Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

SEP 19 2018

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87508-6303

Subject: Notification of Completion and Public Posting of the Triennial Review Report

References: 1. New Mexico Environment Department correspondence from J. C. Borrego, Deputy Secretary, New Mexico Environment Department, to Todd Shrader, CBFO, and Bruce C. Covert, NWP, dated December 28, 2017, subject: Request for Termination of Settlement Agreement and Stipulated Final Order No. HWB-14-21, Waste Isolation Pilot Plant, EPA I.D. Number NM4890139088

2. The Settlement Agreement and Stipulated Final Order No. HWB-14-21 (CO), January 22, 2016

Dear Mr. Kieling:

The purpose of this letter is to notify the NMED that the First Triennial Review Report for the Waste Isolation Pilot Plant (WIPP) facility was completed and made available to the public as required by Paragraph 34b of the Settlement Agreement and Stipulated Final Order (Ref 2.). This report was made available to the public by posting it onto the WIPP Information Repository on September 19, 2018.

This notification is made pursuant to the referenced correspondence (Ref 1) that states:

> *NMED has reviewed the Request and acknowledges that all requirements of the Order except for Paragraph 34b have been completed, as discussed above. Because Paragraph 34b has not been completed, and is not scheduled to be completed until several months from now, NMED cannot terminate the Agreement in its entirety at this time. This request may be readdressed after Paragraph 34b has been completed. The Permittees should notify NMED once the initial triennial review has been completed and the results are made available.*

Enclosed is the First Triennial Review Report for the WIPP facility.

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on

our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Mr. Michael R. Brown at (575) 234-7476.

Sincerely,

Signatures on File

Todd Shrader, Manager
Carlsbad Field Office

Bruce C. Covert, Project Manager
Nuclear Waste Partnership LLC

Enclosure

cc: w/enclosure
B. Tongate, NMED *ED
R. Maestas, NMED ED
D. Biswell, NMED ED
M. McLean, NMED ED
H. Tellez, NMED ED
CBFO M&RC
*ED denotes electronic distribution

First Triennial Review Report
For the Waste Isolation Pilot Plant (WIPP)

Prepared for:
Nuclear Waste Partnership LLC (NWP)

Prepared by:
Firewater Associates, LLC

September 7, 2018

Table of Contents

Attachment A – WIPP Triennial Review Plan
Attachment B – Quality Assurance Plan
Attachment C – Criteria Checklists
Attachment D – Review Team Qualifications

Triennial Review Final Report
September 7, 2018

1. INTRODUCTION

This first Triennial Review (or Review) of the Waste Isolation Pilot Plant (WIPP) is the result of a Settlement Agreement between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE)-Carlsbad Field Office (CBFO) and Nuclear Waste Partnership LLC (NWP) to resolve alleged violations of the New Mexico Hazardous Waste Act (HWA), NMSA 1978, Sections 74-4-1 to- 14, the Hazardous Waste Management Regulations, 20.4.1 NMAC, and the WIPP Hazardous Waste Facility Permit (Permit). Specifically, Paragraph 34 of the Settlement Agreement and Stipulated Final Order (SFO) dated January 22, 2016, requires a Triennial Review.

The Review is designed to be a systematic, independent, and documented process of objectively obtaining and evaluating evidence to determine whether specified environmental regulatory requirements are met at the WIPP. The Review is intended to evaluate the integrity of the regulatory compliance processes implemented at the WIPP facility under legislation, permits, DOE Orders, notices, and agreements.

The DOE-CBFO funded the independent, external Triennial Review in accordance with Paragraph 34 of the SFO. Through a competitive procurement process, Firewater Associates, LLC (Firewater) was selected as the independent firm to conduct the first Triennial Review. The document review and on site portion of the Triennial Review was conducted from October 17, 2017 through March 16, 2018. In accordance with its contract (PO #509218) with NWP, Firewater developed a Review Plan to conduct the WIPP first Triennial Review. The Review Plan incorporates the requirements of the *Triennial Review Scope of Work and Guidelines* (SOW), document 17-1003 submitted on January 20, 2017, that the SFO required DOE to submit to NMED for approval. The Review Plan also specifies the methodologies that the Triennial Review Team (Review Team or Team) utilized to conduct the Review for both the off-site and on-site portions of the Review. This Triennial Review Report (Report) documents: 1) the Review objectives; 2) the Review scope, 3) the Review Team members; 4) the activities performed during the on-site and off-site portions of the Review; and, 5) the Review Team's findings, observations and recommendations.

2. REVIEW OBJECTIVES

The primary objective of the Review was to determine whether specified environmental regulatory requirements within the designated scope areas are being properly implemented at the WIPP facility. In those areas, the Review sought to identify potential regulatory deficiencies,

potential violations (herein referred to as non-compliances), and deficiencies that could lead to non-compliances of environmental regulations.

In addition to identifying potential regulatory deficiencies and non-compliances, the Review Team attempted to identify areas of improvement so that NWP could address and mitigate immediate risks, as well as make process improvements to prevent future risks.

3. SCOPE

The Review focused on the following environmental statutes, regulations, and Orders, consistent with the *First Triennial Review Scope of Work and Guidelines*:

- Resource Conservation and Recovery Act (RCRA) and implementation through the New Mexico Hazardous Waste Act (NMHWA)
- Toxic Substances Control Act (TSCA)
- Environmental Protection Agency (EPA) responsibilities under the Atomic Energy Act (AEA)
- Clean Water Act (CWA) and the New Mexico Water Quality Act
- DOE Order 231.1B, Admin Change 1, *Environment, Safety, and Health Reporting*
- DOE Order 458.1, Change 3, *Radiation Protection of the Public*

The Review Team evaluated current WIPP facility programs, plans and procedures for compliance with the above statutes, regulations, and orders at surface and underground structures/facilities at the WIPP facility.

4. REVIEW TEAM

4.1 Personnel

The Triennial Review Team was made of up six team members from two contractors - Firewater Associates, LLC (Firewater) and Longenecker & Associates (L&A). Their resumes can be found in Attachment D. The Review Team members included the following individuals:

Team Member	Affiliation
William Palmer	Firewater Associates, LLC
Gregory Edwards	Firewater Associates, LLC
Anne Weaver	Firewater (Visionary Solutions)
Dr. Ben Rogers	Firewater Associates, LLC
Christine Gelles	Longenecker & Associates
Kathryn Roberts	Longenecker & Associates

4.2 Responsibilities

Each Team member was responsible for developing Lines of Inquiry (LOI) for each of the criteria assigned. Additionally, Review Team members considered the following factors when developing LOIs:

- Accuracy of reporting and documentation
- Identifying precursors of future non-compliances
- Lessons Learned from previous complex wide environmental assessments
- Impacts on the client
- Schedule/timetable adherence
- Communication
- Confidentiality and information security

5. METHODOLOGY

In accordance with the Review Plan, the Review Team developed criteria checklists for each of the assigned areas (e.g., RCRA, TSCA). The criteria checklists were reviewed by NWP for consistency with the NMED approved *First Waste Isolation Plant Project Triennial Review Scope of Work and Guidelines* (scope of work and guidelines) prior to the on-site portion of the Review. The final criteria checklists were designed to guide on-site observations and help the Team assess whether collected evidence met the review criteria.

5.1 Criteria Selection

This section describes the methodology employed by the Review Team in determining the specific criteria to be evaluated in each of the six areas (i.e., RCRA, TSCA, CWA, AEA, DOE O 231.1B and DOE O 458.1). In general, criteria were generated from specific language in the controlling document (will, shall, must, etc.), but other criteria were added based on the Review Team's evaluation of language that conveyed intent to require an action by NWP. In addition, the Review Team added criteria based on its experience with operations in regulated facilities and the associated risks. The language used in the "Required Program" (question to be answered) column of the associated Criteria Workbook also reflects that experience.

Resource Conservation and Recovery Act (RCRA)

Requirements listed in the Permit that do not directly relate to current activities at the WIPP facility (e.g., closure, post-closure) were not included in the Review criteria. These determinations were made based on the Team's subject matter knowledge, in consultation with NWP and CBFO. Additionally, there were specific areas of the Permit (e.g., waste characterization at generator sites, transportation, packaging) that were outside the scope of the first Triennial Review and were therefore not evaluated. Finally, most provisions identified in the Permit Attachments are referenced in the relevant Permit Parts. Therefore, the Team did not duplicate the criteria, but instead cross-referenced the applicable Permit Part or Attachment in the checklists where appropriate.

In addition to criteria developed from direct requirements of the Permit, criteria associated with non-Permit requirements associated with 40 CFR Part 262 and 40 CFR Part 761 directives were also included. While Permit requirements related to remote-handled (RH) transuranic (TRU) waste management were identified in the development of criteria prior to mobilization for the onsite portion of the Review, these were not addressed, at the request of NWP, based on the decision that RH TRU waste was not being processed at the WIPP facility at the time of the Review.

The Team evaluated the Parts and Attachments of WIPP's Permit with the following exceptions:

- Permit Part 6 – *Closure Requirements*: The Team did not evaluate the majority of Permit Part 6 because the WIPP facility is still actively receiving waste. However, the Team did evaluate the closure requirements for filled panels Panels, 1, 2, 3, 4, 5, and 6), including commitments on closure methodology, design and schedule.
- Permit Part 7 – *Post-Closure Care Plan*: The Team did not evaluate Permit Part 7 because the WIPP facility is not in any phase of post-closure care. Therefore, the majority of these requirements are not yet applicable to the facility.
- Permit Attachment A – *General Facility Description and Process Information*: The Team did not evaluate Permit Attachments A, A1, A2, A3 or A4 because these Attachments provide descriptive language about the facility, rather than Permit requirements. Furthermore, references to Attachment A are captured throughout the Permit Parts (particularly Permit Parts 3 & 4) and were addressed by the Team during the Review.
- Permit Attachment B – *Part A Application*: Attachment B is the WIPP facility RCRA Part A Permit application provided as information within the regulatory record. As such, there are no requirements to be evaluated. The requirements resulting from this application are contained in the Permit itself and were evaluated during the Review.
- Permit Attachment F – *Personnel Training*: At the time of the Review, a Class 2 Permit Modification Request containing a major restructuring of the training program and requirements for hazardous waste facility personnel working at the WIPP facility had been submitted and was under review by NMED. Since completion of the onsite portion of the Review, that modification request has been approved and is being implemented. However, the Review was conducted based on the then-in-force Permit requirements. No review of the changes to the findings based on the new Permit requirements has been conducted.
- Permit Attachments H and H1 – *Post Closure Plan*: The Team did not evaluate Permit Attachments H & H1 because the WIPP facility is not in any phase of post-closure care. Therefore, these requirements are not yet applicable to the facility. Those that apply once Panels are closed are covered in Attachment N.
- Permit Attachment I – *Compliance Schedule*: The Team did not evaluate Permit Attachment I because, currently, there is no Compliance Schedule.
- Permit Attachment J - *Hazardous Waste Management Unit Tables*: Attachment J is a table that lists the Hazardous Waste Management Units (HWMUs). There are no requirements listed in Attachment J. The requirements for each of HWMU are addressed in the individual Permit Parts/Attachments and were evaluated during the Review.

- Permit Attachment M – *Figures*: The Team did not evaluate Permit Attachment M because, currently, there are no figures in this Attachment.
- Permit Attachment N1 – *Hydrogen and Methane Monitoring Plan*: Permit requirements related to this Attachment were identified in the development of criteria prior to mobilization for the onsite investigation portion of the Review. However, upon initiating the investigation during the on-site Review, it was determined that the requirements for hydrogen and methane monitoring are being proposed for deletion from the Permit in a Class 3 Permit Modification Request pertaining to the Panel closure design. The monitoring is not being conducted pursuant to a NMED Administrative Order and because filled Panels 3 and 4, (which do not have explosion isolation walls installed) are not accessible for monitoring. Therefore, no detailed review of the criteria was conducted.

NM Water Quality Act – Discharge Permit 831

Applicable sections of the New Mexico Water Quality Act (NMWQA) were reviewed. Additionally, Discharge Permit (DP) 831 was reviewed in its entirety, and the Permit provisions were evaluated with the following exceptions:

- Conditions 42-51 of DP 831 are common to all discharge permits issued by the NMED-Groundwater Quality Bureau (GWQB). These provisions outline administrative processes that must be followed, such as submitting modifications or amendments to the Permit or payment of fees. For the purposes of the Review, the Team focused on the process provisions of the Permit (rather than the administrative) because violations of these provisions could potentially result in releases to the environment. Preventing releases to the environment is the primary objective of the NMWQA and DP 831.

Toxic Substances Control Act (TSCA)

Criteria under the TSCA, Disposal of PCB/TRU and PCB/TRU Mixed Waste at the U.S. Department of Energy (DOE) WIPP Carlsbad, New Mexico Conditions of Approval (EPA Conditions of Approval), were selected based on the current operations at the WIPP facility. In addition to criteria developed as direct requirements of the Conditions of Approval, criteria associated the applicable PCB regulations in 40 CFR 761 were also included for completeness.

Atomic Energy Act (AEA)

While the AEA is listed within the scope of work and guidelines as a relevant regulatory document, involving the collection and reporting of information required by the recent EPA Compliance Re-Certification responsibilities and authorities for both DOE and EPA, it does not warrant or lend itself to a specific compliance checklist. The Review Team reviewed the AEA as amended and confirmed that any WIPP-related requirements, including waste type definitions and references to TRU waste management and disposal, are also included in other statutory and regulatory requirements within the First WIPP Triennial Review Scope of Work and Guidelines. Further, the responsibilities assigned to the EPA within the AEA relate to regulation of uranium production and enrichment facilities and the disposal of by product materials. As such, the AEA has no apparent relevance to the Review in regard to EPA authorities. Rather, the

EPA roles and authorities are clearly established within the WIPP Land Withdrawal Act (LWA), 40 CFR Part 191, and 40 CFR Part 194.

DOE Orders

DOE Order 231.1B, *Environment, Safety and Health Reporting* and DOE Order 458.1, *Radiation Protection of the Public and Environment* are two regulatory requirements promulgated by DOE under its AEA authorities. Compliance with these two Orders at the WIPP facility was specifically evaluated as part of the Review.

DOE Order 231.1B

In summary, this Order requires the operator at DOE sites, including the WIPP, to 1) produce an annual site environmental report (ASER); 2) report occupational health and safety information; 3) provide ionizing radiation exposure information; and, 4) report radioactive sealed source information.

The WIPP facility 2016 ASER was evaluated, as well as the WIPP facility related environmental monitoring and reporting procedures. Procedures and implementation in the areas of occupational health and safety reporting and radioactive source management were also reviewed. However, the review focused on environmental aspects, rather than worker safety and health, due to the Triennial Review Team focus on environmental criteria pursuant to SFO and the First WIPP Triennial Review Scope of Work and Guidelines.

DOE Order 458.1

This DOE Order establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the DOE control. As such, it has broad implications on any DOE site operations. It also underpins a site Environmental Management System (EMS) and the Radiation Protection Program and relies heavily on recordkeeping. However, compliance with every detail of the Order itself is not the purpose of this Review. In developing the Review Plan relative to Order 458.1, the Team reviewed the Order and the Contractor Requirements Document (CRD) in detail to select those requirements that were directly and currently relevant to the WIPP facility and the purpose of the Review. The Team did not include specific requirements related to institutional controls (IC) or clearance of real property, as they aren't currently relevant to the WIPP facility.

In contrast, the Team included clearance of personal property containing residual radioactivity because there could be contaminated equipment and other items from recovery located at the WIPP facility, and there could be contaminated containers resulting from waste handling activities that require decontamination. The Team focused on two general requirements from the CRD: 1) the NWP implementation schedule, and 2) the documentation of DOE acceptance of the compliance documentation. The Team also focused on requirements related to the establishment and management at the "program level".

As with Order 231.1B, the Review did not address requirements specifically related to occupational exposures to site personnel, based on the decision that the Review is limited to environmental criteria pursuant to SFO and the First WIPP Triennial Review Scope of Work and Guidelines. Rather, the Review against Order 458.1 requirements centered on those related to radiation protection of the environment.

5.2 Selection of Training Records and Inspection Forms for Review

In determining which inspection forms or which employee training records within a job title should be examined to determine whether the regulatory requirements were being met, the Review Team used the following methodology:

- For determining the number of samples to be reviewed for various size sample populations (e.g., daily, weekly, monthly, semi-annually), the Team chose values commonly used in statistical selection to determine the number of records to select from each group of records in order to achieve a high degree of confidence in the review results. A random number generator was then used to select which records from those groups for in-depth review.
- For documents (such as inspection forms), the Team first had to determine the time frame that established the available population. An enhanced review process for inspection forms was implemented at the WIPP facility in July 2016. Therefore, the Team chose October 1, 2016 as the start date for selecting the population of documents to be reviewed to allow the WIPP facility staff two months to implement the new inspection forms process. The publication/production dates within each document frequency group (e.g., daily, weekly, monthly, semi-annually) were sequentially numbered starting with October 1, 2016. A random number generator was then used to select the specific document dates to be reviewed.
- For selection of personnel for in-depth review of training compliance, the list of personnel for each job title was numbered sequentially. A random number generator was then used to select the personnel from each job category to be examined in-depth.

6. ON-SITE REVIEW ACTIVITIES

The Review Team was on-site for a four-week period extending from February 20, 2018 through March 16, 2018. During that time, team members performed a thorough document review (e.g., program plans, procedures, instructions, other documentation), conducted interviews of relevant NWP and CBFO personnel, observed a variety of operational activities (e.g., volatile organic compound (VOC) sampling, inspections, groundwater sampling) and participated in walk-downs of several areas (e.g., storm water ponds, the Waste Handling Building (WHB), all accessible areas of the underground). The Review Team evaluated over 500 individual criteria across the six focus areas identified in Section 3, above.

Below is a summary of the Review Team activities during the on-site portion of the Review.

