panels has been obtained in accordance with the Permit and has been presented in the PMR to support this. The NMED reviewed the data and requested calculations regarding potential waste streams and has determined that the data supports that there is no need for explosion-isolation walls. An engineering analysis comparing the performance is unnecessary and meaningless as the initial premise and design intent for the explosion-isolation wall is no longer applicable (see Comment Responses and Revisions to the RCRA Part B Permit Application, Volume VI of VI (January 17, 1996) Appendix II - Detailed Design Report for An Operational Phase Panel-Closure System).

The commenter also requested an analysis/comparison of the effectiveness of control VOC's between the explosion-isolation wall and the steel bulkhead. NMED does not believe this is necessary for two reasons: 1) the major contributors of VOCs are the active rooms and 2) the environmental performance requirements (VOC standards) are not being changed by this modification. The level of protection of human health and the environment is unchanged by this PMR and still fully adequate. It should also be noted that the Permittees are in compliance with the VOC standards relative to this permit at this current time, even when the panels are not fully closed.

Another comment involved a request for further clarification regarding the “engineering judgment” used to justify the 100 foot length of the ROM salt. The NMED requested additional information from the Permittees in the Technical Incompleteness Determination (**TID**) issued on September 20, 2013. The Permittees responded that “there are three factors that were considered in selecting the length of the ROM salt. The first factor was based on engineering judgment (i.e., industry practice of choosing a factor between 7 to 10 times the entry height) and the ROM salt for backfilling underground openings to impede flow as described in the PMR. The second factor was the linear footage available in the entries for installation. The total length of each entry is about 200 feet. One goal is to fill as much of the entries as possible, while leaving enough room on the outside to maintain the bulkhead, including the possibility of replacing it. The slopes require about 50 feet of the entry, based on the Design Report, Appendix D, Drawing No. 262-002 and assuming a nominal 2:1 slope (horizontal to vertical) at each end of the ROM salt to avoid impacting the in-bye bulkheads and a 13-foot entry height. This leaves about 150 feet for the salt and the construction of the bulkheads. The design allows a clearance of 4 feet for each of the steel bulkheads on the in-bye and out-bye sides of the ROM salt. Finally, the design allows a minimum of 20 feet on the out-bye side to allow for future bulkhead construction if the out-bye bulkhead needs to be replaced. This means that in panels such as Panel 6 and beyond, where the in-bye bulkhead is against the waste face, there may be as much as 120 feet of tunnel for the ROM salt, not including the slopes. However, in Panels 3 and 4, where a substantial barrier exists and a new in-bye bulkhead may need to be constructed, there may only be around 100 feet available. The third factor used in establishing 100 feet as the minimum length is that the air flow modeling from the design report PMR, Item 1, Appendix C) shows that, once the air gap closes, a length of 100 feet of ROM salt provides adequate flow resistance to limit volatile organic compound (**VOC**) releases.”

Another comment stated that any modeling used should include the range of plausible values for each parameter and sensitivity analysis and that the worst case scenario should be analyzed including a roof collapse. Modeling is commonly used in environmental regulation to predict outcomes and parameters. Modeling does not need to “include the range of plausible values for each parameter and sensitivity analysis” if the plausible values for the input parameters are chosen conservatively as was done in this situation. Regardless, the NMED requested additional information regarding modeling inputs and assumptions in the TID issued on September 20, 2013. It is also important to note that the Permittees have stated that active panels contribute the most VOCs and that closed panels are a secondary source. When the air gap exists in a closed panel, the majority of airflow will be through the air gap and thus the majority of resistance to airflow will be by the bulkhead. The October 2012 design report for panel closure systems prepared by RockSol Consulting Group, Inc is included in the PMR. Figures 3-7 and 3-8 of this report clearly show the air gap magnitude in the drifts and concludes that the air gap closes after approximately 23 years. At that point the dominant air flow and air flow resistance become the pore space of the ROM salt.

Another comment stated that “[t]he Permittees also should provide information regarding their consideration of whether other materials could be added that would reduce the gap(s) or the amount of VOC emissions. The Permittees also should provide all actual data on ROM salt and provide the results of use of adequate model(s) with a range of parameter values, including VOC concentrations. The Permittees also should provide analyses of the worst possible scenarios and their impacts and mitigation alternatives.” The NMED believes that the Permittees have presented a proposed design that will provide the necessary unit closure. The design does not need further measures to pre-consolidate the salt nor does the design require other engineered solutions beyond the bulkhead. Mandating further review of other non in-situ material is unnecessary and unreasonable. The air flow model considered the expected conditions of low density emplacement and normal creep rates and found the results acceptable. Higher density and faster closure will only shorten the time for closure of the gap.

Another comment requested that the Permittees provide information about maintenance of bulkheads. In the TID, the NMED requested a discussion of this with examples of potential triggers for bulkhead maintenance as well as a discussion of the association between maintenance required for compliance with Panel Closure performance standards and how the maintenance is minimized with this WPC design as required by 20.4.1.500 NMAC (incorporating 40 CFR 264.111). A copy of the Panel Closure Bulkhead Maintenance Procedure was also requested. The Permittees provided the procedure and further information as part of the responses to the TID. This information is posted on the NMED HWB WIPP Group website and is part of the Administrative Record.

Another comment requested that the Permittees provide a detailed cost and schedule information for the proposed and other viable alternatives of the PCS. The Permittees cited savings as a benefit, but the regulations do not provide for cost savings as a justification for PMRs. Thus, the NMED does not agree that detailed cost and schedule information for the six options is necessary. The cost numbers presented are based on original cost identified for Option D in the original Permit Application, Table I-9.

Another comment requested that the Permittees provide detailed information regarding what are considered the worst possible release scenario(s) and how the proposed PCS and alternative PCSs would perform for each scenario. It appears that the commenter has confused design specifications with performance requirements. The environmental performance requirements (VOC standards) are not being changed by this modification. Therefore, the protection of human health and the environment is unchanged and still fully adequate. The regulations do not require, and practicality does not allow, detailed analysis of every “worst possible release scenario” and how a proposed and alternate PCS would perform. As previously discussed, the modeling performed considers the expected scenarios with conservative assumptions. It should also be noted that the PCS cannot by itself achieve complete compliance with the VOC standards as the PCS cannot mitigate VOC migration from an active panel.

Another comment suggested that the elimination of the requirement that “Permittees shall also submit at that time an annual certification by a registered professional engineer certifying the stability of any explosion-isolation walls” is premature. The commenter believed that the requirement is necessary until the PCS is installed in any panel that includes such walls. Based on the presented gas monitoring data, the PMR demonstrates that a hydrogen or methane generated explosion is not possible given the slow accumulation rates for hydrogen and methane. In this situation, the annual certification/inspection is no longer necessary since the concrete block walls no longer have that intended purpose. The concrete block walls will still be subject to inspection until ROM salt placement makes them inaccessible.

Another comment requested that the Permittees provide the basis for the proposed changes, the assumptions used to estimate the schedule, and the range of dates that the activities might occur under other plausible schedules. As stated by the Permittees in the PMR, the two versions of Table G-1 were submitted for clarity so that it would be obvious how each modification would impact the schedule. A final table, incorporating the changes from all items of the modification, will be used in the draft and final permit.

There were additional comments and questions submitted to the NMED regarding Item 1 that were included in the NMED’s Technical Incompleteness Determination issued on September 20, 2013. Those comments and the Permittees’ responses can be found in the Administrative Record.

Item 2

The modification provides for the following general changes:

- Reconfigure the location of Panels 9 and 10
- Designate new locations as Panels 9A and 10A
- Authorize disposal in Panels 9A and 10A

The Permittees are proposing to change the configuration of the WIPP repository relative to the physical location of Panel 9 and Panel 10. The proposal is to revise the location of the HWDUs currently known as Panel 9 and Panel 10; one panel is proposed to be located directly south of

Panel 4 and the other directly south of Panel 5. Ventilation and access drifts would be extended south of Panels 4 and 5 and the new HWDUs would have the same dimensions as the previous eight HWDUs.

This PMR would also remove the designation for Panel 9 and Panel 10 which is currently located in the central access drifts between Panel 1-4 on one side and Panel 5-8 on the other, right in the middle of the underground repository.

The PMR would also authorize the construction, certification and use of those HWDUs. The new HWDUs will be designated as Panel 9A and Panel 10A. The proposed changes are primarily associated with adding references to Panels 9A and 10A, deleting references to Panels 9 and 10, changing the location of the new proposed panels, and revising Permit figures to reflect the reconfiguration. The PMR would also address changes to the underground ventilation description, and would change the underground traffic patterns to address the new panels.

Changes to Table 4.1.1 are also proposed to include the capacities of the new HWDUs. It is important to note that the revised capacities do not authorize the Permittees to dispose more than the 6.2 million cubic feet of TRU mixed waste that is listed as the WIPP facility total capacity in the Land Withdrawal Act.

The Permittees have stated in their PMR that geomechanical considerations have determined that locating new disposal Panels 9A and 10A directly south of existing Panels 4 and 5 is geotechnically more advantageous than the current location proposed for Panels 9 and 10. Changes to support and explain this PMR are further described below:

Background Information

The original configuration of the WIPP repository has ten waste disposal panels, with four panels on each side of four centrally located main access drifts (Panels 1 – 8). The four central main access drifts would constitute two waste disposal panels (Panels 9 and 10). Panels 1 – 8 consist of seven rooms. Each room is nominally 300 ft long, 33 ft wide and 13 ft high. Salt pillars between the rooms are nominally 100 ft wide. The Permit specifies that the centralized main access drifts (Panels 9 and 10) could be used for disposal.

The PMR explains that preliminary designs of the WIPP repository were developed in the early 1970s, with validation efforts starting in 1981 under the Site and Preliminary Design Validation or SPDV program. The SPDV program was developed to further study the site, obtain geotechnical data and validate early WIPP site geology and preliminary repository design.