6.1 Document Review

The Triennial Review Team reviewed the following documents during the on-site portion of the Triennial Review:

Table 1 – Document Review	
Criteria Area	**Procedures/Plans/Documents**
Permit Part 1 – *General Permit Conditions*	• 02-EC.06 *WIPP Site Effluent and Hazardous Waste Sampling Plan* • 02-EC1001 *Characterization Sampling, Shipping, and Documentation* • 02-EC3506 *Environmental Incident Reporting* • 02-RC3112 *Stakeholder E-mail Notification System* • • 02-EM.02 *Integrated Sample Control Plan* • 02-PC.03 *WIPP Hazardous Waste Facility Reporting and Notifications Compliance Plan* • 02-PC3005 *Hazardous Waste Permit Notification and Reporting* • 02-RC.01 *Hazardous and Universal Waste Management Plan* • 02-RC.05 *LL/MLL Waste Management Plan* • 02-RC3109 *Waste Accumulation Area Inspection* • 02-RC3111 *Information Repository* • 02-RC5000 *Site Environmental Compliance RCRA Operating Record* • 04-CO.01-6 *Conduct of Operations Program - Investigation of Abnormal Events, Conditions and Trends* • 04-CO.01-7 *Conduct of Operations Program - Notifications* • 08-NT.12 *NWP Transportation Program* • 12-15 *WIPP Emergency Management Communications Plan* • 12-17 *WIPP Emergency Management Training Program* • 12-ER.02 *WIPP Vital Records Program* • 12-ER4925 *CMR Incident Recognition and Initial Response* • 14-TR.01 *WIPP Training Program* • 15-RM *WIPP Records Management Program* • 15-RM3002 *Records Filing, Inventorying, Scheduling, and Dispositioning* • 15-RM3003 *Disposal of Nonpermanent Records in Office* • 15-RM3006 *Records Inventory and Disposition Schedule Review and Approval* • 18-0317 *Amended Waste Isolation Pilot Plant Biennial Report* • EA12ER4926-7-0 *RCRA Contingency Plan Implementation Decision* • 16-3316 *Implementation of RCRA Contingency Plan* • 17-1004 *Quarterly Report* • 17-1023 *Return of Surge Storage to Normal* • 17-1029 *Implementation of RCRA Contingency Plan*

	• 17-1035 *Class 1 Modification – CH Storage Clarification* • 17-1045 *Request for Extension of Storage Time* • 17-1058 *Closure of UG Derived Waste Storage Area* • 17-1068 *Certificate of Completion of Settlement Agreement* • 17-1096 *Implementation of RCRA Contingency Plan* • 17-3592 *Semi-Annual VOC, Hydrogen, and Methane Data Summary Report* • 18-0317 *Biennial Report* • EA12ER3907-1-0 *Emergency Notification Form* • EA12ER3907-2-0 *WIPP Emergency Notification Fax Coversheet* • EA12ER4926-8-0 *Notification of Implementation of the WIPP RCRA Contingency Plan* • 2017 *Waste Minimization Report* • *Guidance on which NWP Transmittals Require Certification - Signatures* • *WIPP Order 05-20001* • *Surface 90-day Accumulation Area Inspections* • *Surface Satellite Accumulation Inspection Reports* • *Underground Operations Pre-Start Inspection Reports* • *Underground Compliance Plan* • *NMED Inspection Letter – December 2016* • *Settlement Agreement and Stipulated Final Order* • 2018 *Class 3 Permit Modification – Numerous Sections*
Permit Part 2 – *General Facility Conditions*	• 02 RC.01 *Hazardous and Universal Waste Management Plan* • 02-EC3506 *Environmental Incident Reporting* • 02-RC5000 *WIPP Site Environmental Compliance RCRA Operating Record* • 04-AD3001 *Facility Mode Compliance* • 04-VU1001 *Surface and Underground Ventilation and Filtration System* • 04-VU-2001 *Interim Ventilation System (IVS) Operation* • 04-VU2004 *Interim Ventilation System Testing and Balancing* • 08-3378 WIPP Emergency Planning Hazards • 08-NT3020 *TRU Waste Receipt Inspection* • 08-NT3105 *Transportation "Out of Service" Tags* • 08-NT3111 *Return of TRU Waste to the Generator* • 12-10 WIPP Incident/Accident Response Team Plan • 12-15 WIPP Emergency Management Communications Plans • 12-5 *Waste Isolation Pilot Plant Radiation Safety Manual* • 12-9 *WIPP Emergency Management Plan* • 12-ER.02 *WIPP Vital Records Program* • 12-ER.21 *WIPP Fire Department Emergency Evacuation Procedure* • 12-FP.01 *WIPP Fire Protection Program* • 12-FP.28 *Fire Protection Program and Implementation Procedure* • 12-FP.30 *WIPP Fire Protection Engineering Training Program*

	• 12-HP1100 *Radiological Surveys* • 12-HP1500 *Radiological Postings and Access Control* • 15-RM *WIPP Records Management* • 17-1011 *Safeguards and Security Access Control Plan* • 17-SS-1011 *Safeguards and Security Access Control Plan* • 17-SS-1023 *Safeguards and Security Fences, Gates, and Signs Inspection* • *CH-TRU Payload Appendices* • *Contact Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC)* • EA04AD3002-SR54 *LCO Surveillance Data Sheet* • 2017 *Waste Minimization Report* • 2016 *Waste Minimization Report* • 2015 *Waste Minimization Report*
Permit Part 3 – *Container Storage*	• 02-RC.01 *Hazardous and Universal Waste Management Plan* • 04-CO.01-7, 12-15 *Conduct of Operations Program Notifications, WIPP Emergency Management Communications Plan* • 05-WH1101 *CH Waste Processing* • 05-WH1025 *CH Waste Downloading and Emplacement* • 05-WH1202 *TP III Monorail Hoist* • 05-WH1407 *6-Ton Bridge Cranes* • 05-WH-1410 *Adjustable Center of Gravity Lift Fixture* • 05-WH1810 *Underground Transuranic Mixed Waste Disposal Area Inspections* • 08-NT3001 *Volume Control of Parking Area Storage Unit* • 12-IH.02-3, *Hazardous Waste Operations and Emergencies*
Permit Part 4 – *Geologic Repository Disposal*	• 02-PC.03 *WIPP Hazardous Waste facility Reporting and Notifications* • 02-PC3005 *Hazardous Waste Facility Permit Notification and Reporting* • 02-RC3111 *Information Repository* • 02-RC3112 *Stakeholder E-Mail Notification System* • 04-CO.01 *Conduct of Operations* • 04-VU1001 *Surface Underground Ventilation and Filtration System* • 04-VU1613 *Underground Airflow Configuration and Verification* • 04-VU1614 *Underground (UG) Air Volume Readings* • 05-WH1101 *CH Surface Transuranic Mixed Waste Handling Area Inspections* • 05-WH1810 *Underground Transuranic Mixed Waste Disposal Area Inspections* • 07-EU1301 - *Manually Acquired Geomechanical Instrumentation Data* • 07-EU1303 *Geomechanical Instrument Data Processing* • 08-NT3020 *TRU Waste Receipt Inspection* • 12-FP.29 *Fire Protection Program Records Retention*

	• 12-VC.01 *Volatile Organic Compounds Monitoring Plan* • DWG#51-W-214-W *Typical Panel Design Drawing* • EA04AD3001-SR47 *LCO Surveillance Data Sheet* • EN:18:00317 *Geomechanical Mine Stability Surveillance Report* • *Map of Container Placement in HWMU* • RP4C43 *Preoperational Underground TRU Mixed Waste Disposal Area Inspection Form* • WP1736471 *Panel 8 Work Package* • 2018 Class 3 Permit Modification • Engineering Drawings of Panels 1 Through 7
Permit Part 5 - *Groundwater Detection Monitoring* & **Attachment L** - *WIPP Groundwater Detection Monitoring Program Plan*	• 02-RC5000 *RCRA Operating Record* • 02-1 *WIPP Groundwater Monitoring Program Plan* • 02-EM1002 *Electric Submersible Pump Operation and Maintenance Purging* • 02-EM1010 *Field Parameter Measurements and Final Sample Collection* • 02-EM1014 *Groundwater Level Measurement* • 02-EM1025 *Data Review for the Annual Culebra Groundwater Report* • 02-EM1026 *Water Level Handling & Reporting* • 02-PC3002 *WIPP Hazardous Waste Facility Permit Change Request & Modification Processing* • 02-EC1003 *Low-Flow Groundwater Purging & Sampling* • 02-EM3003 *Data Verification & Validation of RCRA Results* • 02-PC.03 *WIPP Hazardous Waste Facility Permit Reporting & Notifications Compliance Plan* • 06-3339 *WIPP Groundwater Protection Program Plan* • 10-AD3029 *Calibration & Control of Monitoring & Data Collection Equipment* • RCRA Operating Record List, Revision 12 • 13-1 *NWP Quality Assurance Program Description*
Permit Parts 6-8 (*Closure Requirements, Post-Closure Care Plan and Corrective Action for SWMUs and AOCs*), **Attachments G** -	• 00-2001 *WIPP Facility Work Plan for Solid Waste Management Units and Areas of Concern* • 04-AU1007 *Underground Openings Inspections* • 05-WH.04 *WIPP Waste Operations Training Program Plan* • 12-ER.02 *WIPP Vital Records Program* • 15-RM *WIPP Records Management Program* • Permit Table 4.1.1 *Underground HWDUs*

Closure Plan, **H** - *Post Closure Care Plan* and **K** - *SWMU and AOC Tables*	
Permit Attachment C - *Waste Analysis Plan*	• 02-EC3506 *Environmental Incident Reporting* • 04-AD3001 *Facility Mode Compliance* • 08-NT3105 *Transportation "Out of Service" Tags* • 08-NT3111 *Return of TRU Waste to the Generator* • 12-5 *Waste Isolation Pilot Plant Radiation Safety Manual* • 12-HP1100 *Radiological Surveys* • 12-HP1500 *Radiological Postings and Access Control* • *CH-TRU Payload Appendices* • *Contact Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC)* • DOE Order 460.2A *Departmental Material Transportation and Packaging Management* • DOE/WIPP 07-3373 *Waste Isolation Pilot Plant Technical Safety Requirements* • DOE/WIPP-07-3372 *Waste Isolation Pilot Plant Documented Safety Analysis* • EA04AD3002-SR54 *LCO Surveillance Data Sheet* • *Hazardous Waste Facility Permit, EPA Identification Number NM4890139088-TSDF* • *RCRA Contingency Plan, Section D-2b* • U. S. Department of Energy, *HalfPACT Safety Analysis Report, NRC-Docket 71-9279* • *Waste Confirmation data (e.g., shipping records)*
Permit Attachment D - *RCRA Contingency Plan*	• 1.48 *Emergency Management Program* • 12-13 *Emergency Action Levels* • 12-17 *WIPP Emergency Management Training Program* • 12-ER.05 *Fire Department Hazardous Materials Response Guide* • 12-ER3002, Emergency Operations Center • 12-ER3907 *Operational Emergency Notifications* • 12-ER4926 *CMR Expanded Staffing Operations* • DOE-WIPP-173573 *WIPP Emergency Management Plan* • EA12ER3907-1-0 *Emergency Notification Form* • EA12ER3907-2-0 *WIPP Emergency Notification Fax Coversheet* • EA12ER4926-7-0 *RCRA Contingency Plan Implementation Decision Checklist*

	• EA12ER4926-8-0 *Notification of Implementation of the WIPP RCRA Contingency Plan*
Permit Attachment E - *Inspection Schedule Process and Forms*	• 02-RC.01 *Hazardous and Universal Waste Management Plan* • 04-AU1007 *Underground Openings Inspections* • 04-AU1026 *Self-Rescuer Inspection* • 04-CO.01-7, 12-15 *Conduct of Operations Program Notifications, WIPP Emergency Management Communications Plan* • 04-ED1301 *Diesel Generator Operation* • 04-FP1401 Underground Fuel Station Operation • 05-WH1101 *CH Waste Processing* • 05-WH1025 *CH Waste Downloading and Emplacement* • 05-WH1202 *TP III, Monorail Hoist* • 05 WH1407 *6-Ton Bridge Cranes, 41-T-151 A, B, C & D* • 05 WH1410 *Adjustable Center of Gravity Lift Fixture* • 05 WH1810 *Underground Transuranic Mixed Waste Disposal Area Inspections* • 05-WH1101 *CH Surface Transuranic Mixed Waste Handling Area* • 07-EU1301 *Manually Acquired Geomechanical Instrument Data* • 08-NT3001 *Volume Control of Parking Area Storage Unit* • 12-9 *WIPP Emergency Management Plan* • 12-ER.02 *WIPP Vital Records Program* • 12-FP 0026 Diesel and Electric Pump Valve Inspections • 12-FP.01 *WIPP Fire Protection Program* • 12-FP.19 *WIPP Fire Protection Self-Assessment Program* • 12-FP.20 *WIPP Equivalency, Exemption and Variance Program* • 12-FP.28 *Fire Protection Program and Implementation Plan and Procedures* • 12-FP.29 *Fire Protection Program Records Retention* • 12-FP.30 *WIPP Fire Protection Engineering Training Program Plan* • 12-FP0025 *Fire Protection Sprinkler System Report* • 12-FP0026 *Weekly Surveillance for Fire Water Supply and Surveillance* • 12-FP0028 *Fire/Safety Inspection and Testing* • 12-FP0029 *Self-Contained Breathing Apparatus (SCBA) Inspection* • 12-FP0034 *Fire Hydrant and Isolation Valve Inspection* • 12-FP0034, Attachment 1 *Fire Hydrant Semi Annual,* • 12-FP0034, Attachment 2 *Fire Hydrant and Isolation Valve Annual Inspection* • 12-FP0046 *Hydrant Flow Testing* • 12-FP0060 *Semi-Annual Inspection and Test of Automatic Fire Suppression for Vehicles and Equipment* • 12-FP3001 *Fire Protection Impairment*

	• 12-FP3004 *WIPP Fire Department Pre-Incident Plans* • 12-IH.02-3 *Hazardous Waste Operations and Emergencies* • 12-IS.01-1 *Industrial Safety Program - Barricades and Barriers* • 15-EM *Records Management Program* • 15-GM1002 *Issues Management Processing of WIPP Forms* • 15-MD3102 *Event Investigation* • 17-SS1023 *WIPP Fence, Gates, and Sign Daily Inspection Checklist* • 30 CFR Part 57 *Safety and Health Standards - Underground Metal and Nonmetal Mines* • 40 CFR Part 761, Subpart C *Marking of PCBs and PCB Items* • 40 CFR Part 761, Subpart D *Storage and Disposal* • *Action Requests, Inspection Forms and Work Orders Department* • *Administrative Order Issued May 12, 2014* • DOE Order 251.1C *Departmental Directives Program* • DOE Order 420.1C *Facility Safety* • DOE Order 426.1 Federal Technical Capability • DOE STD-1137-2007 *Fire Protection Engineering Functional Area Qualification Standard* • DOE/WIPP-02-3212 *Ground Control Annual Plan for the Waste Isolation Pilot Plant,* • DOE/WIPP-07-3372 *Waste Isolation Pilot Plant Documented Safety Analysis (DSA),* • DOE/WIPP-07-3373 *Waste Isolation Pilot Plant Technical Safety Requirement (TSRs)* • DOE-STD-1066-2012 *Fire Protection* • DOE-STD-1137-2007 *Fire Protection Engineering Functional Area Qualification Standard* • EA12FP0025-452 Sprinkler System Inspections • EA12FP0028-452 *Monthly and Quarterly Inspections* • PM000011 *Room/Panel Closure Bulkheads Monthly Inspection* • STDJHA-1039 *Underground Openings Inspections,* • Title 40 *Code of Federal Regulations* (CFR) §264.15, *General Inspection Requirements* • *Underground Compliance Plan, Prepared in Response to NMED Request*
Permit Attachment F - *Facility Personnel Permit Training Program*	• 05-WH.04 *WIPP Waste Operations Training Program Plan* • 12-FP.03 *WIPP Fire Department Program Plan* • 12-FP.20 *WIPP Equivalency, Exemption and Variance Program* • 12-17 *WIPP Emergency Management Training Program* • 14-TR.01 *WIPP Training Program* • *Class 2 Permit Modification – Training Plan Changes*

	• *Training Records Compliance Review of 61 Hazardous Waste Workers in 26 RCRA Hazardous Management Job Titles*
Permit Attachment N - *Confirmatory VOC Monitoring Plan*	• 02-PC3003 *EPA Compliance Program* • *12-IH.02-17 Volatile Organic Chemical Occupancy Exposure Limits* • *12-IH1828 MSHA Air Quality Monitoring 12-VC.02 Quality Assurance Project Plan for Volatile Organic Chemicals* • 12-VC.01 *VOC Monitoring Plan* • 12-VC1684 *VOC Monitoring Group - Air Sampling* • 12-VC1685 *Subatmospheric Air Sampling in Passivated Containers* • 12-VC3209 *VOC Monitoring Group* • 13-1 *NWP Quality Assurance Program Description* • 16-01 *Environmental Monitoring* • *Quality Assurance Independent Assessment Program* • *NWP Quality Assurance 2-Year Independent Assessment Schedule* • *Permit Modification Request to Delete Hydrogen and Methane Monitoring (11/10/2016)* • *Sampling Data Sheet 2/21/2018* • S16-16-61 *Closure of NWP QA Surveillance*
Permit Attachment O - *Mine Ventilation Rate Monitoring Plan*	• 00CD-0001 *WIPP Mine Ventilation Plan* • 02-PC.03 *WIPP Hazardous Waste Facility Reporting and Notifications Compliance Plan* • 04-AD3007 *CMC Alarm Disable Authorization* • 04-AD3008 *Preparation and Use of Round Sheets, Surveillance Data Sheets, Shift Briefing Packages, and Critical Component/Equipment Status Sheets* • 04-CO.01-11 *Logkeeping* • 04-VU1612 *WIPP Mine Ventilation Rate Monitoring* • 04-VU1612 *WIPP Mine Ventilation Rate Monitoring* • 04-VU1614 *Underground (U/G) Air Flow Volume Readings* • 04-VU1615 *Abnormal Active Room Ventilation Flowrate Conditions & Implementing Measures (This document is a draft)* • 04-VU1615 *Abnormal Active Room Ventilation Flowrate Conditions & Implementing Measures (This document is a draft)* • 04-VU2004 *Interim Ventilation System Testing and Balancing* • 04-VU3003 - *SVS Testing and Balancing* • 10-AD3028 *Calibration and Control of Measurement and Test Equipment* • 10-AD3029 *Calibration and Control of Monitoring and Data Collection Equipment* • *Air Flow Reading, WP 04-VU 1612, "Ventilation Rate Log Sheet, 12/16/2016 thru 11/27/2017* • EA04AD3008-36-0 *U/G Air Quality Round Sheet*

	• IC041087 *Calibration of Suction Flow Transmitters for 41-B-9656 and 41-B-957* • IC413000 *Station B Mass Flow Measurement System, Loop 41A001W2001* • IC413005 *Calibration of Flow Indicating Transmitters for U/G Exhaust Fans* • SDD VU00 *Underground Ventilation System Design Description (SDD)*
Clean Water Act (CWA)/DP 831	• Discharge Permit 831 • WP 02-2 - *WIPP DP 831 Monitoring Plan* • WP 02-EM1022 *Site Discharge Area Inspections* • WP 10-WC3011 *Work Control Process (Action Request)* • WP 04-AD3008 *Facility Operations Facultative Sewage Lagoons, Industrial Wastewater and Stormwater Ponds Round Sheet* • WP 02-EM1014 *Groundwater Level Measurement* • WP 02-EC1003 *Low Flow Groundwater & Sampling* • WP 02-EC3003 *DP 831 Semi-Annual Report Preparation* • WP 02-EM1001 *Sewage Lagoon & Infiltration Controls Sampling* • WP 02-EM3001 *Administrative Processes for Environmental Monitoring & Hydrology* • *Work Order 1744997* • *Work Order 1745215* • *Inspection Forms* • *Records Inventory and Disposition Schedule*
TSCA	• 05-WH1101 *CH Surface Transuranic Mixed Waste Handling Area Inspections* • 08-NT3020 *TRU Waste Receipt* • *CH Waste Operations Tailored Shift Briefing* • *WDS Containers to be Emplaced Report*
AEA, DOE Orders 231.1B & 458.1	DOE Order 231.1B: • 04-CO.01 *Conduct of Operations* • 12-3 *Dosimetry Program* • 12-4 *Radiological Assistance Plan* • 12-FP.01 *WIPP Fire Protection Program* • 12-NS.04 WIPP Nuclear Criticality Safety Program • 12-HP3200 *Radioactive Material Control* • 12-HP3201 *Radioactive Source Accountability and Control* • 15 GM.02 *Worker Safety & Health Program Description* • 15-HS.02 *Occupational Health Program* • 15-MD3102 *Event Investigations* • EA04AD3036 *Safety Basis Implementation Plan Development* • *Annual Site Environmental Report (ASER) – 2016* • *WIPP Environmental Monitoring Plan* DOE Order 458.1:

	• 95-2054 *WIPP Radiation Protection Program* • 02-EM1009 *Soil Sampling* • 02-EM1010 *Field Parameter Measurements and Final Sample Collection* • 02-EM1011 *Biotic Sampling* • 02-EM1012 *Airborne Particulate Sampling* • 02-EM1017 *Surface Water and Sediment Sampling* • 02-EM1019 *Vegetation Sampling* • 02-EM3004 *Radiological Data Verification and Validation* • 12-2 *WIPP ALARA Program Manual* • 12-HP3000 *Radiological Control Administration* • 12-HP3100 *Radiological Containment/Confinement* • 12-HP3500 *Airborne Radioactivity* • 12-HP4000 *Emergency Radiological Control Responses* • 12-RE3007 *ALARA Program Integration for Facility Design and Modification* • *Annual Site Environmental Report (ASER) – 2016*

6.2 Interviews

The Triennial Review Team interviewed several WIPP personnel from the following WIPP organizations:

Table 2 - Interviews	
Criteria Area	**Interviewees**
Permit Part 1 - *General Permit Conditions*	Manager, RES; Deputy Manager, Communications
Permit Part 2 - *General Facility Conditions*	WIPP Protective Force; RES Sustainability Programs; Manager, RES; RES Confirmation, Manager; NWP Transportation, Manager; RES Site Environmental Compliance Staff
Permit Part 3 – *Container Storage*	Manager, RES; Waste Operations; Mining and Ground Control; Manager, Waste Operations
Permit Part 4 - *Geologic Repository Disposal*	Manager, RES; Mine Engineering Staff; Geotechnical Engineering Staff
Permit Part 5 - *Groundwater Detection Monitoring* & **Attachment L** - *WIPP Groundwater Detection Monitoring Program Plan*	Environmental Monitoring and Hydrology, Manager; Environmental Monitoring and Hydrology Staff
Permit Parts 6-8 (*Closure Requirements, Post-Closure*	Regulatory Project Manager, RES; Manager, RES

Care Plan and Corrective Action for SWMUs and AOCs)	
Permit Attachment C - *Waste Analysis Plan*	Manager, RES
Permit Attachment D - *RCRA Contingency Plan*	Hazardous Waste Permitting Manager, RES; Senior Technical Advisor, RES; Manager RES
Permit Attachment E - *Inspection Schedule Process and Forms*	Fire Control Engineer; WIPP Protective Force, Supervisor; Fire Department, Chief of Operations; Waste Operations, Manager; Waste Operations Staff; Geotechnical Engineering Staff; U/G Facility Operations Staff
Permit Attachment F - *Facility Personnel Permit Training Program*	Technical Training Staff; Technical Training and Procedures, Manager; Fire Dept. Staff; Fire Protection Engineering Staff, Manager, RES
Permit Attachment G - *Closure Plan*	Regulatory Project Manager, RES; Manager, RES
Permit Attachment H - *Post Closure Care Plan*	Regulatory Project Manager, RES; Hazardous Waste Permitting Manager, RES; Senior Technical Advisor, RES; Manager, RES
Permit Attachment K - *SWMU and AOC Tables*	Regulatory Project Manager, RES; Hazardous Waste Permitting Manager, RES; Senior Technical Advisor, RES; Manager, RES
Permit Attachment N - *Confirmatory VOC Monitoring Plan*	Environmental Monitoring and Hydrology Staff; QA Programs Manager; Nuclear Safety Manager; Site Environmental Compliance Manager, RES; Geotechnical Engineering Staff
Permit Attachment O - *Mine Ventilation Rate Monitoring Plan*	Hazardous Waste Permitting Manager, RES; Senior Technical Advisor, RES
CWA/DP 831	Site Environmental Compliance Manager, RES; Environmental Compliance Staff, RES
TSCA	Manager, RES
AEA, DOE Orders 231.1B & 458.1	N/A

6.3 Field Observations

The Review Team performed the following field observations/inspections during the on-site portion of the Triennial Review:

Table 3 – Field Observations	
Criteria Area	**Field Observations/Inspections**
Permit Part 1 - *General Permit Conditions*	3/7/18 – Satellite Accumulation Area walk-down 3/12/18 – Waste Accumulation Area walk-down

Permit Part 2 - *General Facility Conditions*	3/7/18 - WHB walk-down
Permit Part 3 – Container Storage	3/7/18 – WHB walk-down/Parking Area Unit walk-down/Underground Tour
Permit Part 4 - *Geologic Repository Disposal*	3/7/18 - Underground Tour
Permit Part 5 - *Groundwater Detection Monitoring* & Attachment L - *WIPP Groundwater Detection Monitoring Program Plan*	2/22/18 - Performed walk-down with NWP staff of stormwater ponds (SWP), salt storage ponds (SSP) and the facultative lagoons 3/12/18 - Observed well stabilization/calibration activities at WQSP-1
Permit Parts 6-8 (*Closure Requirements, Post-Closure Care Plan and Corrective Action for SWMUs and AOCs)*	N/A
Permit Attachment C - *Waste Analysis Plan*	N/A
Permit Attachment D - *RCRA Contingency Plan*	N/A
Permit Attachment E - *Inspection Schedule Process and Forms*	3/7/18 - WHB walk-down/Underground Tour
Permit Attachment F - *Facility Personnel Permit Training Program*	3/13/18 – Inspection of Records
Permit Attachment G - *Closure Plan*	N/A
Permit Attachment H - Post *Closure Care Plan*	N/A
Permit Attachment K - *SWMU and AOC Tables*	N/A
Permit Attachment N - *Confirmatory VOC Monitoring Plan*	2/28/18 - Witnessed Disposal Room VOC sampling under WP 12-VC 1685 *Subatmospheric Air Sampling in Passivated Canisters* R11, @ S-2520, W-170, from within Panel 7. 3/1/18 - Witnessed Repository VOC sampling under WP 12-VC.01, R13 (VOC-C) *Volatile Organic Compound Monitoring Plan*

	3/1/18 - Witnessed Repository VOC sampling under WP 12-VC.01, R13 (VOC-D) *Volatile Organic Compound Monitoring Plan* 3/7/18 – Underground Tour
Permit Attachment O - *Mine Ventilation Rate Monitoring Plan*	N/A
CWA/DP 831	2/22/18 – Performed walk-down with NWP staff of stormwater ponds (SWP), salt storage ponds (SSP) and the facultative lagoons
TSCA	3/7/18 - WHB walk-down/Parking Area Unit walk-down
AEA, DOE Orders 231.1B & 458.1	N/A
General	3/1/18 – Site perimeter walk-down

7. FINDINGS, OBSERVATIONS AND RECOMMENDATIONS

This section documents the findings and observations identified during the Review and the Review Team recommendations for correcting these findings. In accordance with the Review Plan, these are issues that the Review Team identified that fall into one of the following categories: 1) potential regulatory deficiencies; 2) potential non compliances; or, 3) deficiencies that could lead to non-compliances of environmental regulations. For the purposes of this report, the Review Team has also listed observations for NWP's consideration.

Findings

1. **Finding 1 –Panel Closure Schedule Requires Update**

Description

Permit Part 6 - *Closure Requirements* and **Attachment G** - *Closure Plan*

Permit Part 6 and associated Attachment G, define both the approach to and the anticipated completion dates for, completion of closure of Panels 1-6. The current Permit describes approaches for closing each Panel and the date (June 30, 2018) by which that closure is anticipated to be completed. The Review Team reviewed the pending Class 3 Permit Modification Request (PMR) for panel closure currently under review by NMED, to evaluate whether the proposed changes would provide relief from the June 30, 2018 closure date. At the time of the Review, the pending PMR (nor any other PMRs currently pending NMED review) did not address the June 30, 2018 compliance date. Therefore, the Team concluded that, without approval of a Permit modification to extend the date for final closure of Panels 1-6, a Permit non-compliance would occur on June 30, 2018.

Recommendation

The Permittees developed and submitted a Class 1* PMR that proposed revisions to Table G-1 - *Anticipated Earliest Closure Dates for Underground HWDUs*. This modification was submitted to NMED on June 4, 2018. NMED approved the Class 1* PMR on June 29, 2018. On that basis, this finding is closed.

2. Finding 2 – No List of Employees by RCRA Permit Job Title

Description

Permit Attachment F - *Training Plan*

Permit Attachment F – *Training Plan*, requires that there be a current list of employees by Permit job title maintained at the facility. When requested by the Review Team, no list existed. Subsequently, a list was developed. That list was used in activities related to review of the criteria for Permit Attachment E - *Inspection Schedule, Process and Forms*, and Attachment F - *Personnel Training*.

On March 23, 2018, a Class 2 PMR that completely redefined the training requirements for hazardous waste management personnel at the WIPP facility was approved by NMED.

Recommendation

The Review Team's understanding is that NWP is currently in the process of adding a Permit Job Title field for each employee to the associated database. That field will allow the list of employees by Permit Job Title to be generated. It is also the Review Team's understanding that procedures for assuring that the information is current are also being developed. Using that information, it is recommended that a master report, similar to the individual job title reports, be developed for the specific training requirements of the Permit. With that, the first column of the job title reports could be "Permit Requirements". A yellow or red color indicator in that column would instantly alert the supervisor of a pending or actual issue.

3. Finding 3 – Inspections of Fire-Related Systems Do Not Specifically Meet Permit Requirements

Description

Permit Attachment E - *Inspection Schedule, Process and Forms*; **Permit Attachment F** - *Personnel Training*

Multiple sources reported that inspections of some fire-related systems are not being conducted by personnel qualified in compliance with the Permit. Upon review of training and inspection records, the Review Team determined that Permit training for some inspectors was not in compliance with Permit requirements. Specifically, only four of the Fire Protection Technicians (FPTs) had completed FPT-01, Fire Protection Technician

Qualification Card as required by the Permit. In addition, FPTs not qualified under FPT-01 were participating in inspections required under Permit Attachment E.

In investigating the issue, a meeting was held with the Fire Department (FD) and Fire Protection Engineering (FPE). A history was presented, as follows:

- It was determined that at a point in the past the FPTs lacked the required National Institute of Certification of Engineering Technologies (NICET) certification and that the inspection responsibility was transferred to Fire Protection Engineering (FPE). At that time the FPT-01 Qualification Card was terminated.
- At a later date, the approach was modified, with both an FPT and FPE conducting the inspections, with the FPE providing the required certification.
- Both parties sign the inspection reports. In addition, a set of new training requirements for FPTs has been developed (FPS-01-01 through 04). FPTs are currently working through those requirements.

A Class 2 PMR that redefined the training requirements for WIPP was approved by NMED on March 23, 2018. The Review Team has not evaluated the new training requirements. However, NWP staff have stated that they are addressing remaining training gaps during the implementation phase for the new Permit training program.

Recommendation

The Review Team has determined that, while current practices do not *wholly* meet the requirements of the Permit, required inspections of fire-related systems are adequate to meet all other regulatory requirements. The current practice does not present a risk that would require action on an emergency basis. However, only four of the current FPTs have completed FPT-01. FPTs who have not completed FPT-01 are participating in inspections. It should be noted that unqualified personnel participating in fire-related system inspections are supervised by personnel fully qualified under the fire protection standards.

The Review Team recommends that NWP review the recently approved training program requirements to determine whether those requirements can be met with the current structure. Should that not be possible, a Permit modification should be submitted to ensure full compliance with the Permit. Additionally, because the FPE engineers are participating in the inspections, the Team recommends that NWP consider applying the same or similar training requirements for FPTs as FPEs, along with maintaining their NICET certifications.

4. Finding 4 – Failure to Assure that Employees Meet Permit Required Training

Description

Permit Attachment F - *Personnel Training*

A review of training documentation for randomly selected personnel (consistent with the methodology outlined in Section 4.2) in all job titles applicable to the Review was conducted. Through that process, a variety of potential inconsistencies were identified with the Permit that was current at the time the Review was conducted.

NWP has been developing a new, visually improved system, that allows managers to view the status of personnel training in each job classification. The report is a table that lists employees with columns for each training requirement. The columns are populated with due dates, and are color coded for easy recognition of pending or current issues (e.g., yellow - training due within current month, red – training overdue). Reports have been developed for the most prevalent job classifications. However, the reports do not include "once and done" training requirements, only recurring (refresher) requirements.

The reports described above are developed in support of the training requirements included in the current NWP Qualification Program. That program is not consistent with training requirements in the Permit in all cases. In addition, because reports have not yet been generated for all job titles included in the Permit, training gaps currently go unidentified. As a result of the Review, the following inconsistencies were identified related to training and may potentially result in non-compliances:

- Training modules have been consolidated or expanded and given new titles. No crosswalk for these changes exists, so a new employee taking the new training would not technically meet the requirements of the Permit (examples: OPS-122 is now SBD-101; for RCTs, RAD-201 is now RCT-01-3R; FPT-01 is now FPS-01-01 through 04). However, most personnel currently in job titles with these training requirements have completed the original training.
- Some managers have training gaps relative to Permit requirements (Radiation Control, Environmental Compliance).
- WWIS Data Administrator lacks Subject Matter Expert/OJT training
- Mine Rescue Team – one member lacks First Aid/CPR Refresher
- No report has been developed for the Emergency Response Team – One member lacks hazardous waste responder training.
- One employee, based on a training status report run on March 13, 2018, had failed to complete the required respirator fit test that was required in February 2018. Further investigation indicated that the test was completed on February 26, 2018, but the record was slow to make it to data entry. While not a non-compliance, this issue created an apparent issue when a report was run.
- FPT training issues, as detailed in depth in Finding 3.

Recommendation

The Review Team's understanding is that there is a major effort currently ongoing to complete training to meet the new requirements contained in the Class 2 PMR. Part of that effort is to update the report tables for each job title. We recommend that NWP ensure that there is a report for each job title referenced in the modified Permit. The Team also recommends that the additional column for "once and done" training, be included in each report template.

The Team further recommends that NWP/CBFO conduct a compliance review of every change to the training program, specifically aimed at identifying changes that create a technical non-compliance with the Permit.

A potential for delay exists for portions of the SAF-631 (Respiratory Protection) series of requirements, especially the medical qualification and respirator fit test portions, based on how the supporting documentation is developed and transmitted. We suggest that NWP conduct a review of the process to identify changes that would assure timely updating of the training database.

A Class 2 PMR that redefined the training requirements for hazardous waste management personnel at the WIPP facility was approved by NMED on March 23, 2018. The Review Team has not evaluated the new training requirements. However, NWP staff have stated that they are addressing remaining training gaps during the implementation phase for the new Permit training program.

5. Finding 5 – DP 831 Fence and Sign Inspections

Description

Discharge Permit (DP) 831

DP 831, Conditions 5 & 6 require that the fences and signs surrounding the Facultative Lagoons be inspected. At the time of the on-site portion of the Review, the Operations procedure (WP 04-AD3008) did not include an explicit requirement for fence & sign inspection.

Recommendation

The Team discussed this finding with NWP during the onsite Review. As a result, the applicable Round Sheet (EA04AD3008-31-0) administered by Operations has been modified to incorporate the documentation of applicable inspection of the fence and signage. On that basis, this finding is closed.

Observations

1. **Need for Additional Assurance that Permitted Waste Volumes in the Waste Handling Building (WHB) and Parking Area Unit (PAU) are Not Exceeded**

   Description

   TSCA Permit Section III A 1-2, PCB/TRU Waste Storage, Authorized Storage Areas, defines the maximum quantities of PCB/TRU waste that may be stored in the WHB and PAU at any time. Current practice is to review the CH Waste Operations Tailored Shift Briefing report at the beginning of each shift. That report includes the status of shipments by shipment and TRUPACT identifying location (PAU, WHB, EnRoute) with associated waste volumes.

   For the WHB, the current approach limits storage of PCB/TRU waste containers either in the unloading area (limit two TRUPACTs) or on pallets, two loads per pallet. The storage locations of pallets are marked on the floor ensuring that the permitted storage limit cannot be exceeded.

   For the PAU, at the beginning of each shift, the amount of waste stored in the PAU is calculated and, if close to the Permitted limit, shipments are held at the gate until waste is moved from the PAU to the WHB, opening up room to receive the shipment(s).

   While the system can work, it relies on the experience of the workers to assure that waste isn't received during the shift before space has been created within the Permitted limit. In addition, a desire to remove the artificial limits placed on the WHB in order to improve waste management, was expressed in interviews with NWP. Changing that aspect of WHB operations will increase the complexity of manually calculating waste volumes throughout the shift.

   Recommendation

   Based on the Review Team's experience with operations of commercial treatment storage and disposal facilities (TSDFs), the current approach to assuring that Permitted waste volume limits are not exceeded is inadequate. The Team recommends an automated approach that will both provide documentation of compliance and increase ease of management of waste movements. In discussions with NWP personnel who manage the WDS, they identified a report that they felt could be used to develop a relatively simple system for checking waste movements.

   Before moving waste, the package and move information would be entered into the program. The program would then check resulting waste volumes against defined limits and indicate 'yes' or 'no'. By implementing such a system, subjectivity would be eliminated from the process.

2. **Formalizing DP 831 requirements in procedures or desk instructions**

Description

There are several instances where NWP uses the requirements in DP 831 as its procedure for that activity. For example, in Criteria 50, NWP was asked whether there is a procedure/process that outlines the requirements of a contingency plan (once the contingency plan has been enacted). Because there are provisions of DP 831 that aren't explicitly addressed in a procedure, the Review Team is concerned that NWP may be unnecessarily at risk of a non-compliance.

Recommendation

Although having a procedure is not a requirement of DP 831, the Review Team encourages NWP to assess the need for formalizing, through procedure or desk instruction, more of these requirements.

8. CONCLUSIONS

The Review Team concluded that, overall, the WIPP facility has done an outstanding job of maintaining compliance in the regulatory areas evaluated as part of this Review. The Review Team evaluated over 500 individual criteria across six different regulatory areas. The above findings and observations were identified as part of the Review Team's off-site document review and research as well as during the on-site portion of the Review. Five items were identified as potential regulatory deficiencies, potential non-compliances, or deficiencies that could lead to non-compliances of environmental regulations. Finding 1 was resolved based on NMED's June 29, 2018 approval of a Class 1* PMR which extended the date for final closure of Panels 1-6 beyond June 30, 2018. Finding 5 was resolved by the Permittees by providing a revised Round Sheet (EA04AD3008-31-0) on April 2, 2018.

The remaining unresolved findings are related to training requirements and training/inspection records. These findings were also documented in the Review Team's Triennial Review Close-Out Report, dated March 15, 2018. NWP is in the process of correcting the three remaining training-related findings as a part of implementing the revised training program resulting from NMED's approval of the above-referenced Class 2 PMR on March 23, 2018. The two observations, while not required to be addressed by NWP, can be resolved by either implementing the Review Team's recommendations or by implementing solutions of NWP's design.

ATTACHMENT A

WIPP TRIENNIAL REVIEW PLAN

WIPP TRIENNIAL REVIEW PLAN
SUBCONTRACT DOE13-PO509218

Triennial Review Plan Submitted:	December 18, 2017
Submitted By:	Firewater Associates, LLC Team
Technical Point of Contact:	Wille Most, RES

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Appendices:

Appendix A – Review Team Resumes

Appendix B – Schedule

1. PURPOSE

The purpose of this Review Plan (Plan) is to provide guidance and direction to the Firewater Triennial Review Team for performance of the first Triennial Review of the U.S. Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) environmental programs. Performance of the Triennial Review is intended to ensure the Permittees regulatory deficiencies are identified regarding the applicable regulations in those areas that have been selected for review. The Triennial Review is designed to demonstrate the integrity of the regulatory compliance processes implemented at the WIPP facility under legislation, permits, DOE Orders, notices, and agreements.

2. INTRODUCTION

Firewater Associates, LLC (Firewater) has developed this Plan in response to Nuclear Waste Partnership, LLC (NWP) Request for Proposal Number 509218[1] to conduct the Waste Isolation Pilot Plant Project (WIPP) First Triennial Review. The Triennial Review (Review) is a systematic, independent, and documented process of objectively obtaining and evaluating evidence to determine whether specified environmental regulatory and operations requirements are met. The first (initial) Triennial Review is committed to be completed and made public before the end of federal fiscal Year 2018 (i.e., September 30, 2018). The review will be carried out by knowledgeable professionals using industry approved audit techniques, consensus standards and familiarity with applicable environmental regulations in accordance with the requirements of the referenced Subcontract ("the Review Team").

This Review Plan provides the flow-down requirements from the Triennial Review Scope of Work and Guidelines from the Settlement Agreement and Stipulated Final Order No. HWB-14-21 Supplemental Environmental Projects Paragraph 34(a), January 20, 2017. This is a "living document" intended to provide a safe, cost effective means of objectively and independently ensuring the objectives of the New Mexico Environment Department (NMED), DOE, and NWP are successfully achieved. It is anticipated that as the project progresses, this Plan will require updating to reflect any changed requirements.

This Review Plan implements applicable requirements of DOE 0rder 226. 1B, *Implementation of Department of Energy Oversight Policy*, in the areas of management and independent assessment, and integrates roles and responsibilities of the Triennial Review Team into an Integrated Safety Management System (ISMS) program.

This plan promotes and integrates a Safety Conscious Work Environment, in which all personnel feel that:

- They are empowered to raise safety questions without fear of retaliation.
- Management wants and willingly listens to their concerns.
- Issues they identify are managed through constructive and timely processes.

[1] WIPP Project First Triennial Review Statement of Work, Aug 2, 2017, Revision 1

The Safety Conscious Work Environment Policy is strongly supported by the leadership of DOE, NWP, and likewise will be adhered to by the Review Team.

3. REVIEW OBJECTIVES

The objective of the Triennial Review is to determine whether specified environmental regulatory requirements within the designated areas are being properly implemented at the WIPP facility. In those areas, the Triennial Review will identify potential regulatory deficiencies, potential violations, and deficiencies that could lead to violations of environmental regulations.

The goal of the Review Team is to qualitatively identify current and future vulnerabilities and risks in the identified areas so that NWP can address and mitigate immediate risks as well as understand the potential and likelihood for future risks. The Review Team will develop a hierarchy of risk sources that will provide NWP with direction for resource allocation to manage those risks. Further, the Review Team will identify vulnerabilities that could be embedded in the current programs or that could involve unresolved issues that relate to current or future change in regulation, personnel, procedure, or program.

The Review Team will deploy effective, consistent, and thorough review methods to provide smooth transition to the next Triennial Review. The effective methodology deployed during this first Review will carry on to subsequent reviews for the benefit of Permittees. The Review Team will perform qualitative risk analysis (i.e., confidence assessment) at varying stages throughout the Review, as appropriate.