One of the geotechnical considerations in the design basis for this configuration was the salt creep properties of the salt formation. Salt creep is the rate at which the salt closes in on open or mined out spaces. The advantage of this salt property is that after waste is emplaced in the repository the salt formation eventually creeps in and entombs the waste, isolating it from the environment.

The validated design for disposal rooms included a nominal five years for mining, waste emplacement, and closure with minimal maintenance. This design led to the “just-in-time” mining approach in which areas are mined and prepared for waste disposal shortly before they are needed. However, the areas currently designated as Panels 9 and 10, the central access drifts, were mined out with the intent that they would remain open and usable for the entire 25- to 30-year life of the repository. These drifts are narrower than the panel disposal rooms and the original intent was to re-mine these drifts to make them suitable for waste disposal at the time they would be needed.

Engineering evaluations of the drifts designated as Panels 9 and 10 have led to the conclusion that the relocation of the panels to different location in the underground repository is preferred over widening the central drifts for waste emplacement.

Geotechnical Evaluation and Analysis

A geotechnical evaluation and analysis of historical and current ground conditions as described in the Geotechnical Analysis Report for July 2009-June 2010, indicates that the salt creep rate and fractures depend on the age of the excavation and the proximity of nearby excavations.

As the repository ages, ground support systems need to be installed and maintained and additional mining and scaling are needed to maintain safe access. The central access drifts can be maintained to support these activities. However, if these drifts were enlarged for waste disposal activities, this would likely induce salt creep and fracturing rates, which would lead to increased maintenance. Because this maintenance would be taking place in areas where waste is actively being emplaced, this maintenance would interfere with waste disposal operations. Therefore the Permittees are proposing to locate disposal Panels 9A and 10A to the south of Panels 4 and 5 instead of enlarging the central access drifts for disposal in Panels 9 and 10.

The evaluation of the geotechnical information collected regarding Panels 9 and 10 supports the option to mine new panels as opposed to attempting to recondition the existing drifts. Because this is a design change to the permitted unit, this modification is necessary. The current anticipated schedule indicates that Panel 9A would be needed for operations in the year 2020. According to the PMR, the Permittees would begin mining operations to extend the current access drifts further south in calendar year 2016. Mining must be integrated with the current schedule to perform final closure of Panels 1 through 6 and ongoing waste operation in Panels 7 and 8. Final closure of waste disposal panels is discussed in Item 1 of this Class 3 PMR above. Submittal of this modification at this time provides the Permittees sufficient time for the Class 3 PMR process and to assure integration of mining and waste emplacement activities and to provide the necessary resources in a timely and efficient manner.

Modifications to Table 4.1.1, Underground HWDUs

Changes to Table 4.1.1 Underground HWDUs and related text are required to assure that there is no confusion with regard to total capacity of the WIPP facility when the Panels 9A and 10A are added. The total amount of waste disposed at the WIPP facility cannot exceed the capacity listed in the Land Withdrawal Act as referenced in the footnotes of Table 4.1.1 of the Permit.

Changes to the underground traffic pattern description and mine ventilation description

Changes to the underground traffic pattern description and mine ventilation description are needed to accommodate new Panels 9A and 10A. When mining operations are underway it will be necessary for the mining ventilation circuit and the waste ventilation circuit to cross. This would be accomplished by using a ventilation structure referred to as an overcast. Overcasts allow one airstream to flow over another in a manner that prevents mixing and are common structures in the WIPP underground facility. The parts of the Permit that are being changed to clarify traffic and ventilation requirements are Permit Attachment A4, Attachment A2, and Part 4, Section 4.5.3.1.

Changes to panel closure schedule

Changes to the closure schedule, Table G-1 of the Permit, are required in order to include Panels 9A and 10A in place of Panels 9 and 10. Note 1 of Table G-1 is being deleted because this PMR will authorize disposal in all remaining waste panels and Note 4 is being deleted because it specifically applied to Panels 9 and 10. Other changes to Table G-1 are discussed in the Panel Closure Redesign section of this fact sheet and the PMR.

Changes to the VOC Monitoring Plan and the Hydrogen and Methane Monitoring Plan

Changes to Section 4.4.3 and Section N-3a(3) Ongoing Disposal Room VOC monitoring, are required to accommodate Panels 9A and 10A.

Other Editorial Changes

The Permittees are proposing to make the following clarifying and editorial changes:

- Part 4, Table 4.1.1 Underground HWDUs- Remove blank column as it is no longer needed;
- Attachment A2, Section A2-1 Description of the Geologic Repository- Combined paragraphs relating to waste emplacement in boreholes for clarity;
- Attachment A2, Section A2-2a(3) Subsurface Structures- Removed text referencing future permits; and
- Removed text referring to “during the term of this Permit”. The text is no longer relevant and is unnecessary because all disposal areas in the underground will be authorized for construction and use.

Public Comment Regarding Item 2

During the public comment period the NMED received various comments on Item 2 of the PMR. One comment stated concern that the PMR does not meet 40 CFR 270.42(c) (1)(iii) of the RCRA regulations which requires that the Permittees explain why the modification is needed, and is therefore incomplete. The comment acknowledges that the PMR states the modification is needed because the new proposed locations is more advantageous and that changes to the ventilation and underground traffic descriptions are required to support the new panel reconfiguration. The comment goes on to state that another reason why the modification is needed was not included in the PMR and therefore the PMR is incomplete. The commenter believes the WIPP Facility has been managed in a way that does not provide enough actual capacity for the 6.2 million cubic feet of TRU waste in the original WIPP design of 8 panels. The comment also states that the need for additional panels that are not currently permitted is to

allow the Permittees to emplace a larger amount of waste than could be filled in these 8 panels. The comment is in error in stating that the original WIPP design was for 8 panels. Permitting documents (application and permits) have consistently maintained that panels 9 and 10 would be used for waste disposal and that they are currently authorized for mining (see current Permit condition 4.5.2.1 where Panels 9 and 10 are identified as “Disposal Area access drift”).

The NMED did request additional information in the TID: specifically, clarification from the Permittees regarding former plans for Panels 9 and 10 and proposed plans for 9A and 10A. The Permittees provided further information as part of the responses which in part, stated that final engineering designs for Panels 9 and 10 have never been prepared because the panels have not been permitted for waste disposal. As a result, volume capacities for those panels have not yet been established and therefore the assertion that there is a problem reaching the allowable capacity without this PMR is erroneous. The NMED has determined that the justification for the PMR as presented by the Permittees is adequate.

A few comments requested that the Permittees provide more information to support their conclusion that mining new panels would be better than widening the central access drifts and for more information that supports the proposed location of new panels directly south of Panels 4 and 5. The NMED included both requests in the TID. The Permittees provided further information as part of the responses that includes referencing additional Geotechnical Analysis Reports that have been submitted to the NMED, as required in Part 4, Section 4.6.1.2 of the Permit and also provided references to past geological studies. This information is posted on the NMED HWB WIPP Group website and is part of the Administrative Record.

One comment requested a comparison of the volumes of [conceptual] Panels 9 and 10 to proposed Panels 9A and 10A. The NMED requested additional information on the TID. As part of their response the Permittees state that final engineering designs for Panels 9 and 10 has never been prepared because these panels have never been authorized for waste disposal. As a result, no volume capacities have been established.

Another comment requested information on whether the current ventilation system at WIPP could support the longer drifts and new panels that come with the proposed Panels 9A and 10A to meet the ventilation requirements in Part 4, Section 4.5.3.2 of the Permit. The Permittees provided further information as part of their response that includes a discussion on maintenance activities in the repository that have reduced resistance to airflow and have also included a mine ventilation modeling report that supports the Permittees conclusion that, “compliance with the ventilation requirements of the Permit is achievable for the new configuration”. This information is posted on the NMED HWB WIPP Group website and is part of the Administrative Record.

There are some additional comments and questions submitted to the NMED regarding Item 2 that were included in the NMED’s Technical Incompleteness Determination issued on September 20, 2013. Those comments and the Permittees’ responses can be found in the Administrative Record.

Item 3

The modification provides for the following changes:

Update the VOC target analyte list for the WIPP facility VOC monitoring programs (Table 4.4.1)

The VOC source term was modified based on actual headspace gas data from approximately 136,000 waste containers analyzed from the opening of WIPP in 1999 through the permit renewal application in 2010. The data were accumulated according to Waste Matrix Code Group (WMCG). A weighting factor for each WMCG was calculated using the TRU waste inventory used in the 2004 Compliance Recertification Application. The updated source terms for each VOC were then calculated based on each compound's weighted average concentration from 1999 through 2010. Once these concentrations were known, they were compared to EPA recommended values for non-carcinogen reference concentration (RfC) and carcinogen inhalation unit risk (IUR). Each compound was evaluated for percent contribution to both the non-cancer hazard and cancer risk. The updated target analyte list includes six compounds which make up 99.4 percent of the carcinogenic risk and 97.6 of the non-carcinogenic hazard.

Revise the method of determining compliance with the environmental performance standard and establish alternative remedial actions should risk action levels be reached

Rather than establishing Concentrations of Concern (COCs), Table 4.6.2.3 of the Permit has been revised to reflect the carcinogenic IUR and/or the non-carcinogenic RfC. This approach allows the assigned risk to be easily modified as EPA recommends new or more accurate values for compounds. Also, this method provides a better evaluation of health impacts because it takes into account both the carcinogenic risk and the non-carcinogenic hazard index (HI). The allowable carcinogenic risk factors of 10^{-5} for non-waste surface workers and 10^{-6} for members of the public remain unchanged. For both groups, the allowable exposure to non-carcinogenic compounds will not exceed a HI of 1.0.