4. SCOPE

The first Triennial Review will focus on the following environmental statutes, regulations, and Orders, to the extent requested:

- Resource Conservation and Recovery Act (RCRA) and New Mexico implementation through the Hazardous Waste Act (HWA)
- Toxic Substances Control Act (TSCA)
- Atomic Energy Act (AEA) and Environmental Protection Agency (EPA)
- Clean Water Act (CWA) and the New Mexico Water Quality Act
- DOE Order 231.1B, Admin Change 1, Environment, Safety, and Health Reporting
- DOE Order 458.1, Change 3, Radiation Protection of the Public

The Triennial Review will evaluate those portions of the regulating documents for compliance with the above statutes, regulations and orders at surface and underground structures/facilities at the WIPP facility. The exact locations for various review methods, activities, and processes to be observed will be determined after the initial meeting between the Review Team and the Permittees.

The activities to be performed by the Triennial Review Team will include:

- Determining, through investigation, examination of records, interviews, and inspections if the Permittees are deficient with regard to the terms and conditions of permits and authorizations implementing the environmental regulations that stem from the listed statutes.
- Determine, through investigation, examination of records, observation, and interviews, if the Permittees have programs in place to identify and implement new environmental requirements when they are promulgated.
- Examine the status of the Environmental Management System (EMS) regarding completeness. Completeness is defined as including the major activities that impact the environment and providing a method for mitigation of the impacts.
- Determine, through investigation, examination of records, and interviews, the robustness of the oversight processes in place for the environmental programs at the WIPP facility to ensure the technical content of the implementation programs is effectively controlled.
- Document findings in a written report that will be submitted to the Permittees through the NWP subcontract technical point of contact (TPOC) at the completion of the review.
- Determine, by applying the graded approach through risk assessment, the potential for, and likelihood of failures, so that the Permittees can develop a risk management plan and mitigation strategy if appropriate.

5. TRIENNIAL REVIEW TEAM

5.1 Personnel

The Triennial Review Team is made of up six team members from two contractors - Firewater Associates, LLC (Firewater) and Longenecker & Associates (L&A). Resumes for each Team member are provided in Appendix A. The Review Team members and their contact information are:

Team Member	Affiliation	Email	Phone
William (Bill) Palmer	Firewater Associates, LLC Team Lead Reviewer	weap1114@gmail.com	(865) 805-2220
Gregory Edwards	Firewater Associates, LLC Support Reviewer	gedwardstn@aol.com	(865) 368-3000
Anne Weaver	Firewater (Visionary Solutions) Support Reviewer	aweaver@vs-llc.com	(865) 228-0225
Dr. Ben Rogers	Firewater Associates, LLC Support Reviewer	bencrogers@hotmail.com	(423) 505-3299
Christine Gelles	Longenecker & Associates Support Reviewer	gelles@longenecker-associates.com	(301) 508-0177
Kathryn (Katie) Roberts	Longenecker & Associates Subcontractor Lead	kroberts@longenecker-associates.com	(505) 603-9216

The Review Team will operate under the direction of the NWP TPOC, Wille Most.

5.2 Team Lead – Mr. William Palmer (Firewater)

Mr. Bill Palmer is the lead for this Review and is responsible for the following:

- Task assignments to Review Team members
- Protecting the health and safety of Review team members during the Review
- Interfacing with the client and auditee
- Ensuring competence of the Review Team
- Ensuring integrity of the Review Process
- Preventing and resolving conflicts
- Assuring compliance and implementation with this Review Plan

5.3 Roles and Responsibilities

The Team Lead will assign each Review Team member a set of criteria in one or more of the six focus areas identified above. Furthermore, the Team Lead is responsible for ensuring that personnel are trained and qualified to do their assigned work in a manner that achieves performance levels or objectives, and their proficiency is maintained in accordance with this Review Plan. The Team Lead is responsible for ensuring that required indoctrination and training of the team members is successfully completed and that additional training needs are identified and met.

Each Team member will be responsible for developing Lines of Inquiry (LOI) for each of the criteria assigned. Additionally, Review Team members will consider the following factors when developing LOIs:

- Impacts on client
- Schedule/timetable adherence
- Communication
- Accuracy of reporting and documentation
- Confidentiality and information security
- Lessons Learned from previous complex wide environmental violations
- Identifying precursors of future violations

The LOIs will be incorporated into Review Checklists for the on-site portion of the Review. The Review Plan will be updated to reflect each team members' assigned criteria.

Additionally, the complexity of the Triennial Review necessitates responsive management of the interfaces among the Review Team, NWP Representatives, DOE Representatives and Subcontractors, as applicable, to maintain control of contractual work and to facilitate the flow

of technical information. The Team Lead and the TPOC will be responsible for managing these interfaces.

5.4 REPORTING/DOCUMENTATION

Documentation will be passed through the Team Lead for acceptability and accuracy and maintained to prevent breach of confidentiality and security. Records will be protected against damage, deterioration, or loss. Requirements and responsibilities for records transmittal, distribution retention, maintenance, and disposition will be established and documented in the QA Plan.

5.4.1 Monthly Reports: Written monthly reports will be provided to NWP in a format agreed upon by NWP and the Review Team. Monthly reports will be submitted via email to the TPOC by the 10th of each month.

5.4.2 Review Checklists: Review Checklists will be developed before the on-site portion of the Review. The Review Checklists will assist the reviewers in conducting a thorough, systematic, and consistent review. Checklists are used to guide on-site observations and help the reviewer to assess whether evidence meets review criteria. These checklists will provide consistency and will be tracked to completion. Review Checklists will be provided to NWP for review and approval prior to commencing the on-site portion of the Review.

5.4.3 Draft Triennial Review Report: The Team Lead will be responsible for the preparation of the Draft Triennial Review Report. The draft will be submitted to NWP for comments. The draft report will include the following items:

- The review objectives
- The review scope,
- Identification of the reviewers,
- The dates and places where the review activities were undertaken,
- The review criteria,
- The review draft findings,
- The review draft conclusions, and
- Draft recommendations for corrective or preventative action.

5.4.4 Final Triennial Review Report: The Team Lead will be responsible for the preparation of the Final Triennial Review Report. The Final Report will include the following items with comments from the draft report resolved and/or incorporated:

- The review objectives
- The review scope,
- Identification of the reviewers,
- The dates and places where the review activities were undertaken,
- The review criteria,
- The review draft findings,
- The review draft conclusions, and

- Recommendations for corrective or preventative action.

5.4.5 Triennial Review Records: Records will include completed checklists, interview records, draft and final report and non-NWP documents that were used during the review. The Team Lead will be responsible for the submission of Triennial Review records (including electronic records) generated by the Review Team during the review to NWP. Triennial Review records will be marked, "Official Use Only (OUO)." The Technical Point of Contact may designate other documents as OUO, as necessary**.**

6. QUALITY ASSURANCE PLAN

A Quality Assurance (QA) Plan is being developed in parallel with this Review Plan to ensure the integrity of the Triennial Review. The QA Plan will identify quality assurance procedures that will be undertaken during the Triennial Review. The QA Plan will be submitted to NWP as a draft for comment prior to the Review Team issuing a final QA Plan.

7. METHODOLOGY

Methods utilized during the Review will be a combination of interviews, observations, document reviews, and in some cases inspections of certain attributes that can only be adequately determined by field inspection (e.g., instrument calibration and impacts of special processes on environmental hardware). Some activities will be conducted remotely (i.e., document reviews) and will be communicated to the Permittees beforehand.

Once compliance with each requirement has been assessed, findings will be documented in a table similar to the example provided in Attachment C. This table will then be used as a basis for compiling the Triennial Review Report. Each Team member will designate each requirement as compliant or non-compliant. If there is insufficient evidence to make this determination, the Team member will designate the requirement as "undetermined". Consistent with the Statement of Work, NWP may perform further research to facilitate a final determination. The Review Team may recommend alternative methods to achieve compliance or methods to improve current practices; however, implementation of these recommendations is at the discretion of NWP.

Non-compliant conditions shall be brought to the attention of NWP immediately (after confirmation by the Team Lead) for the purposes of assessing the significance and to address the deficiency.

8. SCHEDULE

Appendix B includes a detailed schedule of the Review activities, which has been approved by NWP. The on-site portion of the Review is currently scheduled for February 20, 2018 through March 16, 2018. The exact locations, dates and times for activities (e.g., interviews, inspections) during the on-site portion of the Review will be coordinated with NWP prior to commencement of on-site activities and finalized at the opening (i.e., kickoff) meeting on December 4, 2017 to be held in Carlsbad, NM. During the site-review, a schedule status will be provided weekly.

ATTACHMENT B

QUALITY ASSURANCE PLAN

FIREWATER

Quality Assurance Plan
Waste Isolation Pilot Plant (WIPP)
Triennial Review

For

Nuclear Waste Partnership, LLC

Subcontract No. DOE13-PO509218

December 18, 2017

Revision 1

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FIREWATER

REVISION LOG

Rev No.	Date	Description	Total Pages	Affected Pages
0	11/20 /17	Issued	21	All
1	12/18/17	Issued	20	All

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APPROVALS

Approval:

Signature on File

Wille Most
Subcontract Technical Representative
NWP-RES

Date

Approval:

Signature on File

Renee Echols
President
Firewater Associates, LLC

Date

FIREWATER

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QUALITY ASSURANCE PLAN POLICY STATEMENT

The Review Team (Team) of Firewater Associates, LLC (Firewater) and Longenecker & Associates (L&A) are committed to performing the First Annual Triennial Review in a manner that minimizes risk and environmental impacts and maximizes safety, reliability, and performance in accordance with the NWP Statement of Work (SOW). The Firewater Quality Assurance Plan (QAP) is intended to provide an effective management system tailored to the assessment process through the deliberate and graded application of Quality Assurance (QA) elements. The graded approach determines the degree of application of controls commensurate with importance and relative risk to safety and regulatory compliance, among other factors. As with the NWP policy, it is Firewater's policy for the Team to participate in establishing, implementing, assessing, and improving its QA program. Each individual is responsible for the quality of his or her own work. NWP along with Firewater management verifies the achievement of quality through periodic management assessments. This QAP will work together with the NWP QA WP 13-1 to provide direction for accomplishment of the triennial review goals.

EXECUTIVE SUMMARY

This Quality Assurance Plan (QAP) provides the primary requirements for the integration of quality functions into all aspects of the Review Team functional and project activities at the WIPP facility. Effective implementation of Quality Assurance (QA) requirements supports the principles and functions of the Integrated Safety Management System (ISMS).

This QAP promotes and integrates a Safety Conscious Work Environment, in which all personnel feel that:

• They are empowered to raise safety questions without fear of retaliation.

• Management wants and willingly listens to their concerns.

• Issues they identify are managed through constructive and timely processes.

The Safety Conscious Work Environment Policy is strongly supported by the leadership of both Firewater and L&A.

ACRONYMS AND ABBREVIATIONS

AEA Atomic Energy Act

ASME American Society of Mechanical Engineers

ASNT American Society for Nondestructive Testing

CAA Clean Air Act

CAP Corrective Action Plan

CAQ Condition Adverse to Quality

CBFO Carlsbad Field Office

CFR Code of Federal Regulations

CGD Commercial Grade Dedication

CGI Commercial Grade Item

CIO Chief Information Officer

CWA Clean Water Act

DEAR U. S. Department of Energy Acquisition Regulations

DOE U. S. Department of Energy

DQO Data quality objective

EDO Environmental data operation

EM (DOE Office of) Environmental Management

EMS Environmental Management System

EPA U. S. Environmental Protection Agency

EPCRA Emergency Planning and Community Right to Know Act

HWA New Mexico Hazardous Waste Act

HWFP Hazardous Waste Facility Permit

ISMS Integrated Safety Management System

ISO International Organization for Standardization

GPDD General Plant Design Description

M&DC Monitoring and data collection (equipment)

M&TE Measuring and test equipment

MOC Management and Operating Contractor

NARA National Archives and Records Administration

NDE Nondestructive Examination

NEPA National Environmental Policy Act

NESHAP National Emission Standards for Hazardous Waste Pollutants

NIST National Institute of Standards and Technology

NMAC New Mexico Administrative Code

NMED New Mexico Environment Department

NMSA New Mexico Statutes Annotated

NQA Nuclear Quality Assurance

NRC Nuclear Regulatory Commission

NUREG Nuclear Regulatory Commission Report Designation

NWP Nuclear Waste Partnership LLC

Permit Waste Isolation Pilot Plant Hazardous Waste Facility Permit

QA quality assurance

QAP Quality Assurance Program

QAPD Quality Assurance Program Description/Document (CBFO)

QAPjP Quality Assurance Project Plan

QC Quality Control

QIP Quality Assurance Implementation Plan

RCRA Resource Conservation and Recovery Act

RIDS Records Inventory and Disposition Schedule

SARA Superfund Amendments and Reauthorization Act

SCAQ Significant Condition Adverse to Quality

S/CI Suspect/Counterfeit Item

SEP Supplemental Environmental Project

SFO Settlement Agreement and Stipulated Final Order

SOP standard operating procedure

SOW Scope of Work

SQA Software Quality Assurance

SSC structure, system, or component

STR Subcontract Technical Representative

TRU transuranic

TRAMPAC TRUPACT-II Authorized Methods for Payload Control TRU Transuranic

TRUPACT Transuranic Package Transporter (Model II and III)

TSCA Toxic Substances Control Act

UL Underwriters Laboratories

V&V verification and validation

WAC Waste Acceptance Criteria

WAP Waste Analysis Plan

TABLE 1 – QA PLAN SOURCE DOCUMENTS

DEVELOPMENTAL RESOURCES	TITLE
WP 13-1	Quality Assurance Program Description
Title 10 CFR Part 21	"Reporting of Defects and Noncompliance"
Title 10 CFR Part 71, Subpart H "Quality Assurance" (Packaging and Transportation)	"Quality Assurance" (Packaging and Transportation)
Title 10 CFR Part 830, Subpart A	"Nuclear Safety Management," "Quality Assurance Requirements"

Title 10 CFR Part 122	"Quality Assurance”
Title 40 CFR Part 194	"Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations"
Title 40 CFR Part 261	"Identification and Listing of Hazardous Waste"
Title 40 CFR §268.6	"Petitions to Allow Land Disposal of a Waste Prohibited under Subpart C of Part 286"
Title 48 CFR §970.5204-2	"Laws, Regulations, and DOE Directives"
ASME NQA-1-1989 Basic and Supplementary Requirements	Quality Assurance Program Requirements for Nuclear Facilities
ASME NQA-2a-1990 addenda, Part 2.7	Quality Assurance Requirements of Computer Software for Nuclear Facility Applications
ASME NQA-3-1989 (excluding Section 2.1(b) and (c), and Section 17.1)	Quality Assurance Program Requirements for the Collection of Scientific and Technical Information for Site Characterization of High-Level Nuclear Waste Repositories
NM4890139088 – TSDF/WIPP, Dated December 8, 2017	WIPP Hazardous Waste Facility Permit
NWP Subcontract DOE-13PO509218, Rev. 2, December 13, 2017	Waste Isolation Pilot Plant Project First Triennial Review Statement of Work
DOE Order 226.1B	Implementation of Department of Energy Oversight Policy
DOE Order 414.1D	Quality Assurance
DOE Policy 450.4A	Integrated Safety Management Policy

DOE/CBFO-94-1012, Dated 4/20/17	Quality Assurance Program Document
DOE/CBFO-09-3442	CBFO Integrated Safety Management System Description
EM-QA-001, Rev. 1, 6/11/2012	EM Quality Assurance Program
SNT-TC-1A-1980	American Society for Nondestructive Testing (ASNT) "Recommended Practice No. SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing," August 1980
GUIDANCE DOCUMENTS TITLE DOE G 414.1-2B	Quality Assurance Program Guide
EPA (U. S. Environmental Protection Agency) QA/G-5	EPA Guidance for Quality Assurance Project Plans
Firewater QAPP, Rev. 1, May 30, 2017	Firewater QA Program
NUREG-1298 (2/88)	Staff Position – Qualification of Existing Data for High-level Nuclear Waste Repositories
NUREG-0167 (1993)	Software Quality Assurance Program and Guidelines

1.0 BACKGROUND

The Triennial Review (Review) is a systematic, independent, and documented process of objectively obtaining and evaluating evidence to determine whether specified environmental regulatory and operations requirements are met. The First (initial) Triennial Review shall be completed and made public before September 30, 2018. The Triennial Review shall be carried out by knowledgeable professionals using industry approved audit techniques, consensus standards and familiarity with applicable environmental regulations.

NWP has required a quality assurance plan (QAP) be developed to assure the integrity of the Review. The QAP for the Review is written to flow-down DOE Order 414.1D, Quality Assurance; Title 10 Code of CFR, Part 830, Subpart A, Quality Assurance Requirements; 10 CFR Part 71, Subpart H, Quality Assurance, and DOE HQ EM-QA-001, EM Quality Assurance Program for conducting activities that affect, or may affect, nuclear safety at DOE nuclear facilities. The same ten criteria, using the "graded approach," are applied to non-nuclear facilities and activities with the potential to cause harm from radiological or other hazards regardless of where they may occur. This QAP will identify the quality assurance procedures to be utilized during the Review. The Review will be managed by the Triennial Review Team Lead with oversight from NWP.

2.0 SCOPE AND GUIDELINES

This QAP will ensure that the WIPP Triennial Review Team meets the Review requirements and key performance parameters. Key Performance Parameters from the Triennial Review SOW and Guidelines Include:

- The scope and guidelines document resulting from the settlement agreement between NMED and the Permittees. The scope of the Triennial Review is limited to an evaluation of implementation of environmental regulatory requirements that apply to the WIPP facility.
- Recommendation 1: This recommendation resulted in a list of specific applicable environmental regulations that should be considered in the general scope of the review. Implementation of these regulations can be assessed because compliance relies on documented processes, procedures, training, management oversight, and in some cases, the collection of monitoring data.
- Recommendation 2: This recommendation resulted in a list of specific applicable environmental regulations that should be excluded from this review for various reasons indicated in the analysis. Some of these may be included in future scope statements if there is benefit to the Permittees or to the State of New Mexico.
- Recommendation 3: This recommendation identified trends that are indicated by the noncompliances reported by the Permittees. One trend has to do with the adequacy of procedures and processes for performing and documenting inspections required by the Permit. The effectiveness of the corrective actions should be examined by the Review Team. The second trend has to do with preparing and submitting required reports in a timely manner. The Review Team may wish to evaluate the mechanisms that trigger the preparation and submittal of both periodic and non-periodic reports. Other issues are associated with incomplete awareness of the requirements imposed by a specific regulation. This may indicate a less than robust process for identifying applicable regulations or changes in regulations and transforming them into operational activities. The Review Team may wish to evaluate this process.

- Recommendation 4: This recommendation identified the implementation of the Environmental Management System (EMS) as a topic for the triennial review. This review will go beyond the factors considered in the program certification and will include the people, parts, and processes of implementation and the Review Team may choose to evaluate the management oversight process.

Applicable Environmental Statute or Regulation	Focus of the Review
Resource Conservation and Recovery Act (RCRA) (and New Mexico implementation through the HWA)	Processes and procedures to assure compliance to the operational requirements and compliance to requirements for the accumulation and retention of records and monitoring data Corrective actions taken to prevent the recurrence of non-compliances
Toxic Substances Control Act (TSCA)	Processes and procedures to assure compliance to the operational requirements and compliance to the requirements for the accumulation and retention of records and monitoring data
Atomic Energy Act (AEA) and Environmental Protection Agency (EPA)	Processes for the collection and reporting of information required by the most recent Compliance Certification
Clean Water Act (CWA) (and the New Mexico Water Quality Act)	Processes for controlling permitted discharges and the collection of monitoring data for reporting to the NMED
DOE Order 231.1B, Admin Change 1, (Environment, Safety, and Health Reporting)	Procedures for implementation and the reporting requirements
DOE Order 458.1, Change 3 (Radiation Protection of the Public)	Procedures for implementation and the reporting of environmental requirements

3.0 PURPOSE

NWP has determined that a separate QAP should be written to more precisely describe the necessary controls required for the Triennial Review Team to identify and document their results and conclusions relative to the unique synergy between the various and complex environmental regulations and those organizations interacting to ensure that compliance is achieved.

The purpose of this QAP is to provide direction and guidance to the Triennial Review Team and identifies and incorporates cost-effective, and timely quality measures to promote efficient delivery of the Review that meets the requirements outlined in the Triennial Review SOW.