Establish new room-based action levels (COCs) to correspond to the revised target analyte list

In the original 1999 permit, the COCs were established as either a lower explosive limit (LEL) or a value that poses an immediate danger to life and health (IDLH). This modification proposes an alternate method for calculating COCs. The worst-case underground worker exposure was defined in the original permit as a roof fall in a closed room that is adjacent to an active room. It was further assumed that a roof fall would displace 10% of the gas mixture above the waste in the closed room. The one-minute exposure to that gas mixture is calculated by multiplying the monitored concentration in the closed room by the ratio of displaced volume caused by the roof fall to the volumetric ventilation in the active room during a one-minute time interval. The single new COC for target analyte trichloroethylene was calculated in this manner. The PMR also proposes to delete the following compounds from the target analyte list (Table 4.4.1): chlorobenzene, 1,1-dichloroethylene, methylene chloride, and toluene. These proposed deletions are based on actual data collected in 2011 and 2012. In the case of chlorobenzene, toluene, and 1,1-dichloroethylene, these compounds are consistently below the instrument detection limit or below the method reporting limit. For methylene chloride, the highest measured concentration was found in Panel 5, reported as 6,119 parts per million volume (ppmv) for the period from July 1, 2011 through December 31, 2011. The methylene chloride concentration in other panels does not exceed 1,000 ppmv. Since the Table 4.4.1 room-based limit is 100,000 ppmv (equal to the IDLH), the Permittees propose to also drop methylene chloride as a target analyte.

Eliminate the requirement to sample and report threshold exceedances for VOCs in closed disposal rooms that are not immediately adjacent to an active TRU waste disposal room and remove closed room monitoring for non-adjacent Rooms

The Table 4.4.1 room-based exposure limits are premised on the worst-case scenario of a roof fall in a closed room adjacent to an active room. Concentrations in other non-adjacent rooms do not contribute to the displaced volume caused by the roof fall. Therefore, the concentrations for target analytes are relevant to the adjacent room only. This PMR proposes to discontinue VOC monitoring in non-adjacent rooms, since there is no scenario that predicts active room VOC increases from a roof fall in a non-adjacent room. In other words, the COCs in Table 4.4.1 apply to adjacent rooms only, and exceedances of the COCs in non-adjacent rooms should not trigger panel closure or the 7-day reporting requirement. The NMED concurs with the Permittees in that VOC monitoring in non-adjacent rooms is not necessary for the protection of workers in the underground.

VOC Monitoring Program clarifications and updates

The Permittees are proposing numerous changes related to the VOC Monitoring Program. These changes generally fall into three categories:

- 1) editorial changes to update program language, remove unnecessary detail, and to make editorial corrections;
- 2) technical changes to align the program with EPA methods for ambient air monitoring;
and
- 3) clarifications to make the requirements internally consistent.

The major changes under this category include a change in VOC sampling method from pressurized to subatmospheric and elimination of VOC background monitoring station VOC-B. Also of significance is a proposed change to the sampling duration at VOC-A to a 24-hour integrated time-weighted average, with one sample taken per week. Sampling for room-based monitoring will be of shorter duration using the guidelines set forth by EPA in Method TO-15. The disposal room and adjacent closed room VOC monitoring frequencies are unchanged. The current permit specifies monthly monitoring of Room 1 of closed panels unless an explosion isolation wall is installed. Active room VOC monitoring will occur once every two weeks. The Permittees are not proposing to change the sampling schedule for measuring VOC concentrations in the immediately adjacent room.

Public Comment Regarding Item 3

During the public comment period the NMED received various comments on Item 3 of the PMR. One commenter stated that the Permittees did not provide an adequate basis for updating the target analyte list. The commenter left out the first sentence that is part of the reason given in the overview, which is essential to be included in the context of the comment. The sentence reads: *“This modification is needed because changes in the requirements upon which the Permit is based with regard to VOC monitoring have changed, creating a cause for modification as defined by 20.4.1.900 NMAC (incorporating 40 CFR 270.41(a)(3)).”*

This sentence states that based on regulatory requirements, there is a cause for the modification. Specifically, there have been VOCs detected in the underground that are not on the target list and, therefore, have no associated levels. It is important to establish these action levels to assure adequate protection of the public.

Another comment alluded to reduced levels of protection by expressing concern regarding detection levels stating that “[t]he detection levels should be compared with maximum exposure levels of underground workers and maximum exposure levels to surface workers. Those actual exposure levels also must be compared to modeling results.” It was not clear to the NMED what the commenter was referring to regarding reduced levels of protection. The modification does not propose to change the level of protection required by the Permit. This is made clear in the text. The information in Table 10 supports the establishment of a new concentration of concern for the additional analyte. It represents the results of disposal room monitoring, and therefore cannot be correlated with repository monitoring. Values are not directly comparable to worker exposures because they do not represent releases, only concentrations in closed areas. The values from Station VOC-A represent the actual exposure levels and are used by the Permittees to determine actual compliance with the environmental performance standards (as opposed to model results).

Another comment requested that the Permittees provide an evaluation of the effectiveness of the existing VOC monitoring program and a comparison of the projected health effects to underground and surface workers from the proposed revised program. The health effects are compound dependent and can be found in the original permit application or the information supporting the risk factors. These are summarized as either carcinogenic or non-carcinogenic for the purposes of establishing the limits in the Permit. Since the Permit does not allow the Permittees to exceed the set limits, the health effects are considered acceptable. The effects from the proposed program will be the same as the existing program. However, the evaluation becomes more straightforward and the ability to adjust to changes in risk factors or compound concentrations will be significantly easier. This will afford improved protection to the extent that the Permittees can assess the effects of new compounds directly against the risk standard instead of trying to establish an appropriate concentration of concern, which could take months.

Another comment requested that the Permittees provide the actual data regarding worker experience, including amount of time that underground and surface worker have exposures and actual turnover rates. The commenter requested that other parameters and scenarios involved in modeling should be compared with actual worker data and a sensitivity analysis should be included. No such data is necessary since these are risk modeling assumptions. The exposure times are assumptions used to model the possible exposures to individuals in the Training Building. They represent estimates of the duration of possible exposures in order to evaluate the consequences. Actual exposure times do not become important unless the concentrations reach the 10^{-5} risk level. At that point, should it ever occur, one of the alternative actions that the Permittees may propose is to monitor exposures at the Training Building.

Another comment requested that the Permittees provide their health-based basis for use of the

10^{-5} risk level stating that “the permittees presume that the 10^{-5} risk level is appropriate. But the request does not demonstrate that level is adequately protective of public health and the environment.” The Permittees have not claimed that 10^{-5} is protective to all classes of the public. This has never been the premise for the Permit. The Permittees assert that 10^{-5} is protective for the class of individuals that work in the WIPP Training Building. The NMED established this exposed population with a combination of occupational exposure limits and public exposure limits and provided their rationale in their written testimony in 1999. The Permittees are not changing this class of exposed individuals nor is the level of protection being changed by this modification. The comment does not provide data to compel such a change.

Another comment stated that the waste inventory data used in Table 1 of the PMR is years out of date and that the Permittees should use 2012 inventory data. The inventory used is the last inventory where the information was summarized according to final waste form. This inventory is a significant improvement over the previous inventory since it was developed after the WIPP facility was open and receiving waste. As with the previous inventory, the source term developed is an approximation to be used as a starting point for design and operations. Note that VOC Station A data is used in conjunction with the source term to identify target analytes. Since the weighting factor and source term used are appropriate, no update is required. The relevant requirement remains that the Permittees maintain VOC emissions within the limits established by the Permit.

Another comment requested that the Permittees provide specific justification for how VOC emissions from non-adjacent rooms will be determined if sampling in such rooms is eliminated and how elimination of such sampling improves understanding of VOC emissions. The comment does not propose any technical information that monitoring non-adjacent rooms improves the NMED’s and the Permittees’ knowledge of VOC emissions or that there is any other valid reason for the monitoring. The NMED and the Permittees are aware that VOCs will be emitted by containers of waste. The NMED and the Permittees are also aware that the emissions from unclosed panels contribute to the overall concentrations at Station VOC-A. However, the Permittees are only able to affect the concentrations in the rooms being filled with waste and shall take action if an adjacent filled room reaches a harmful level. Therefore, taking measurements in other rooms simply to have the information is not beneficial, since such information does not support operational decision-making.

Another comment requested that the Permittees provide actual data of six-hour and 24-hour sampling in the WIPP underground, including a comparison of the range of exposure amounts and that the Permittees provide justification as to why the 24-hour sampling always provides more conservative results than six-hour sampling. The data presented in Figure 1 of the PMR compares the 24-hour samples with the six-hour samples. The expectation is that 24-hour samples will be more representative of the emissions during active operations and when operations have ceased. The data appears to result in somewhat higher values for the 24-hour samples, although this may be due to the improved sampling method represented by the data.

There were additional comments and questions submitted to the NMED regarding Item 3 that were included in the NMED’s Technical Incompleteness Determination issued on September 20,

2013. Those comments and the Permittees' responses can be found in the Administrative Record.

The NMED PROPOSED ACTION IN DRAFT PERMIT

The NMED is issuing a draft Permit for public comment that considers the PMR submitted by the Permittees and all comments received during the public comment period on the PMR. The NMED is proposing to approve the PMR with changes that ensure compliance with the New Mexico Hazardous Waste Act, NMSA 1978 §§74-4-1 through 74-4-14 and the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC. This draft Permit therefore reflects the NMED's proposed action on the PMR that includes changes submitted with the Permittees responses to the TID. The NMED proposes to approve the PMR with the following changes:

1. *Parts 1, 4 and 6 list of Permit Attachments, Revise title of Permit Attachment G1 to new title "WIPP Panel Closure (WPC) Description and Specifications" and in the Table of Contents for Part 4 corrected Section 4.4.3 to read "Ongoing Disposal Room VOC Monitoring."*
2. *Change language to standard and enforceable condition format and correction of typographical errors throughout portions applicable to this PMR in Attachments A2, A4, G, G1, N and H when applicable, language using "will" and "is" are changed to "shall". (e.g. ... Closure at the panel level shall include the construction of barriers to limit the emission of hazardous waste constituents from the panel into the mine ventilation air stream below levels that meet environmental performance standards).*
3. *Change language in Part 4, Table 4.1.1 and Attachment J, Table J-3 retained "Maximum Capacity" column total and clarified by renaming the column to "Maximum Disposal Unit Capacity," adding a row "Summation of Disposal Unit Capacity" and adding footnote 4 "This total is a summation of the listed disposal unit capacity and is for information purposes only and is not a limit or condition" and footnote ** "Total only applies to the Maximum Disposal Unit Capacity column." The NMED determined that the disposal unit capacity total should remain but be clarified.*
4. *Delete language in Part 4, Section 4.5.3.1. "...in order to provide adequate separation of traffic and ventilation air when waste is being transported in the underground". The NMED determined this language is incomplete and superfluous. Attachment A thoroughly describes the purpose of the underground traffic requirements.*
5. *Revise language in Part 4, Section 4.6.2.3 to also include revision to tables 4.1.1 and 4.6.3.2. The NMED determined that a TIC cannot become a target unless the new compound is added to all three tables: Table 4.4.1, Table 4.6.2.3, and Table 4.6.3.2. The Inhalation Unit Risk (IUR) for carcinogens and the Reference Concentrations (RfC) for non-carcinogens in Table 4.6.2.3 are published values and can be easily added for new target analytes. The disposal room concentration limit for a new compound is required in order to update Tables 4.4.1 and 4.6.3.2. These limits for new targets will be calculated in the same way as in the original 1999 permit application. The limit is derived from either*

the OSHA IDLH or the LFL/LEL, whichever is lower. Then a dilution term equal to 48 is applied, which results from the worst-case adjacent room roof-fall scenario. For example, this PMR identifies one compound, trichloroethylene, that requires addition to Table 4.4.1 as a new target analyte. The compound is not flammable, so the OSHA IDLH of 1,000 ppmv was used. The resulting disposal room concentration limit is 48,000 ppmv. All information in Tables 4.4.1, 4.6.2.3, and 4.6.3.2 can be looked up in reference literature and are not subject to interpretation. Therefore, the addition of a new target analyte is considered by NMED to be informational in nature and such additions may be accomplished through the RCRA Class 1 Permit Modification Notification process.

6. *Change language in Part 4, Sections 4.6.2.3 and 4.6.2.4. from “can” to “may” so that the condition reads: “Alternatively, prior to reaching the action level, the Permittees may propose an alternative remedial action to the Secretary for ensuring no individuals are exposed to concentrations in excess of the limits.”* The NMED determined this language is more enforceable and accurate.
7. *Change language in Part 4, Condition 4.6.3.2 add the phrase “in any active open room or”.* The NMED determined clarification is necessary and that language should be consistent with other related conditions such as 4.6.3.3.
8. *In Attachment A2, Section A2-2a(3) add “(CH and RH)” to read “The volume of TRU mixed waste (CH and RH) emplaced in the repository shall not exceed 6,200,000 ft³ (175,564 m³) and the volume of RH TRU mixed waste shall not exceed 250,000 ft³ (7,079 m³).”* The NMED determined clarification is necessary making it clear that total included both CH and RH waste.
9. *Attachment B, Section 8.PROCESS—CODES AND DESIGN CAPACITIES (continued) – add “(CH and RH)” to “Up to 175,564 m³ of TRU mixed waste (CH and RH) could be emplaced in Panels 1 to 10A and up to 7,079 m³ of RH TRU mixed waste could be emplaced in Panels 4 to 10A.”* The NMED determined clarification was necessary so that it is clear that total included both CH and RH waste, and so the language is consistent with Attachment A2, Section A2-2a(3).
10. *Attachment B, RCRA PART A APPLICATION CERTIFICATION correction of a typographic error “partnership” to “Partnership”.*
11. *Add language in Permit Attachment E, Table E-1 clarifying the inspection schedules for explosion-isolation walls and bulkheads in filled panels. Only accessible bulkheads and explosion-isolation walls require periodic inspections.*
12. *Attachment G, Section G-1e - Closure Activities - Add a sentence that reads “Attachment G1 and the specifications and drawings in Appendices G1-A and G1-B apply to current and future HWDUs”.* This change will insure that the figures in Appendix G1-B apply to the new panels 9A and 10A.

13. *Add language in Attachment G1, Section G1-1b(b) “functionally equivalent material” to read “Telescoping tubular steel or functionally equivalent material shall be used to bolt the bulkhead to the floor and roof.”* The NMED determined that functionally equivalent material option is necessary and appropriate language.
14. *Change language in Attachment G1, Section G1-1b(1) from “a” to “the approximately”.* The NMED determined that clarification and consistency was necessary.
15. *Delete a sentence in Attachment H, Section H-1 “As discussed in Attachment G (Closure Plan), Section G-1e(1), panel closures have been designed to require no post-closure maintenance of the disposal unit.”* The NMED determined this language no longer applies and is not correct. The requirement for minimal maintenance is clearly stated in Attachment G.
16. *Delete redundant language in Attachment N, Section N-3a(1): “Station VOC-A will collect the upstream VOCs plus any additional VOC concentrations resulting from releases from the closed and open panels” and “The sampling location was selected based on operational considerations. There are several different potential sources of release for VOCs into the WIPP mine ventilation air. These sources include incoming air from above ground and facility support operations, as well as open and closed waste panels”.* The NMED determined this language is redundant and not necessary as it is already stated in the earlier portion of the paragraph.
17. *Add language in Attachment N, Section N-3b Analytes to Be Monitored with the phrase “as well as justification for exclusion of some non-target TICs from the laboratory’s target analyte list as ARAs”.* The NMED determined the Permittees should justify why non-target TICs are not included in the target list as an additional ARAs. The NMED also changed the text in the last paragraph of this section to be consistent with the changes made to Part 4, Section 4.6.2.3 requiring Permit modification.
18. *Added new section to Attachment N, new Section N-3(e)3 to include the calculation used to determine the VOC room-based concentration limits found in Table 4.4.1.* This PMR proposes to allow addition of new compounds to the target analyte list and calculation of the resulting Table 4.4.1 limit as a Class 1 PMR. The NMED believes that inclusion of the roof-fall scenario calculation is important to include in the permit, so that an update to Table 4.4.1 can be clearly regarded as an informational change.
19. *Added summarized list of criteria that must be met in order for a TIC to become a target analyte. This list appears in Attachment N, Section N3(b), end.* The NMED recognizes that all TIC requirements are discussed in Section N-3(b), but that there is value added to summarize these requirements at the end of the discussion.
20. *Minor formatting changes to Attachments G and N.*