This QAP provides the primary requirements for the integration of quality functions into all aspects of the review process. Effective implementation of review methods and requirements supports the principles and functions of the DOE ISMS, documented in DOE/CBFO-09-3442 CBFO Integrated Safety Management System Description

This QAP is the written directive of the Firewater President and Project Manager to accomplish the planned tasks and to implement procedures that provide the controls and sound management practices needed to ensure that contractual obligations are met. This QAP is designed to use training, procedures, assessments, and surveillance functions as management tools to ensure that all functional and project activities, including subcontract work, are executed in a quality and safe manner that will protect workers, public health, and the environment, promote the success of DOE and NWP, and meet or exceed contract requirements. For subcontracted work, this is accomplished through a flow down of requirements and standards in procurement documents and subcontract terms and conditions.

The graded approach is the process by which the extent (level of rigor) of application of control is determined based on the importance of the activity or scope of work relative to public and worker safety, potential for environmental releases, working within facility performance boundaries, and achieving programmatic mission objectives. A graded approach is applied to meet customer expectations and utilize resources in a cost-effective manner.

This QAP implements applicable requirements of DOE 0rder 226.1B, Implementation of Department of Energy Oversight Policy, in the areas of management and independent assessment, and integrates roles and responsibilities of the Triennial Review Team into the ISMS program.

4.0 GOALS AND OBJECTIVES

This plan outlines the approach for the Review, and describes the roles and responsibilities of project personnel in performing QA functions. The goal of the Triennial Review is to identify:

- Potential Regulatory deficiencies
- Potential violations

- Deficiencies that could lead to violations of environmental regulations

The QAP is a living document and will be updated as required to ensure the Review is successful at meeting the WIPP goals and objectives, as the Review progresses.

5.0 QUALITY MANAGEMENT SYSTEM

The team will be onsite for only a few weeks, but within that time it must identify potential deficiencies that could have adverse impact on the continued operation of the WIPP facility.

The Team will perform its review under DOE O 414.1D Quality Assurance Criterion 10 “Independent Assessment”. This QAP is structured to the 10 criteria but those applicable requirements of NQA-1 will be addressed as well as relevant requirements of EM-QA- 001, Office of Environmental Management (EM) and its “adoptive” standard, NQA-1. Because ISO 14001 is also applicable in some cases, the applicable requirements ISO 9001 are also considered as appropriate. The following QA requirements apply in cooperation with the WIPP Project CBFO and NWP QA Programs. As is customary with the 10 criteria structure, this QAP has three major elements: management, performance, and assessment. If there are conflicts between the Team requirements and the Site requirements, the Team Lead will determine the path forward in consultation with the STR and appropriate Site Management.

5.1 PROGRAM

This QAP is flowed-down from the Firewater Associates, LLC Quality Assurance Program Plan. This QAP, in combination with the Review Plan, identifies the organization, functional responsibilities, and interfaces necessary to meet the goals and objectives described in the SOW. The Review Team consists of highly educated and experienced professionals led by an audit professional with 30 years of experience in DOE operations, construction, nuclear, and environmental projects. Only certain criteria apply to the Review Team outside of Independent assessment and those criteria are described within this QAP. When applicable, the Review Team will implement NWP quality requirements while on the WIPP Site. The focus of the Team will be to fulfill the safety requirements of the WIPP facility while also fulfilling the Contract obligations.

The Team will comply with NWP and DOE quality management systems as appropriate. The Review Team endorses the establishment and maintenance of a Quality Management System approach. Quality Assurance, as a management tool, provides valuable performance improvement initiatives. The Team fosters an unimpeded communication program to solicit feedback from all members of the Team regarding opportunities for improvement. This QAP prompts early identification, documentation, classification, correction, elimination, and follow-up of items and processes that do not meet established requirements or goals and do not result in the requisite or expected quality.

The Team will meet its objectives by utilizing an integrated quality approach to define quality standards and identify those elements with highest risks based upon a grading scheme, to measure and continuously improve quality.

One method employed by the Triennial Review Team is qualitative risk assessment which will be used for each regulation or group of similar citations or activities. The Risk Assessment (RA) will become a project record that will be available for review upon completion. The purpose of the RA will be to ensure proper priority is placed on an activity such as potential for improper implementation of a procedure. Based on uncertainty relative to an activity and potential for failure within that activity, the Team will provide management a list of deficiencies that could lead to violations of environmental regulations. In most cases, probability of failure cannot be fully quantified or qualified until the assessment of the regulation and area have been completed. Continuous Improvement is the goal of risk management.

5.2 TRAINING

The Review Team consists of highly educated and experienced professionals lead by an audit professional with 30 years of experience in DOE operations, construction, nuclear, and environmental projects under DOE QA programs. The Team's experience elevates it above the need to train to the "basics". The Team's education gives each member structure and discipline above the novice level. Therefore, the need for redundant and step-by-step procedures is unnecessary.

The WIPP EMS is compliant with ISO 14001 and as such uses ISO 9001 as a system framework for implementation. Under the requirements of ISO 14001, procedures are only needed in certain areas such as document control and records as are the requirements of this QAP. Each member relies on their education, experience, discipline, and professionalism to guide them. Every review initiated for DOE does require some level of indoctrination and training.

The magnitude and importance of this review make it even more imperative that the Review Team understands the unique WIPP environmental, safety, and operational requirements. That is why the team has been assigned required reading not only relative to the assessment process, but to the myriad documents and records that are relevant to this Review. Training assignments are made by the Review Team Lead who tracks completion and effectiveness. Documented evidence of assignment completion is maintained at the Firewater corporate office as a Quality Record. Quality in the Review Team organization is achieved through clear understanding of the goals and objectives to be accomplished by each individual, as well as through each person's discipline training.

5.3 IMPROVEMENT

The quality improvement process Is established to ensure that the Review Team maintains focus on achieving review goals and objectives. The Review Team will continuously focus on the goals and objectives of this Triennial Review, and to reduce the risk of failure. Many factors affect risk such as increase or decrease in the probability of an event occurring or may increase or decrease the consequence resulting from the occurrence of an event. These factors, when appropriately applied, can reduce risks to acceptable levels. Part of the improvement program will be to perform risk assessments at stages during the review to determine whether the review is still focusing on those aspects with greatest risk of failure, and with greatest consequence. Improvements may be put into place and communicated to the team improving the review process.

Nonconformances may be identified in WIPP programs during this review and if so, corrective actions may be developed along with causal analysis, corrective actions, and closure.

5.4 DOCUMENTS AND RECORDS

Documents, once approved and verified, will be maintained in hard copy, and electronic format backed up daily as records (NQA-1). The WIPP EMS is compliant with ISO 14001: 2004 and as such uses ISO 9001 as a system framework for implementation.

Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for records transmittal, distribution retention, maintenance, and disposition will be developed as needed using the Firewater program and will be sensitive to contradicting site records management procedures.

Performance Documents are the collection of policies, procedures, directives, charters, and program descriptions that define the team's management systems, programs, and processes. Processes as documented in Performance Documents implement the requirements of this QAP and applicable QA requirements mandated by law and contract to provide the detail necessary for proper implementation of the QA management program using a graded approach. This ensures the level of documentation necessary to comply with a requirement is commensurate with the following:

- Relative importance to safety, safeguards, and security.
- Magnitude of any hazard involved as identified, analyzed, and controlled in the facility safety basis documents.
- Life-cycle stage of the facility/activity or project.

- Impact/consequences on programmatic mission of the facility/activity or project.
- Characteristics of the facility/activity or project.
- The nuclear safety classification or hazard category of the item or activity.
- Adequacy of existing safety documentation.
- Complexity of products or services involved.
- Environmental consequences and level of resource protection required.
- History of problems at a site, facility, or project.

Performance Documents that contain or implement regulatory requirements or other commitments denote those requirements or commitments in the associated sections or steps of the document. Performance Documents that are technical procedures incorporate job-specific hazard controls. The process for creation of specific documents that become "records" is defined in procedures, or other governing documents as required. These documents include or reference appropriate quantitative or qualitative acceptance criteria as appropriate for determining that results are satisfactory.

The word "shall" indicates mandatory requirements. The word "should" indicates a preferred or recommended approach. The word "may" indicates an acceptable or suggested means of accomplishment.

Review Team Procedures, checklists, and other appropriate means include the following:

- Organization Structure
- Risk Assessment Process
- Documents and Records Process
- Training Flow
- Lessons Learned Coordination
- Checklists
- Criteria Review and Approach Documents (CRADS)

Other instructions, procedures and appropriate means will be developed as needed.

5.5 WORK PROCESSES

The Review process is planned, authorized, and performed by technically competent individuals who provide leadership, direction, and oversight. The review process is performed using technical standards developed or adopted from commercial practice, policies, procedures, and other appropriate means and contain a level of detail commensurate with the complexity and

importance of the work being performed (i.e. graded approach). Environmental, quality, safety, and health requirements are integrated into the Review Team work processes.

The Review Team has developed a set of instructions and guides to implement its work. These procedures and guides provide adequate detail for performing work. The Review QAP encompasses only the assessment process. The team will be subject to WIPP Site requirements in most cases and will implement safe practices in all cases.

5.6 DESIGN

Design is not applicable to this work.

5.7 PROCUREMENT

Procurement is not applicable to this work.

5.8 INSPECTION AND ACCEPTANCE TESTING

Inspection and Acceptance Testing is not applicable to this work.

5.9 MANAGEMENT/ SELF-ASSESSMENT

Periodic assessment of the review process and progress will be performed by appropriate Firewater and Longenecker management.

The Review Team Management recognizes that there are risks associated with the performance of any item or performance of any activity. Risk is a quantitative or qualitative expression of possible loss or harm with consideration of the probability of occurrence of an unwanted event and the consequences resulting from it. Consequences can include adverse impacts on (1) health and safety of facility personnel and the public, (2) the environment, and (3) NWP Management objectives.

5.10 INDEPENDENT ASSESSMENT

Independent Assessment specifies a uniform method for scheduling, conducting, and reporting independent assessments designed to evaluate compliance with environmental, health, safety, quality, and regulatory requirements; evaluate process performance; and promote improvement.

Independent assessments are part of the Review Team assessment and oversight program. Independent assessments are performed to evaluate compliance with environmental, health, safety, quality, and regulatory requirements and to determine the effectiveness of the QA

Program. Independent assessments may also be used to verify or validate conditions or fulfill directed senior management investigations and verify the effectiveness of corrective actions for significant issues. Independent assessments focus on performance of work with significant consideration given to compliance with requirements and safely performing work while achieving the goals of the organization. Their purpose is to improve performance and process effectiveness through assessing item and service quality, measuring adequacy of work performed and promoting improvement. Independent assessments are conducted by technically qualified and knowledgeable staff not responsible for supervising or performing the work being reviewed.

6.0 TRIENNIAL REVIEW SCOPE

The activities to be performed by the Triennial Review Team will include:

- Determining, through investigation, examination of records, interviews, and inspections if CBFO and NWP comply with the terms and conditions of permits and authorizations implementing the environmental regulations that stem from the listed statutes.
- Determine, through investigation, examination of records, and interviews, if the CBFO and NWP have programs in place to identify and implement new environmental requirements when they are promulgated.
- Examine the status of the Environmental Management System (EMS) regarding completeness. Completeness is defined as including the major activities that impact the environment and providing a method for mitigation of the impacts.
- Determine, through investigation, examination of records, and interviews, the robustness of the oversight processes in place for the environmental programs at the WIPP facility to ensure the technical content of the implementation programs is effectively controlled.
- Document findings in a written report that will be submitted to the Permittees through the NWP subcontract technical point of contact (TPOC) at the completion of the review.

The Triennial Review Team will focus on the environmental statutes, regulations and Orders listed in Section 2.0 above. The Triennial Review Team will evaluate compliance with the above-referenced requirements at surface and underground structures/facilities at the WIPP site.

6.1 METHOD

The Triennial Review Team will utilize a variety of techniques such as, interviews, observations, document reviews, and in some cases inspections of certain attributes that can only be adequately determined by field inspection, such as instrument calibration. Some activities will be conducted remotely (i.e., document reviews) and will be communicated to NWP beforehand.

6.3 CRITERIA (2)

Criteria include statutes, regulations, and DOE Orders as well as requirements from procedures and instructions that have been generated from regulations in order to carry out specific activities in demonstration of compliance.

6.4 IMPACT OF REVIEW ON CLIENT

Every effort will be made to minimize impact on WIPP operations and personnel. Activities such as interviews, observations will be scheduled and adhered to.

7.0 PERSONNEL ROLES & RESPONSIBILITIES

7.1 PERSONNEL

The Triennial Review Team is made of up six team members from two contractors: Firewater Associates (Firewater) and Longenecker & Associates (L&A). The roles and responsibilities of each team member are briefly described below.

Team Lead – Mr. William Palmer (Firewater)

Mr. Bill Palmer is the lead for this Review and is responsible for the following:

- Task assignments to Review Team members
- Protecting the health and safety of Review Team members during the Review
- Interfacing with the client and auditee
- Ensuring competence of the Review Team
- Ensuring integrity of the Review Process
- Preventing and resolving conflicts

Review Team members

Mr. Greg Edwards (Firewater)
Ms. Anne Weaver (Firewater)
Dr. Ben Rogers (Firewater)
Ms. Kathryn Roberts (L&A)
Ms. Christine Gelles (L&A)

7.2 ROLES & RESPONSIBILITIES

The Team Lead is responsible for ensuring that personnel are trained and qualified to do their assigned jobs in a manner that achieves performance levels and objectives. The Team Lead is also responsible for ensuring that required quality assurance indoctrination and training is successfully completed and that additional training needs are identified and met.

Review Team members are responsible for completing all tasks assigned by the Team Lead in accordance with the Review Plan and this QAP.

7.3 INTERFACE CONTROLS

The importance of the Triennial Review necessitates responsive management of the interfaces among the Review Team, NWP Technical Point of Contact (TPOC), and DOE representatives to maintain control of contractual work and to facilitate technical information flow. The procedures and plans identified by this QAP and the Review Plan are on file in the Firewater corporate office and provide applicable interfaces.

8.0 REPORTING AND DOCUMENTATION

Documentation will be passed through the Team Lead for acceptability and accuracy and maintained to prevent breach of confidentiality and security. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for records transmittal, distribution, retention, maintenance, and disposition are described below.

The President of Firewater, Ms. Renee Echols, will have sole responsibility for formally transmitting deliverables to Mr. Wille Most, NWP TPOC.

Upon completion of the Review, documentation and records will be turned over to NWP for retention and/or disposition as directed by the STR.

9.0 REFERENCES

10 CFR Part 830, Nuclear Safety Management, Subpart A, Quality Assurance Requirements

10 CFR Part 830, Nuclear Safety Management, Subpart B, Safety Basis Requirements

10 CFR Part 830.7, Graded Approach

10 CFR Part 830.122, Quality Assurance Criteria

DOE M 450.4-1, Integrated Safety Management System Manual,

DOE 0 414.1D, Quality Assurance

DOE P 450.4A, Integrated Safety Management Policy, April 25, 2011, U.S. Department of Energy, Washington, D.C.

EM-QA-001, Office of Environmental Management, Subject: EM Quality Assurance Program (QAP), U.S. Department of Energy, Washington, D.C.

NQA-1-2008, Quality Assurance Requirements for Nuclear Facility Applications and NQA-1a-2008 and NQA-1b-2009 Addenda

DOE O 232.2, Occurrence Reporting and Processing of Operations Information

DOE O 226.1B, Implementation of Department of Energy Oversight Policy

NQA-1-2008, Non-mandatory Appendix 2A-1, “Guidance on the Qualifications of Inspection and Test Personnel”

ATTACHMENT C

CRITERIA CHECKLISTS

	Triennial Review Checklist					
	RCRA Non-Permit Generator Requirements					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 1**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	40 CFR §262.11 (20.4.1.300 NMAC) Hazardous Waste Determination	Is there a program in place to determine if a solid waste generated at the WIPP facility is hazardous as defined in 40 CFR Part 261?				
2	40 CFR §262.20 - 23 (20.4.1.300 NMAC) Manifest Requirements	Is there a program in place to assure compliance with the manifest requirements for shipping hazardous waste off-site?				
3	40 CFR §262.30 - 33 (20.4.1.300 NMAC) Packaging Requirements	Is there a program in place to assure EPA and DOT packaging requirements are met before shipping hazardous waste off-site?				
4	40 CFR §262.34(a)(1) – 34(a)(3) (20.4.1.300 NMAC) Accumulation Time	Is there a program in place to assure accumulation times are not exceeded?				
5	40 CFR §262.34(a)(4) (20.4.1.300 NMAC) Compliance with Preparedness and Prevention, Contingency Plan and Emergency Procedures, Training, and Waste Analysis Plan Requirements	Are there programs and procedures to assure compliance with preparedness and prevention and contingency requirements for large quantity generators?				
6	40 CFR §262.34(b) (20.4.1.300 NMAC) Extension of Storage Period	Is there a program in place to extend the 90-day storage period if needed?				
7	40 CFR §262.34(c) (20.4.1.300 NMAC) Restrictions and Requirements	Are there programs and procedures to manage satellite accumulation areas?				
8	40 CFR §262.40 (20.4.1.300 NMAC) Record-Keeping Requirements	Are there procedures to ensure manifests, test results, waste analyses, biennial reports, and exception reports are kept on-site for at least three years.				
9	40 CFR §262.41 (20.4.1.300 NMAC) Generator-Biennial Report	Has the most recent biennial report been submitted to the EPA by March 1 of the most recent even- numbered year?				
10	40 CFR §262.42 (20.4.1.300 NMAC) Exception Reporting	Is there a program in place to ensure exception reporting is done for unreturned manifests?				
11	40 CFR §262.43 (20.4.1.300 NMAC) Additional Reporting	Has the NMED Secretary required additional reporting beyond what's required in the regulations?				

	Triennial Review Checklist					
	RCRA Permit Part 1 - General Permit Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 1**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
12	Permit Part 1 Section 1.7.7 Proper Operation and Maintenance	Are systems required to achieve compliance with the conditions of the permit adequately identified and maintained?				
13	Permit Part 1 Section 1.7.7 Proper Operation and Maintenance	Are there sufficient staff and is the training of the operating staff current?				
14	Permit Part 1 Section 1.7.8 Duty to Provide Information	Have the Permittees been asked to provide additional information and has that information been provided in a timely manner?				
15	Permit Part 1 Section 1.7.9.3 Inspection	Has NMED inspected the WIPP facility in the past year?				
16	Permit Part 1 Section 1.7.10.1 Representative Sampling	Have representative samples been taken as prescribed?				
17	Permit Part 1 Section 1.7.10.2 Record Retention	Is there a compliant records retention program?				
18	Permit Part 1 Section 1.7.10.3 Monitoring Records	Do monitoring records contain the required information?				
19	Permit Part 1 Section 1.7.11.1 Reporting Planned Changes	Have the Permittees posted links to planned change notification transmittal letters?				
20	Permit Part 1 Section 1.7.11.2 Reporting Anticipated Noncompliance	Have the Permittees posted links to planned change notification transmittal letters?				

	Triennial Review Checklist					
	RCRA Permit Part 1 - General Permit Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 1**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
21	Permit Part 1 Section 1.7.13 24 Hour and Subsequent Reporting	Do the Permittees have processes in place to assure compliance with the 24 hour and subsequent reporting?				
22	Permit Part 1 Section 1.7.13.4 Contingency Plan Implementation	Have the Permittees implemented the Contingency Plan in the past year and have they complied with the reporting requirements of Attachment D?				
23	Permit Part 1 Section 1.7.14 Other Noncompliance	Do the Permittees have a process in place to assure the reporting of other noncompliances in the annual monitoring report?				
24	Permit Part 1 Section 1.7.14 Other Noncompliance	Have other noncompliances been reported?				
25	Permit Part 1 Section 1.7.15	Do the Permittees have a process in place to assure reporting as required?				
26	Permit Part 1 Section 1.9 Signatory Requirement	Do the Permittees have a process in place to assure documents are properly signed and certified?				
27	Permit Part 1 Section 1.10.1 Information Submittal	Do the Permittees have a process in place to assure proper information submittal?				
28	Permit Part 1 Section 1.11 Public E-Mail Notification List	Do the Permittees have a process in place to assure compliance with the Public E-Mail Notification requirements?				
29	Permit Part 1 Section 1.13 Documents to be Maintained at the Facility	Are the listed documents maintained at the WIPP facility and are there processes in place to assure maintenance?				
30	Permit Part 1 Section 1.14 Information Repository	Do the Permittees have a process in place to assure compliance with the Information Repository requirements?				
31	Permit Part 1 Section 1.14 Information Repository	Are the Permittees in compliance with the Information Repository requirements?				

	Triennial Review Checklist					
	RCRA Permit Part 1 - General Permit Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 1**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
32	Permit Part 1 Section 1.15	Do the Permittees have a process in place to assure compliance with the Community Relations Plan requirements?				
33	Permit Part 1 Section 1.15	Are the Permittees in compliance with the Community Relations Plan requirements?				

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Part 2, Section 2.2.2 - Required Notification of Off-Site Sources	Have the Permittees provided the required notice of off-site sources of TRU mixed waste as required by 24.4.1.500 NMAC (incorporating 40 CFR § 264.12(b))?				
2	Permit Part 2, Section 2.3.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.13	Do the Permittees have processes to identify and characterize derived waste?				
3	Permit Part 2, Section 2.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.73(b)(9)	Do the Permittees have the required waste minimization program in place?				
4	Permit Part 2, Section 2.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.73(b)(9)	Have the Permittees submitted the required waste minimization report to the NMED?				
5	Permit Part 2, Section 2.6.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(1)))	Is there a surveillance system comprised of security officers that provide protection 24 hours per day, every day?				
6	Permit Part 2, Section 2.6.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(1)))	Do security officers continuously monitor and control personnel, vehicle, and material access/egress to the Property Protection Area (PPA)?				
7	Permit Part 2, Section 2.6.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(1)))	During non-operational hours, do security officers conduct documented security patrols outside of the PPA, at a minimum rate of two per 12-hour shift?				
8	Permit Part 2, Section 2.6.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(1)))	Whenever scheduled security patrols cannot be made, is the reason for missing the patrol documented in the security logbook?				
9	Permit Part 2, Section 2.6.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(i)))	Is the PPA enclosed by a permanent seven ft high chain-link fence topped by three strands of barbed wire, for a total height of eight ft.?				
10	Permit Part 2, Section 2.6.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(i)))	Does the fence completely surround all major surface structures on the active portion of the facility?				

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
11	Permit Part 2, Section 2.6.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(i)))	Is the fence inspected as specified in Permit Attachment E to ensure it remains in good repair?				
12	Permit Part 2, Section 2.6.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(ii)))	Do the Permittees control entry to the active portion of the facility at all times?				
13	Permit Part 2, Section 2.6.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(ii)))	Is entry into the PPA, through controlled gates and doors?				
14	Permit Part 2, Section 2.6.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(b)(2)(ii)))	Are only properly identified and authorized persons, vehicles, and property allowed entrance to and exit from the active portion of the facility?				
15	Permit Part 2, Section 2.6.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(c)))	Have the Permittees posted “No Trespassing” signs and “Danger: Authorized Personnel Only” signs in English and Spanish at approximately 50 ft intervals on the permanent chain-link fence surrounding the PPA.?				
16	Permit Part 2, Section 2.6.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.14(c)))	Are signs legible from a distance of 25 ft and visible from any approach to the facility?				
17	Permit Part 2, Section 2.7.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Have the Permittees implemented the inspection schedule specified in Permit Attachment E to detect any malfunctions and deteriorations, operator errors, and discharges?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
18	Permit Part 2, Section 2.7.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Do the Permittees use the inspection logbooks and forms as specified in Permit Attachment E?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
19	Permit Part 2, Section 2.7.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Are original copies of these completed forms maintained in the Operating Record?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
20	Permit Part 2, Section 2.7.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Do the records include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
21	Permit Part 2, Section 2.7.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Do the Permittees inspect monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment at the frequency specified in Tables E-1 and E-2 of Permit Attachment E2				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
21 part 2	Permit Part 2, Section 2.7.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b))	Do the Permittees inspect monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment at the frequency specified in Tables E-1 and E-2 of Permit Attachment E2				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
22	Permit Part 2, Section 2.7.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(c))	Do the Permittees have a program to remedy any deterioration or malfunction of equipment or structures which an inspection reveals?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
23	Permit Part 2, Section 2.7.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(d) and 264.73(b)(5))	Are the Permittees maintaining inspection logbooks and forms in the operating record until closure?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment E – Inspection Schedule, Process and Forms
24	Permit Part 2, Section 2.8.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.16)).	Have the Permittees implemented a personnel training program that includes the requirements specified in Permit Attachment F and Permit Attachment F2?				Issues were identified during the review. Those issues were technical discrepancies, and did not affect the safety of WIPP operations. These discrepancies are included in Finding 3 of the Report.
25	Permit Part 2, Section 2.8.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.16)).	Are Permittees' employees that are involved in the management of mixed and hazardous waste trained in procedures relevant to the positions in which they are employed, as specified in Permit Attachment F1?				
26	Permit Part 2, Section 2.8.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.16(d) and (e))).	Do the Permittees maintain training documents and records, as required by the Permit?				

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
27	Permit Part 2, Section 2.8.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.16)).	Is refresher training completed by the end of the month of the anniversary date when the training was previously completed?				
28	Permit Part 2, Section 2.9 (20.4.1.500 NMAC (incorporating 40 CFR § 264.17)).	Do the Permittees have programs in place to assure no ignitable, corrosive, reactive, or incompatible wastes are managed, stored or disposed at the WIPP facility within the permitted units?				
29	Permit Part 2, Section 2.10.1.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(a))).	Do the Permittees have an internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel?				
30	Permit Part 2, Section 2.10.1.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(a))).	Do the Permittees internal communication systems include two-way communication by the public address (PA) system and its intercom phones, mobile phones, mine phones~~,~~ plant base radios, and portable two-way radios.?				
31	Permit Part 2, Section 2.10.1.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(a))).	Does the Permittees internal communication systems include local and facility-wide alarm systems?				
32	Permit Part 2, Section 2.10.1.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(b))).	Do the Permittees have a communications device or system capable of summoning outside agencies for emergency assistance?				
33	Permit Part 2, Section 2.10.1.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(b))).	Do the external communication systems include the commercial telephone system and two-way radios?				
34	Permit Part 2, Section 2.10.1.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(c))).	Do the Permittees have portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment as described in Permit Attachment D?				

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
35	Permit Part 2, Section 2.10.1.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(d))).	Do the Permittees have water at adequate volume and pressure to supply water-hose streams, foam- producing equipment, automatic sprinklers, or water-spray systems?				
36	Permit Part 2, Section 2.10.1.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32(d))).	Does the permittees facility water system consist of water furnished by the City of Carlsbad capable of providing water at a rate of 6,000 gallons per minute; two water storage tanks, one 180,000 gallon capacity tank for use by the fire-water system and a second tank with a 100,000-gallon reserve; dedicated fire water pumps rated at 1,500 gallons per minute at 125 pounds per square inch; and a wet-pipe sprinkler system connected to surface buildings as described in Permit Attachment D?				
37	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Do the Permittees maintain dedicated batteries designed to supply power to a fully loaded uninterruptible power system (UPS) for 30 minutes?				
38	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are the Permittees maintaining the back-up diesel generators?				
39	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are the backup diesel generators connected to the RH equipment as required by the Permit?	NA			
40	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ The underground filtration system fails in the “filter” mode so that no releases of contaminated particulates will occur				Deals exclusively with RHTRU - Not in scope
41	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ The UPS maintains all monitoring systems and alarms in waste handling areas so that fires or pressure loss will be detected and an appropriate response initiated				

	Triennial Review Checklist					
	RCRA Permit Part 2 - General Facility Conditions					
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42	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ Generators are brought on line within 30 minutes, at which time hoisting can be initiated so that personnel do not have to stay underground for extended lengths of time.				
43	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ Decisions to evacuate underground personnel will be made in accordance with the requirements of the Mine Safety and Health Administration (MSHA)				
44	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ The waste hoist brakes set automatically so that loads do not				
45	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ Cranes retain their loads so that spills do not occur from dropped containers				
46	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ Communication systems are maintained				
47	Permit Part 2, Section 2.10.1.5 (20.4.1.500 NMAC (incorporating 40 CFR § 264.32)).	Are there procedures in place to implement the following in the event of a loss of electrical power? □ The emergency operations center is powered if it is needed				
48	Permit Part 2, Section 2.10.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.33)).	Do the Permittees test and maintain the equipment specified in Permit Section 2.10.1, as necessary, to assure its proper operation in time of emergency, as specified in Permit Attachment E?				
49	Permit Part 2, Section 2.10.3 (20.4.1.500 NMAC (incorporating 40 CFR § 264.34)).	Do the Permittees maintain access to the communications and alarm systems specified in Permit Section 2.10.1?				

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	RCRA Permit Part 2 - General Facility Conditions					
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	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 2**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
50	Permit Part 2, Section 2.10.4 (20.4.1.500 NMAC (incorporating 40 CFR § 264.35)).	Do the Permittees maintain aisle space in the WHB Unit and Parking Area Unit to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency?				
51	Permit Part 2, Section 2.10.5.1 (20.4.1.500 NMAC (incorporating 40 CFR § 264.37)(a) and 264.57(c))).	Do the Permittees maintain preparedness and prevention arrangements with state and local authorities, other mining operations, contractors, and other governmental agencies specified in Permit Attachment D, Section D-6?				
52	Permit Part 2, Section 2.10.5.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.37)(a))).	Are the Permittees arrangements either Memoranda of Understanding (MOUs) or Mutual Aid Agreements (MAAs) between the Permittees and the off-site cooperating agencies?				
53	Permit Part 2, Section 2.10.5.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.37)(a))).	Do the Permittees arrangements include the elements required by 20.4.1.500 NMAC (incorporating 40 CFR § 264.37)(a))?				
54	Permit Part 2, Section 2.10.5.2 (20.4.1.500 NMAC (incorporating 40 CFR § 264.37)(a))).	Are copies and descriptions of the Permittees MOUs and MAAs maintained at the facility in the operating record?				
55	Permit Part 2, Section 2.10.6	Have the Permittees developed and implemented Live Fire Extinguisher Training and Refresher and is it mandatory for unescorted access to the underground?				
56	Permit Part 2, Section 2.12.1 (20.4.1.500 NMAC (incorporating 40 CFR §264.51(b)))	Do the Permittees have procedures in place to immediately implement the Contingency Plan as specified in Permit Attachment D whenever there is a fire, explosion, or release of mixed or hazardous waste or hazardous waste constituents which could threaten human health or the environment, as required by.				
57	Permit Part 2, Section 2.12.2 (20.4.1.500 NMAC (incorporating 40 CFR §264.53))	Do the Permittees maintain copies of the Contingency Plan and all revisions and amendments to the Contingency Plan?				

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	RCRA Permit Part 2 - General Facility Conditions					
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58	Permit Part 2, Section 2.12.2 (20.4.1.500 NMAC (incorporating 40 CFR §264.53(b)))	Do the Permittees provide copies of the current Contingency Plan to the Secretary and all entities with which the Permittees have emergency MOUs or MAAs?				
59	Permit Part 2, Section 2.12.2 (20.4.1.500 NMAC (incorporating 40 CFR §264.53(b)))	Do the Permittees maintain at least one current paper copy of the Contingency Plan at the facility in a location readily accessible to the Emergency Coordinator?				
60	Permit Part 2, Section 2.12.3 (20.4.1.500 NMAC (incorporating 40 CFR §264.54))	Do the Permittees have a process in place to review and immediately amend, if necessary, the Contingency Plan, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.54)?				
61	Permit Part 2, Section 2.12.4 (20.4.1.500 NMAC (incorporating 40 CFR §264.55))	Do the Permittees assure that an Emergency Coordinator as specified in Table D-1 of Permit Attachment D is available at all times in case of an emergency?				
62	Permit Part 2, Section 2.12.4 (20.4.1.500 NMAC (incorporating 40 CFR §264.55))	Is the Permittees' Emergency Coordinator thoroughly familiar with the Contingency Plan?				
63	Permit Part 2, Section 2.12.4 (20.4.1.500 NMAC (incorporating 40 CFR §264.55))	Does the Permittees' Emergency Coordinator have the authority to commit the resources needed to implement the Contingency Plan?				
64	Permit Part 2, Section 2.12.4 (20.4.1.500 NMAC (incorporating 40 CFR §264.56))	In the event of an imminent or actual emergency, does the Emergency Coordinator implement the requirements Contingency Plan.				

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	RCRA Permit Part 2 - General Facility Conditions					
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65	Permit Part 2, Section 2.13 (20.4.1.500 NMAC (incorporating 40 CFR §264.71 and 264.72))	Do the Permittees have a process in place to assure compliance with the manifest requirements?				
66	Permit Part 2, Section 2.14.1 (20.4.1.500 NMAC (incorporating 40 CFR §§264.73(a)))	Do the Permittees maintain a written operating record at the facility?				
67	Permit Part 2, Section 2.14.1 (20.4.1.500 NMAC (incorporating 40 CFR §§264.73(b))	Does the Permittees' written operating record include all information required under 20.4.1.500 NMAC (incorporating 40 CFR §264.73(b)) subject to the limitations on the storage of classified information				
68	Permit Part 2, Section 2.14.1 (20.4.1.500 NMAC (incorporating 40 CFR §§264.73(a)))	For those portions of the Operating Record that are electronic, is the record unalterable by the user and capable of producing a paper copy?				
69	Permit Part 2, Section 2.14.1 (20.4.1.500 NMAC (incorporating 40 CFR §§264.73(a)))	Do the Permittees have a process in place to maintain the operating record until closure of the facility?				
70	Permit Part 2, Section 2.14.2 (20.4.1.500 NMAC (incorporating 40 CFR §§264.75))	Do the Permittees submit to the Secretary a biennial report?				
71	40 CFR §264.76 (20.4.1.500 NMAC) Unmanifested Waste Report	Have the Permittees handled unmanifested waste correctly?				
72	40 CFR §264.77 (20.4.1.500 NMAC) Additional Reports	Have the Permittees been required to submit additional reports to the NMED?				

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	RCRA Permit Part 3 - Container Storage					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Permit Part 3**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Part 3, Section 3.1 – Designated Container Storage Units	Is there a program in place to ensure that TRU mixed waste containers are only stored in designated container storage units?				
2	Permit Part 3, Section 3.1.1.1 -Storage Containers	Is there a program in place to ensure only permitted containers are used for storage of TRU mixed waste in the WHB?				
3	Permit Part 3, Section 3.1.1.2 - Storage Locations and Quantities	Is there a program in place to ensure containers are stored in the authorized areas of the WHB?				
4	Permit Part 3, Section 3.1.1.2 - Storage Locations and Quantities	Is there a program in place to ensure containers do not exceed the authorized quantities when stored in the WHB?				
5	Permit Part 3, Section 3.1.1.3 - Use of CH Bay Surge Storage	Is there a program in place to ensure compliance with surge storage specification in Attachment A1, Section A1-1c(1)?				
6	Permit Part 3, Section 3.1.1.4 - Notification of CH Bay Surge Storage Use	Is there a program in place to ensure the NMED is informed when Surge Storage is used and to justify its use?				
7	Permit Part 3, Section 3.1.1.4 - Notification of CH Bay Surge Storage Use	Is there a program in place to ensure the e-mail notifictions requirements for Surge Storage Use are met?				
8	Permit Part 3, Section 3.1.1.4 - Notification of CH Bay Surge Storage Use	Is there a program in place to ensure the annual report to the NMED regarding surge storage use is submitted timely?				
9	Permit Part 3, Section 3.1.1.5 - Storage on Pallets	Is there a program in place to ensure storage in the WHB is on pallets as applicable?				
10	Permit Part 3, Section 3.1.1.6 - Storage of Derived Waste	Is there a program in place to ensure derived waste is stored in accordance with the Permit?				
11	Permit Part 3, Section 3.1.1.7 - CH TRU Mixed Waste Storage Time Limit	Is there a program in place to ensure CH TRU waste is not stored for longer than 60 days in the WHB?				
12	Permit Part 3, Section 3.1.1.8 - Minimum Aisle Space	Is there a program in place to ensure minimum aisle space of 44 inches is maintained between facility pallets or casks in storage areas?				
13	Permit Part 3, Section 3.1.1.9 - Storage of RH TRU Mixed Waste Containers	Is there a program in place to ensure RH TRU mixed waste is stored in accordance with the specifications in Attachment A1, Section A1.1c(1)?	NA			Deals exclusively with RHTRU - Not in scope
14	Permit Part 3, Section 3.1.1.10 - RH TRU Mixed Waste Storage Time Limit	Is there a program in place to ensure RH TRU mixed waste storage time limits are not exceeded?	NA			Deals exclusively with RHTRU - Not in scope

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	Citation	Required Program				Notes/Comments
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15	Permit Part 3, Section 3.1.1.11 - Hot Cell RH TRU Mixed Waste Processing Capacity	Is there a program in place to ensure Hot Cell processing limits are not exceeded?	NA			Deals exclusively with RHTRU - Not in scope
16	Permit Part 3, Section 3.1.2 - Parking Area Container Storage Unit	Is there a program in place to ensure the Permittees manage the Parking Area Container Storage Unit in compliance with the specifications in Permit Attachment A1, Figure A1-2?				
17	Permit Part 3, Section 3.1.2.1 - Storage Containers	Is there a program in place to ensure only permitted containers are used for storage of TRU mixed waste in sealed CH and RH Packages Described in Permit Attachment A1?				
18	Permit Part 3, Section 3.1.2.2 - Storage Locations and Quantities	Is there a program in place to ensure RH and CH TRU mixed waste packages are stored in the authorized areas of the PAU?				
19	Permit Part 3, Section 3.1.2.3 - Use of CH Bay Surge Storage	Is there a program in place to ensure compliance with all surge storage specifications in Attachment A1, Section A1-1c(2)?				
20	Permit Part 3, Section 3.1.2.4 - Notification of Parking Area Surge Storage Use	Is there a program in place to ensure compliance with surge storage notification requirements?				
21	Permit Part 3, Section 3.1.2.5 - Prohibition on Opening Containers	Do the Permittees keep containers of off-site waste closed at all times?				
22	Permit Part 3, Section 3.1.2.6 - Storage Time Limits	Do the Permittees have a process in place to prevent exceeding storage times in the PAU?				
23	Permit Part 3, Section 3.1.2.7 - Minimum Aisle Space	Is there a program in place to ensure minimum spacing of 4 feet maintained between loaded packages in the PAU?				
24	Permit Part 3, Section 3.2 - Permitted and Prohibited Waste Idenification	Is there a program in place to ensure compliance with permitted and prohibited waste requirements?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
25	Permit Part 3, Section 3.2.1.1 - Waste Analysis Plan	Is there a program in place to ensure TRU mixed waste managed in the WHB and PAU comply with the WAP?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
26	Permit Part 3, Section 3.2.1.2 - TSDF Waste Accpetance Criteria	Is there a program in place to ensure TRU mixed waste managed in the WHB and PAU comply with the TSDF WAC?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
27	Permit Part 3, Section 3.2.1.3 - Hazardous Waste Number	Is there a program in place to ensure TRU mixed waste managed in the WHB and PAU only contain acceptable HWNs?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
28	Permit Part 3, Section 3.2.2 - Prohibited Waste	Is there a program in place to ensure TRU mixed waste managed in the WHB and PAU does not contain prohibited items?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.

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	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Permit Part 3**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
29	Permit Part 3, Section 3.3, 20.4.1.500 (incorporating 40 CFR §264.171)	Is there a program in place to ensure waste containers are in "good condition" and in compliance with 40 CFR 264.171?				
30	Permit Part 3, Section 3.3.1 - Acceptable Storage Containers	Is there a program in place to ensure TRU mixed waste managed in the WHB and PAU are in approved containers?				
31	Permit Part 3, Section 3.3.2 - Derived Waste Containers	Is there a program in place to ensure the Permittees only store derived waste in approved containers in the WHB?				
32	Permit Part 3, Section 3.4, 20.4.1.500 (incorporating 40 CFR §264.172)	Is there a program in place to ensure that containers are compatbile with the TRU mixed waste being stored in accordance with 40 CFR 264.172?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
33	Permit Part 3, Section 3.5, 20.4.1.500 (incorporating 40 CFR §264.173)	Is there a program in place to ensure that containers remain closed during storage (except when adding waste to derived waste containers) in accordance with 40 CFR 264.173?				
34	Permit Part 3, Section 3.6, 20.4.1.500 (incorporating 40 CFR §264.175)	Is there a program in place to ensure that secondary containment systems are maintained for containers in the WHB and Parking Area container storage units in accordance with 40 CFR 264.175?				
35	Permit Part 3, Section 3.7, 20.4.1.500 (incorporating 40 CFR §264.174)	Is there a program and/or procedure in place to inspect the WHB and Parking Area container storage units at least weekly in accordance with 40 CFR 264.174?				
36	Permit Part 3, Section 3.8-Recordkeeping	Is there a program and/or procedure in place to ensure that results of waste analysis are placed in the operating record?				