AVAILABILITY OF ADDITIONAL INFORMATION

The Administrative Record for this proposed action consists of this Fact Sheet, the Public Notice, the permit modification request described above and other relevant correspondence and documents. The administrative record may be reviewed from Monday through Friday 8:00 AM to 5:00 PM at the following locations:

New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone: 505-476-6051
Attn: Pam Allen
Email: Pam.Allen@state.nm.us

OR

New Mexico Environment Department
DOE Oversight Bureau
406 N. Guadalupe, Suite C
Carlsbad, New Mexico 88220
Phone: 575-885-9023
Attn: Krissie Carrasco

Email: Trais.Kliphuis@state.nm.us

Attn: Trais Kliphuis (for Public Comment and Request for Hearing),
Email: Trais.Kliphuis@state.nm.us

To obtain a copy of the administrative record or any part thereof, please contact Pam Allen of the New Mexico Environment Department at the above address. The draft permit is also available on the NMED web site (www.nmenv.state.nm.us/wipp).

PUBLIC COMMENT AND REQUEST FOR HEARING

NMED shall issue a public notice on **February 14, 2014**, to announce the beginning of a 60-day comment period in accordance with 20.4.1.901 A(3) NMAC that will end at **5:00 p.m. MST, April 15, 2014**. Any person who wishes to comment on the draft Permit or request a public hearing should submit written or electronic mail (e-mail) comments with the commenter's name and address to the respective address above. Only comments and/or requests received before **5:00 p.m. MST on April 15, 2014** will be considered. In accordance with 20.4.1.901 A(4) NMAC, if the secretary issues a draft permit, and a timely written notice of opposition to the draft permit and a request for a public hearing is received, the department, acting in conjunction with the applicant, will respond to the request in an attempt to resolve the issues giving rise to the opposition. If such issues are resolved to the satisfaction of the opponent, the opponent may withdraw the request for a public hearing.

Written comments should include, to the extent practicable, all referenced factual materials. Documents in the Administrative Record need not be re-submitted if expressly referenced by the commenter. Requests for a public hearing shall provide: (1) a clear and concise factual statement of the nature and scope of the interest of the person requesting the hearing; (2) the name and address of all persons whom the requestor represents; (3) a statement of any objections to the draft Permit, including specific references to any conditions being modified; and (4) a statement of the issues which the commenter proposes to raise for consideration at the hearing. Written comment and requests for public hearing must be filed with Ms. Trais Kliphuis on or before **5:00 p.m. MST, April 15, 2014**. NMED will provide a thirty (30) day notice of a public hearing, if scheduled.

PROCEDURES FOR REACHING FINAL DECISION

The following procedures are provided by the HWA (Chapter 74, Article 4 NMSA 1978).

NMED must ensure that the final Permit is consistent with the New Mexico Hazardous Waste Management Regulations. All written comments submitted will be considered in formulating a final decision and may cause the draft Permit to be modified. NMED will respond in writing to all public comments. This response will specify which provisions, if any, of the draft Permit have been changed in the final decision and the reasons for the changes. All persons presenting written comments or who requested notification in writing will be notified of the decision by mail. These responses will also be posted on the NMED's website.

After consideration of all written public comments received and all data, views, and arguments presented at the public hearing, if one is held, NMED will issue, or modify and issue, the Permit. The Applicants shall be provided by mail a copy of any relevant modified documents and a detailed written statement of reasons for the modifications.

The Secretary of the Environment Department will make the final decision publicly available and shall notify the Applicants by certified mail. The Secretary's decision shall constitute a final agency decision and may be appealed.

ARRANGEMENTS FOR PERSONS WITH DISABILITIES

Persons having a disability and needing help in being a part of this hearing process, including TTY users, should contact J. C. Borrego at least 10 days before the event at the NMED Human Resources Bureau, P.O. Box 5469, 1190 St. Francis Drive, Santa Fe, New Mexico, 87502, telephone 505-827-0402.