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	RCRA Permit Part 4 - Geologic Repository Disposal					
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	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 4**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Part 4, Section 4.1 – Designated Disposal Units	Is there a program in place to ensure that waste is dipsosed of in appropriate locations?				
2	Permit Part 4, Section 4.1.1.2 – Designated Disposal Units	Is there a program in place to ensure that the maximum waste capacitiy allowed for disposal in each Underground HWDUs is not exceeded?				
3	Permit Part 4, Section 4.2 – Permitted and Prohibited Waste Identification	Are there procedures to ensure that only permitted waste types are disposed of in the Underground HWDUs?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
4	Permit Part 4, Section 4.2.1.1 - Waste Analysis Plan	Is there a program in place to ensure TRU mixed waste disposed in the underground comply with the WAP?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
5	Permit Part 4, Section 4.2.1.2 - TSDF Waste Accpetance Criteria	Is there a program in place to ensure TRU mixed waste disposed in the underground comply with the TSDF WAC?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
6	Permit Part 4, Section 4.2.1.3 - Hazardous Waste Number	Is there a program in place to ensure TRU mixed waste disposed in the underground only contain acceptable HWNs?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
7	Permit Part 4, Section 4.2.2.1 - General Prohibition	Is there a program in place to ensure TRU mixed waste disposed in the underground is not prohibited?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
8	Permit Part 4, Section 4.2.2.2 - Specific Prohibition	Is there a program in place to ensure that non-mixed waste is not disposed in the underground unless such waste is characterized in accordance with the WAP?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
9	Permit Part 4, Section 4.3 – Disposal Containers	Is there a program in place to ensure that only containers specificed in this section and Attachment A1-1b are disposed of in the Undergound HWDUs	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
10	Permit Part 4, Section 4.3.2 – Condition of Containers	Is there a program/procedure in place to ensure that TRU mixed waste containers are in good condition prior to disposal in the Undergound				
11	Permit Part 4, Section 4.4.1 – Room-Based Limits	Is there a program/procedure in place to ensure that the limits in Table 4.4.1 are not exceeded in each closed room of an active panel?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
12	Permit Part 4, Section 4.4.2 – Determination of VOC Room-Based Limits	Is there a program in place to ensure that VOC concentrations and emission rate limits in Permit Section 4.4.1 are confirmed?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan

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	Citation	Required Program				Notes/Comments
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13	Permit Part 4, Section 4.4.3 – Ongoing Disposal Room VOC Monitoring in Panels 3 through 8	Is there a program in place to ensure that ongoing VOC monitoring is conducted in Room 1 of applicable Panels (Panels 3, 4, and 6)?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
14	Permit Part 4, Section 4.5.1-4.5.2 20.4.1.500 NMAC (incorporating 40 CFR §264.601)	Is there a program in place to ensure each Underground HWDU is constructed in conformance with the requirements in Permit Attachments				
15	Permit Part 4, Section 4.5.2.2 - Notification Requirements	Is there a program in place to ensure the NMED is notified 30 calendar days prior to beginning construction of a new HWDU? Is the notification posted for the most recent Panel (Panel 8)?				
16	Permit Part 4, Section 4.5.3.1 – Underground Traffic Flow	Is there a program/procedure in place separating the ventilation and traffic flow areas in the underground TRU mixed waste handling and disposal areas from the ventilation and traffic flow areas for mining and construction equipment (north of S-1600)?				
17	Permit Part 4, Section 4.5.3.1 – Underground Traffic Flow	Is there a program/procedure in place designating routes for the traffic flow of TRU mixed waste handling equipment and construction equipment?				
18	Permit Part 4, Section 4.5.3.1 – Underground Traffic Flow	Are the designated routes recorded on a mine map posted in a location where persons entering the underground can read it?				
19	Permit Part 4, Section 4.5.3.1 – Underground Traffic Flow	Are old copies of the mine map in the facility files?				
20	Permit Part 4, Section 4.5.3.2 – Ventilation	Is there a program/procedure in place to ensure that a minimum acive room ventilation rate of 35,000 standard ft3/min is maintained during waste disposal activities and when workers are present in the room as specified in Permit Attachment A2, Section A2-2a(3)?				
21	Permit Part 4, Section 4.5.3.3 – Ventilation Barriers	Is there a program/procedure in place requiring construction of ventilation barricades in active Underground HWDUs to restrict the flow of mine ventilation air through full disposal rooms as specified in Permit Attachment A2, Section A2-2a(3)?				
22	Permit Part 4, Section 4.6.1- Geomechanical Monitoring (incorporating 40 CFR § 264.602)	Is there a program/procedure in place requiring Geomechnical Monitoring as specified in Permit Attachment A2, Section A2-5b(2)?				
23	Permit Part 4, Section 4.6.1.2- Reporting Requirements	Is there a program/procedure in place requiring submittal of an annual report (in October) of the Geomechnical Monitoring program (including certification of explosion-isolation walls by a registered professional				

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24	Permit Part 4, Section 4.6.1.2- Reporting Requirements	Is there a program/procedure in place to assure posting of the annual report of the Geomechnical Monitoring program to the WIPP Home page and inform those on the e-mail notification list? Was the most recent report posted?				
25	Permit Part 4, Section 4.6.1.3- Notification of Adverse Conditions	Is there a procedure in place ensuring that notification to NMED is made when the geomechnical monitoring system data identifies a trend towards unstable conditions?				
26	Permit Part 4, Section 4.6.1.3- Reporting Requirements	Is there a program/procedure in place to assure posting of a link to the adverse condition transmittal letter to the WIPP Home page and inform those on the e-mail notification list?				
27	Permit Part 4, Section 4.6.2.1 – Implementation of Repository VOC Monitoring	Is there a Repository VOC monitoring program in place?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
28	Permit Part 4, Section 4.6.2.1 – Implementation of Repository VOC Monitoring	Is there a LPEP or proficiency testing program in place?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
29	Permit Part 4, Section 4.6.2.2 – Reproting Requirements	Do the Permittees provide semi-annual reports in April and Ocotber?				
30	Permit Part 4, Section 4.6.2.3 – Notification Requiremetns	Is there a program in place to assure notification of a VOC exceedance to the NMED?				
31	Permit Part 4, Section 4.6.2.4 – Remedial Action	Is there a program in place to assure remedial action is taken if there is a VOC exceedance requiring action?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
32	Permit Part 4, Section 4.6.3.1 – Disposal Room Volatile Organic Compound Monitoring	Is there a Disposal Room VOC monitoring Program in place?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
33	Permit Part 4, Section 4.6.3.2 – Notification Requirements	Is there a program in place to assure notification of a VOC exceedance to the NMED?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan

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	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 4**				
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34	Permit Part 4, Section 4.6.3.3 – Remedial Action	Is there a program in place to assure remedial action is taken if there is a VOC exceedance requiring action?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment N - Volatile Organic Compound Monitoring Plan
35	Permit Part 4, Section 4.6.4.1 –Implementation of Mine Ventilation Rate Monitoring Plan	Is the Mine Ventiation Rate Monitoring Plan required by Attachment O in place?				
36	Permit Part 4, Section 4.6.4.2 – Reporting Requirements	Is there a program in place to assure that the Permittees submit the required report in October?				
37	Permit Part 4, Section 4.6.4.3 – Notification Requirements	Is there a program in place to assure that the Permittees evaluate the minimum active room ventilation rate on a monthly basis and submit the required notification in the annual report?				
38	Permit Part 4, Section 4.6.5.1 – Implementation of Hydrogen and Methane Monitoring	Is there a hydrogen and methane monitoring program in place?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for
39	Permit Part 4, Section 4.6.5.2 – Reporting Requirements	Do the Permittees provide semi-annual reports in April and October?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for
40	Permit Part 4, Section 4.6.5.3 – Notification Requirements	Is there a program in place to assure notification of a hydrogen/methane exceedance to the NMED and posting a link to the notification letter and informing those on the e-mail list?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for
41	Permit Part 4, Section 4.6.5.4 – Remedial Action	Is there a program in place to assure remedial action is taken if there is a hydrogen/methane exceedance requiring action?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for
42	Permit Part 4, Section 4.6.55 – Sampling Line Loss	Is there a program in place to assure notification of a hydrogen/methane sampling line loss to the NMED and posting a link to the notification letter and informing those on the e-mail list?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for
43	Permit Part 4, Section 4.7 – Inspection Schedules and Procedures	Is there a program in place ensuring that Underground HWDUs are inspected at least weekly to detect malfunctions, signs of deterioration, operator errors, discharges, or any other factors which have caused or may cause a release of hazardous waste or hazardous waste constituents or may compromise the abilty of any HWDU to comply with the environmental				

	Triennial Review Checklist					
	RCRA Permit Part 4 - Geologic Repository Disposal					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK LIST					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 4**				
	Citation	Required Program				Notes/Comments
		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
44	Permit Part 4, Section 4.8.1 – Recordkeeping-Underground HWDU Location Map	Do the Permittees have an up to date (i.e., within the last 6 months) map of the exact location and dimensions of each Underground HWDU?				
45	Permit Part 4, Section 4.8.2 – Recordkeeping-Disposal Waste Type and Location	Do the Permittees have a Record as well as a map identifying the types and quantities of TRU mixed waste in each Underground HWDU and the disposal location of each container or container assembly in accordance with the requirements in this Permit section?				
46	Permit Part 4, Section 4.8.3 – Recordkeeping-Ventilation	Do the Permittees have a Record identifying non-conformances to the ventilation rate specified in Permit section 4.5.3.2?				

	Triennial Review Checklist					
	RCRA Permit Part 5 - Groundwater Detection Monitoring					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 5**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Part 5, Section 5.1 - 20.4.1.500 NMAC (incorporating 40 CFR §§264.97 and 264.98)	Have the Permittees established a groundwater detection moniotring program in accordance with 40 CFR §§264.97 and 264.98?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
2	Permit Part 5, Section 5.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.601(a))	Does the detection monitoring program (DMP) demonstrate compliance with the environmental performance standard for the Underground HWDUs in accordance with §264.601(a))?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
3	Permit Part 5, Section 5.2, 20.4.1.500 NMAC (incorporating 40 CFR §§264.98 and 264.601)	Do the Permittees conduct the DMP at the detection monitoring wells (DMW) specified in Table 5.3.1?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
4	Permit Part 5, Section 5.3, 20.4.1.500 NMAC (incorporating 40 CFR §264 Subpart F)	Is there a program in place ensuring that the DMP is maintained in compliance with 40 CFR §264 Subpart F?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
5	Permit Part 5, Section 5.3.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.97(a) and §264.98(b))	Is there a program in place ensuring that the DMWs are maitained at the locations identified in Attachment L?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
6	Permit Part 5, Section 5.3.2, 20.4.1.500 NMAC (incorporating 40 CFR §264.97(c) and §264.98(b))	Is there a program in place ensuring that the DMWs are maitained in accordance with Attachment L?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
7	Permit Part 5, Section 5.4, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(a))	Is there a program in place ensuring that the DMWs are sampled for the indicator parameters and hazardous constituents identified in Tables 5.4a & 5.4b?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
8	Permit Part 5, Section 5.5.1 Sample Collection Procedures incorporating 20.4.1.500 NMAC (incorporating 40 CFR §§264.97(g)(2), 264.98(d), and 264.601(a))	Do the Permittees collect DMP samples and DMP sample duplicates as specified in Permit Attachment L. Section L-4c?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
9	Permit Part 5, Section 5.5.2 - Sample Preservation and Shipment Procedures	Do the Permittees preserve and ahip DMP samples as specified in Permit Attachment L. Section L-4c(2)(iv)?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
10	Permit Part 5, Section 5.5.3 - nalytical Procedures	Do the Permittees analyze DMP samples using the procedures specified in Permit Attachment L. Section L-4c(3)?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
11	Permit Part 5, Section 5.5.4 - Chain of Custody Procedures	Do the Permittees track and control DMP samples using chain of custody procedures specified in Permit Attachment L. Section L-4c(2)(v)?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan

	Triennial Review Checklist					
	RCRA Permit Part 5 - Groundwater Detection Monitoring					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 5**				
	Citation	Required Program				Notes/Comments
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12	Permit Part 5, Section 5.6, 20.4.1.500 NMAC (incorporating 40 CFR §§264.97(g) and 264.98(d)	Is there a program/procedure documenting the background groundwater quality values listed in Table 5.6 of Permit Part 5 ?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
13	Permit Part 5, Sections 5.7.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.97(f))	Is there a program/procedure in place to esnure that the groundwater surface elevation is determined at each DMW each time groundwater is sampled ?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
14	Permit Part 5, Sections 5.7.2, 20.4.1.500 NMAC (incorporating 40 CFR §264.97(f))	Is there a program/procedure in place to esnure that the groundwater surface elevation is determined at each well completed in the Culebra monthly?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
15	Permit Part 5, Section 5.8, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(e))	Is there a program/procedure in place to esnure that the groundwater flow rate and direction in the Culebra Member of the Rustler Formation is determined at least annually?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
16	Permit Part 5, Section 5.9,1 20.4.1.500 NMAC (incorporating 40 CFR §264.97(h)) & §264.97(i))	Is there a program/procedure in place to esnure that the statistical analysis methods identified in Permit Attachment L are used to evaluate DMP data for each hazardous constituent?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
17	Permit Part 5, Section 5.9.2, 20.4.1.500 NMAC (incorporating 40 CFR §264.90(c))	Is there a program/procedure in place to esnure that statistical tests are performed on DMW samples to determine whether there is statistically significant evidence of contamination for hazardous constituents listed in Permit Table 5.4.b?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
18	Permit Part 5, Section 5.9.3, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(f))	Is there a program/procedure in place documenting the methodology for determining whether statistically significant evidence exists (i.e., comparison of groundwater quality to background values)?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
19	Permit Part 5, Section 5.9.4, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(f)(2))	Is there a program/procedure in place ensuring that data evaluations are performed within 120 calendar days?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
20	Permit Part 5, Section 5.10.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.73(b)(6)) - Operating Record Requirements	Is there a program/procedure in place ensuring that DMP monitoring, testing and analytical data are posted in the Operating Record?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
21	Permit Part 5, Section 5.10.2.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.97(j)) - Data Evaluation Results	Is there a program/procedure in place ensuring that the Data Evaluation results are reported to NMED by November 30th each year?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan

	Triennial Review Checklist					
	RCRA Permit Part 5 - Groundwater Detection Monitoring					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Part 5**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
22	Permit Part 5, Section 5.10.2.2 – Groundwater Surface Elevation Results	Is there a program/procedure in place ensuring that the Groundwater Surface Elevation results are reported to NMED semiannually by May 31st and November 30th?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
23	Permit Part 5, Section 5.10.2.3 – Groundwater Flow Results	Is there a program/procedure in place ensuring that the Groundwater Flow results are reported to NMED by November 30th each year?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
24	Permit Part 5, Section 5.10.3, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(g))	Is there a program/procedure in place ensuring that if statistically significant evidence demonstrates there is contamination, the Permittees comply with all notification, sampling and reporting requirements in Permit Section 5.10.3?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
25	Permit Part 5, Section 5.10.3.1, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(g)(1)) - Notification	Is there a program/procedure in place ensuring that the NMED is notified if statistically significant evidence demonstrates there is contamination requirements in Permit Section 5.10.3?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
26	Permit Part 5, Section 5.10.3.2, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(g)(2)) - Appendix IX Sampling	Is there a program/procedure in place ensuring Appendix IX sampling for DMW for which there is evidence of contamination?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
27	Permit Part 5, Section 5.10.3.3, 20.4.1.500 NMAC (incorporating 40 CFR §264.98(g)(3)) -Verification Sampling	Is there a program/procedure in place ensuring re-sampling for DMW for which there is evidence of contamination?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan
28	Permit Part 5, Section 5.10.4 – Demonstration of Outside Contamination	Is there a program/procedure in place ensuring that if statistically significant evidence demonstrates there is contamination from an off-site source, the Permittees comply with notification, sampling and reporting requirements in Permit Section 5.10.4?				Evaluated in conjunction with RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan

	Triennial Review Checklist					
	RCRA Permit Part 6 through 8 - Closure, Post-Closure and Corrective Action					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Parts 6 through 8**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Part 6, Section 6.4 Notification of Closure (20.4.1.500 NMAC (incorporating 40 CFR § 264.112(d) and 40 CFR § 264.601))	Is there documentation of 60 calendar day written notification to the Secretary prior to the start of closure of each Underground HDWU, and are there links on the WIPP Home Page to those notices and documentation of notification of those on the e-mail notification list?				No HDWUs have undergone closure to-date. However, the schedule in the current approved Permit requires closure of Panels 1-6 by June 30, 2018, which is deemed unachievable.
2	Permit Part 6, Section 6.5.1 Partial Closure (20.4.1.500 NMAC (incorporating 40 CFR § 264.113))	Does documentation support closure of completed Underground HDWU's in accordance with the requirements of Permit Attachment G?	NA			No HDWUs have undergone closure to-date
3	Permit Part 6, Section 6.7 Certification of Closure (20.4.1.500 NMAC (incorporating 40 CFR § 264.111 and 40 CFR § 264.178))	Is there documentation of the 60 calendar day written notification to the Secretary of completion of closure of each Underground HDWU?	NA			No HDWUs have undergone closure to-date
4	Permit Part 6, Section 6.8 Survey Plat (20.4.1.500 NMAC (incorporating 40 CFR § 264.116))	Is there documentation that survey plats detailing the location and dimensions of each of the closed Underground HMWU's were submitted prior to the certification of those closures?				
5	Permit Part 6, Section 6.10.1 Panel Closure	Is their documentation of written notification to the Secretary stating the final volume of TRU mixed waste emplaced in each Underground HDWU, and are their links on the WIPP Home Page to those notices and documentation of notification of those on the e-mail notification list?				
6	Permit Part 6, Section 6.10.1 Panel Closure	Does documentation support closure of completed Underground HDWU's in accordance with requirements of Permit Attachment G and Permit Attachment G1 (Detailed Design Report)?	NA			No HDWUs have undergone closure to-date
7	*Permit Part 7 - Post Closure Care Plan NO APPLICABLE CRITERIA*		NA			No Poet-Closure Care Plan is required
8	Permit Part 8, Section 8.4 Notification and Assessment for Newly Identified SWMUs and AOCs	Have there been any newly identified SWMUs or AOC's beyond those listed in Permit Attachment K? If so, is there documentation of written notification of the Secretary within 15 days of the discovery, and does that notification meet the notification requirements?	NA			There have been no newly identified SWMUs or AOCs

	Triennial Review Checklist					
	RCRA Permit Part 6 through 8 - Closure, Post-Closure and Corrective Action					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Parts 6 through 8**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
9	Permit Part 8, Section 8.4 Notification and Assessment for Newly Identified SWMUs and AOCs	If written notifications to the Secretary have ben made under Section 8.4, has the Secretary required the submittal of Release Assesment Report, and has that report been submitted meeting the requirements of Section	NA			There have been no newly identified SWMUs or AOCs
10	Permit Part 8, Section 8.4 Notification and Assessment for Newly Identified SWMUs and AOCs	If written notifications to the Secretary have been made under Section 8.4, has the Secretary required the submittal of an Investigation Work Plan, and has that report been submitted meeting the requirements of	NA			There have been no newly identified SWMUs or AOCs
11	Permit Part 8, Section 8.4 Notification and Assessment for Newly Identified SWMUs and AOCs (20.4.1.900 NMAC (incorporating 40 CFR § 270.42))	If an Investigation Work Plan has been requested, has the Permit been modified to add the identified SWMU or AOC to Permit Attachment K?	NA			There have been no newly identified SWMUs or AOCs
12	Permit Part 8, Section 8.6.1 Release Assesment Report (20.4.1.900 NMAC (incorporating 40 CFR § 270.14(b)(19)))	If a Release Assessment Report has been requested by the Secretary, was it perpared and submitted in accordance with Permit Part 8.6?	NA			There have been no newly identified SWMUs or AOCs
13	Permit Part 8, Section 8.7.1 Secretary-Initiated Interim Measures	Has written notification for the Secretary of a requirement for an Interim Measures (IM) Work Plan been received and, if so, has the IM Worl Plan been submitted within 30 calendar days?	NA			There have been no newly identified SWMUs or AOCs
14	Permit Part 8, Section 8.7.2 Permittee-Initiated Interim Measures	Has Permittee-initiated Interim Measures been initiated and, if so, was 30 calendar days notice provided to the Secretary before initiating IM?	NA			There have been no newly identified SWMUs or AOCs
15	Permit Part 8, Section 8.7.3 Emergency Interim Measures	Has emergency Interim Measures been initiated and, if so, was one day notice provided to the Secretary before initiating IM?	NA			There have been no newly identified SWMUs or AOCs
16	Permit Part 8, Section 8.7.5 Interim Measures Implementation	If Interim Measures were approved, was the work completed within 180 calendar days of the start of implementation, or was written approval received from the Secretary for an extension of that schedule?	NA			There have been no newly identified SWMUs or AOCs
17	Permit Part 8, Section 8.8.1 Investigation Work Plan Submittal	Have investigation work plans meeting the requirements of Permit Section 8.14.1 been submitted to the Secretary for all SWMUs and AOCs listed in Permit Attachment K, Table K-1?	NA			There have been no newly identified SWMUs or AOCs
18	Permit Part 8, Section 8.8.1.3 Investigation Work Plan Submittal Histroical Documents	Have historical documents for the SWMUs and AOCs been submitted to the Secretary as required?				

	Triennial Review Checklist					
	RCRA Permit Attachment C - Waste Analysis Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment C**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment C , Section C-0b – AK Sufficiency Determination	Is there a program/procedure in place outlining the information necessary to properly evaluate a "Determination Request" for completeness and technical adequacy?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
2	Permit Attachment C , Section C-0b – AK Sufficiency Determination	Should the Permittees determine that the Determination Request is complete, is there a program/procedure in place outlining the public notification and public meeting requirements?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
3	Permit Attachment C , Section C-0b – AK Sufficiency Determination	If the Permittees provisionally approve the Determination Request, is there a program/procedure in place outlining the process for submittal and review to NMED?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
4	Permit Attachment C , Section C-0b – AK Sufficiency Determination	Is there a program/procedure in place requiring that the Permittees submit a list of waste streams to NMED that may be submitted for an AK Sufficiency Determination during the upcoming FFY by July 1st each year?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
5	Permit Attachment C , Section C-0c – Waste Stream Profile Form Completion	Is there a program/procedure in place outlining the information necessary to properly evaluate "Waste Stream Profile Form (WSPF)" and a "Characterization Information Summary (CIS)" for completeness and technical adequacy prior to loading any TRU waste at a generator site?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
6	Permit Attachment C , Section C-0d – Waste Confirmation	Is there a program/procedure in place ensuring that the Permittees perform a waste confirmation on a representative subpopulation of each waste stream shipment after certification and prior to shipment?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
7	Permit Attachment C, Section C-1b – Waste Summary Category Groups and Hazardous wastes accepted at WIPP	Is there a program/procedure in place ensuring that the Permittees only allow generators to ship TRU mixed waste streams with EPA hazardous waste numbers listed in Table C-5 of Permit Attachment C?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
8	Permit Attachment C, Section C-1c – Wastes Prohibited at WIPP	Is there a program/procedure in place requiring that the Permittees perform waste confirmation activities on at least 7% of each waste stream shipment to ensure prohibited items/wastes are not shipped to WIPP?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.

	Triennial Review Checklist					
	RCRA Permit Attachment C - Waste Analysis Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment C**				
	Citation	Required Program				Notes/Comments
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9	Permit Attachment C, Section C-2 –Waste Characterization Program Requirements and Waste Characterization Parameters	Through what means (e.g., procedure or process) do the Permittees require generator sites to develop procedures specifying their programmatic waste characterization requirements?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
10	Permit Attachment C, Section C-3a –Acceptable Knowledge	Through what means (e.g., procedure or process) do the Permittees require generator sites to meet the minimum requirements and DQOs for use of Acceptable Knowledge (AK)?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
11	Permit Attachment C, Section C-3b –Radiography and Visual Examination	Through what means (e.g., policy, procedure or process) do the Permittees require generator sites to characterize CH and RH TRU waste via radiography or visual examination?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
12	Permit Attachment C, Section C-4 –Data Verification and Quality Assurance	Through what means (e.g., policy, procedure) do the Permittees ensure that applicable waste characterization processes performed by generator/storage sites sending TRU mixed waste to the WIPP for disposal meets WAP requirements through data validation, usability and reporting controls?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
13	Permit Attachment C, Section C-4a(1) –Data Quality Objectives	Through what means (e.g., policy, procedure) do the Permittees ensure that waste characterization data obtained through WAP implementation will be used to ensure that the Permittees meet regulatory requirements with regard to both regulatory compliance and to ensure that all TRU mixed wastes are properly managed during	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
14	Permit Attachment C, Section C-4a(2) –Quality Assurance Objectives	Through what means (e.g., policy, procedure) do the Permittees ensure that generator/storage sites demonstrate compliance with each QAO associated with the characterization methods as presented in Permit Attachment C3?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
15	Permit Attachment C, Section C-4a(3) –Data Generation	Through what means (e.g., policy, procedure) do the Permittees ensure that generator/storage sites use BDRs, in a format approved by DOE, for reporting waste characterization data?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.

	Triennial Review Checklist					
	RCRA Permit Attachment C - Waste Analysis Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment C**				
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16	Permit Attachment C, Section C-4a(3) –Data Generation	Is there a program/procedure in place describing the Permittees' audit requirements and responsibilities with regard to generator site	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
17	Permit Attachment C, Section C-4a(4) –Data Verification	How do the Permittees ensure that data validation and verification at both the data-generation level and the project level are performed as required by this Permit?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
18	Permit Attachment C, Section C-4a(5) –Data Transmittal	How do the Permittees ensure that generator sites comply with the data transmittal requirements in section C-4a(5)?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
19	Permit Attachment C, Section C-4a(6) –Records Management	Is there a program/procedure in place ensuring that the Permittees are in compliance with the records management requirements of section C-4a(6)?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
20	Permit Attachment C, Section C-5a –Phase 1 Waste Stream Screening and Verification	Is there a program/procedure in place outlining the requirements of Phase 1 (both initial audit and WSPF approval) waste screening and verification?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
21	Permit Attachment C, Section C-5a(1) –WWIS Description	Is there a program/procedure in place to ensure that generator/storage sites supply required data to the WWIS?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
22	Permit Attachment C, Section C-5a(2) –Examination of the Waste Stream Profile Form and Container Data Checks	Is there a program/procedure in place ensuring the Permittees verify the completeness and accuracy of WSPFs and complete container data checks (i.e., waste matrix codes, determination of ignitability, reactivity, and corrosivity; and a determination of compatibility?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
23	Permit Attachment C, Section C-5a(3) –Audit and Surveillance Program	Does the Permittees' audit and surveillance program ensure that containers and their associated documentation are adequately tracked throughout the waste handling process?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.

	Triennial Review Checklist					
	RCRA Permit Attachment C - Waste Analysis Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment C**				
	Citation	Required Program				Notes/Comments
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24	Permit Attachment C, Section C-5b –Phase II Waste Shipment Screening and Verification	Is there a program/procedure in place outlining the requirements of Phase II (e.g., confirm EPA numbers and check for irregularities) waste shipment screening and verification?				
25	Permit Attachment C, Section C-5b –Phase II Waste Shipment Screening and Verification	How do the Permittees ensure that generator sites provide the information listed in section C-5b for each container shipped?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
26	Permit Attachment C, Section C-5b(1) –Examination of the EPA Uniform Hazardous Waste Manifest & Associated Waste Tracking Information	Is there a program/procedure in place outlining the requirements for examination of the EPA Uniform Hazardous Waste Manifest & Associated Waste Tracking Information upon receipt of a TRU mixed waste shipment?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
27	Permit Attachment C, Section C-5b(2) –Examination of the Land Disposal Restriction (LDR) Notice	Is there a procedure in place outlining how the Permittees evaluate a generator site LDR Notice for accuracy and completeness?				
28	Permit Attachment C, Section C-5b(3) –Verification	How do the Permittees verify that the containers in a shipment are the containers for which accepted data already exists in the WWIS?				
29	Permit Attachment C, Section C-6 – Permittees' Waste Shipment Screening QA/QC	What administrative QA/QC processes control the waste shipment screening process? Where is it documented?				
30	Permit Attachment C, Section C-7 – Records Management & Reporting; C-7(a) - General Requirements, C-7(b) - Records Storage	Is there a procedure in place documenting how waste characterization records will be managed, stored and maintained?				
31	Permit Attachment C, Section C-8 – Reporting	Are the Permittees in compliance with the requirement to provide a biennial report to NMED that includes information on actual volume and waste descriptions received for disposal during the time period covered by the report?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment D, Section D-1 - Scope and Applicability, 20.4.1.500 NMAC (incorporating 40 CFR §264.51(b)) & §262.34(a)(4)	Is there a program/procedure requiring a formal contingency plan that describes actions that facility personnel take in response to any fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment?				
2	Permit Attachment D, Section D-2a - Emergency Response Personnel, 20.4.1.500 NMAC (incorporating 40 CFR §264.52(d))	Is there a program/procedure requiring that a RCRA emergency coordinator be on site at WIPP full-time and be trained in accordance with the requirements in Attachment F-1?				
3	Permit Attachment D, Section D-2a - Emergency Response Personnel	Is there a program/procedure outlining the responsibilities of the additional eight individuals, groups and organizations listed in Section D-2a?				
4	Permit Attachment D, Section D-2b – Emergency Response Training	Is there a program/procedure in place to ensure WIPP Fire Department personnel are trained in accordance with the *WIPP Fire Department Training Plan* ?				
5	Permit Attachment D, Section D-3 - Criteria for Implementation of the RCRA Contingency Plan, 20.4.1.500 2 NMAC (incorporating 40 CFR §264.51(b))	Is there a program/procedure in place ensuring that the RCRA Contingency Plan is implemented immediately in the case of a fire, explosion or a release of hazardous wastes or hazardous waste constituents that could threaten human health or the environment?				
6	Permit Attachment D, Section D-3 - Criteria for Implementation of the RCRA Contingency Plan, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(i))	Is there a program/procedure in place ensuring that the Emergency Coordinator record the date, time and details of the incident that required implementation of the Contingency Plan?				
7	Permit Attachment D, Section D-3 - Criteria for Implementation of the RCRA Conrtingency Plan, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(i)) & §264.56(a)	Is there a program/procedure in place ensuring that the Permittees immediately notify NMED of incidents requiring implementation of the Contingency Plan ?				
8	Permit Attachment D, Section D-3 - Criteria for Implementation of the RCRA Contingency Plan, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(i))	Is there a program/procedure in place which describes the emergency situations (e.g., fire, explosions, unplanned sudden-non sudden releases, other occurrences) that require immediate implementation of the Contingency Plan?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
9	Permit Attachment D, Section D-3 - Criteria for Implementation of the RCRA Contingency Plan	Is there a program/procedure in place that requires the Emergency Coordinator to document when the RCRA Contingency Plan was not implemented?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment D - RCRA Contingency Plan
10	Permit Attachment D, Section D-4a(1) – Initial Emergency Response & Alerting the RCRA Emergency Coordinator, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(a))	Is there a program/procedure in place which describes the notification processes required for facility personnel when a fire, explosion or release occurs at the facility?				
11	Permit Attachment D, Section D-4a(2) – Communication of Emergency Conditions to Facility Employees, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(a))	Are there communications (i.e., fire alarms surface evacuation signal) in place to notify facility personnel immediately of emergency situations?				
12	Permit Attachment D, Section D-4b - Identification of Released Materials and Assessment of the Extent of the Emergency, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(b)	Is there a program/procedure in place requiring that the Emergency Coordinator direct an investigation to determine pertinent information relevant to the actual or potential threat posed to human health or the environment?				
13	Permit Attachment D, Section D-4b - Identification of Released Materials and Assessment of the Extent of the Emergency, 20.4.1.500 NMAC (incorporating 40 CFR §264.52(a) and §264.171)	In the event of a spill or release of hazardous waste or hazardous waste constituents, is there a program/procedure in place requiring that the Emergency Coordinator take the actions (i.e., assemble equipment, transfer contents, determine extent) identified in Permit Attachment D-4b?				
14	Permit Attachment D, Section D-4c - Assessment of the Potential Hazards, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(c))	Is there a program/procedure in place requiring that the Emergency Coordinator conduct a hazard assessment to identify potential hazards to human health and the environment from the fire, explosion or spill/release?				
15	Permit Attachment D, Section D-4d - Post-Assessment Notifications, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(d)(1))	If it is determined that a spill or release of hazardous waste or hazardous waste constituents could threaten human health or the environment outside the facility boundary, is there a program/procedure in place requiring that the Emergency Coordinator notify the local (NM Homeland Security, Eddy Co., Lea Co.) agencies/organizations listed in Permit Attachment D, Section D-4d?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
16	Permit Attachment D, Section D-4d - Post-Assessment Notifications, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(d)(2))	If it is determined that a spill or release of hazardous waste or hazardous waste constituents could threaten human health or the environment outside the facility boundary, is there a program/procedure in place requiring that the Emergency Coordinator notify the government (i.e., NMED and National Response Center) agencies/organizations listed in Permit Attachment D, Section D-4d?				
17	Permit Attachment D, Section D-4e - Control and Containment of the Emergency, 20.4.1.500 NMAC (incorporating 40 CFR §264.56 (e) and 31(f))	Is there a program/procedure in place requiring that the Emergency Coordinator ensure control of an emergency and minimize the potential for the occurrence, recurrence, or spread of releases due to the emergency situation?				
18	Permit Attachment D, Section D-4e - Control and Containment of the Emergency	Is there a program/procedure in place requiring that the Emergency Coordinator, in conjunction with the Incident Commander ensure control of an emergency via the measures (e.g., stopping processes & operations) listed in Permit Attachment D, Section D-4e?				
19	Permit Attachment D, Section D-4e - Control and Containment of the Emergency	Is there a procedure(s) in place documenting the appropriate actions for controlling releases (e.g., establishing drainage controls) in accordance with Permit Attachment D, Section D-4e?				
20	Permit Attachment D, Section D-4e - Control and Containment of the Emergency	If the facility stops operations in response to a fire, explosion or release, is there a procedure/program in place to ensure continued monitoring for leaks pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever appropriate in accordance with Permit Attachment D, Section D-4e?				
21	Permit Attachment D, Section D-4e - Control and Containment of the Emergency	Is there a procedure/program in place to ensure that natural and/or synthetic methods (e.g., absorption, neutralization) are utilized to limit release of hazardous waste or hazardous waste constituents in accordance with Permit Attachment D, Section D-4e?				
22	Permit Attachment D, Section D-4e - Control and Containment of the Emergency	Is there a procedure/program in place documenting the steps necessary to terminate the field emergency response activities in accordance with Permit Attachment D-4e?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
23	Permit Attachment D, Section D-4e(1) - Fires	In case of a fire that threatens TRU mixed waste or site-generated hazardous waste, is there a procedure/program in place documenting the emergency response actions that can be utilized in accordance with Permit Attachment D, Section D-4e(1)?				
24	Permit Attachment D, Section D-4e(2) - Explosions	In case of an explosion that threatens TRU mixed waste or site-generated hazardous waste, is there a procedure/program in place documenting the emergency response actions that can be utilized in accordance with Permit Attachment D, Section D-4e(2)?				
25	Permit Attachment D, Section D-4e(3) – Unplanned Sudden/Non-Sudden Releases	In case of an unplanned sudden/non-sudden release that threatens TRU mixed waste or site-generated hazardous waste, is there a procedure/program in place documenting the emergency response actions that can be utilized in accordance with Permit Attachment D, Section D-4e(3)?				
26	Permit Attachment D, Section D-4e(4) – Other Occurrences	In case of a natural phenomenon (e.g., earthquake, tornado) that threatens TRU mixed waste or site-generated hazardous waste, is there a procedure/program in place documenting the emergency response actions that can be utilized in accordance with Permit Attachment D, Section D-4e(4)?				
27	Permit Attachment D, Section D-4e(4) – Other Occurrences	In case of an underground structural integrity emergency that threatens TRU mixed waste or site-generated hazardous waste, is there a procedure/program in place documenting the emergency response actions that can be utilized in accordance with Permit Attachment D, Section D-4e(4)?				
28	Permit Attachment D, Section D-4f - Post-Emergency Activites, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(g))	Is there a procedure/program in place ensuring that upon initial release or spill control and containment have been completed, the RCRA Emergency Coordinator completes necessary decontamination and that recovered hazardous waste is properly managed, stored, and/or disposed?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
29	Permit Attachment D, Section D-4f - Post-Emergency Activites, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(h))	Is there a procedure/program in place ensuring that upon initial release or spill control and containment have been completed, the RCRA Emergency Coordinator will ensure that incompatibility of waste and restoration of emergency equipment are addressed?				
30	Permit Attachment D, Section D-4f(1) - Management and Disposition of Released Material, 20.4.1.200 NMAC (incorporating 40 CFR Part 261, Subparts C and D)	Is there a procedure/program in place ensuring that the Emergency Coordinator, upon completion of decontamination, nonradioactive hazardous waste resulting from the cleanup of a fire, an explosion, or a release involving a nonradioactive hazardous waste at the WIPP facility will be appropriately managed in accordance with Permit Attachment D, Section D-4f(1)?				
31	Permit Attachment D, Section D-4f(2) - Incompatile Waste, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(h)(1))	Is there a procedure/program in place ensuring that the Emergency Coordinator not treat, store or dispose of any waste that may be incompatible with the released material until cleanup of the released material has been completed?				
32	Permit Attachment D, Section D-4f(3) - Cleaning and Restoring Equipment, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(h)(2))	Is there a procedure/program in place ensuring that the Emergency Coordinator take measures to ensure that in the affected area(s) of the facility, emergency equipment listed in the RCRA Contingency Plan, and used in the emergency response, is cleaned and fit for its intended use or replaced before operations are resumed?				
33	Permit Attachment D, Section D-5 - Required Reproting, 20.4.1.500 NMAC (incorporating 40 CFR §264.56(i))	Is there a procedure/program in place ensuring that the Permittees submit a report to NMED and the EPA Region VI Administrator within 15 days after an incident that requires implementation of the Contingency Plan ?				
34	Permit Attachment D, Section D-6 - Emergency Equipment, 20.4.1.500 NMAC (incorporating 40 CFR §264.52(e))	Is there a procedure/program documenting the emergency equipment available at the WIPP facility, including its location and a brief description, in accordance with Permit Attachment D, Section D-6 and Table D-2?				
35	Permit Attachment D, Section D-7 - Agreements with Local Emergency Response Agencies, 20.4.1.500 NMAC (incorporating 40 CFR §264.37 and §264.52(c))	Is there a procedure/program for maintaining/updating the agreements with local emergency response agencies (e.g., BLM, Eddy Co.) identified in Permit Attachment D, Section D-7?				

	Triennial Review Checklist					
	RCRA Permit Attachment D - Contingency Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment D**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
36	Permit Attachment D, Section D-8 - Evacuation Plan, 20.4.1.500 NMAC (incorporating 40 CFR §264.52(f))	Is there a procedure/program for surface and underground evacuations as well as evacuation training drills?				
37	Permit Attachment D, Section D-8a – Surface Evacuation On-Site and Off-Site Staging Areas	Is there a procedure/program identifying the locations of surface evacuation on-site & off-site staging areas for WIPP facility				
38	Permit Attachment D, Section D-8b – Underground Assembly Areas and Egress Hoist Stations	Is there a procedure/program identifying the location of underground assembly areas and egress hoist stations for WIPP facility personnel?				
39	Permit Attachment D, Section D-8c –Plan for Surface Evacuation	Is there a procedure/program documenting the surface evacuation processes, including alarms, egress routes relevant incident information and specific instructions for ERT members?				
40	Permit Attachment D, Section D-8d –Plan for Underground Evacuation	Is there a procedure/program documenting the underground evacuation processes, including alarms, egress routes relevant incident information and specific instructions for WIPP Fire Department and MRT members?				
41	Permit Attachment D, Section D-8e –Further Site Evacuation	Is there a procedure/program documenting the evacuation processes involving personnel transport and the evacuation routes from the WIPP facility ?				
42	Permit Attachment D, Section D-9 - Location o fthe RCRA Contingency Plan and Plan Revisions, 20.4.1.500 NMAC (incorporating 40 CFR §264.53(a))	Is there a procedure/program in place which documents the locations where the RCRA Contingency Plan shall be maintained at the WIPP facility?				
43	Permit Attachment D, Section D-9 - Location of the RCRA Contingency Plan and Plan Revisions, 20.4.1.500 NMAC (incorporating 40 CFR §264.53(a))	Are copies of the RCRA Contingency Plan provided to the list of agencies/organizations in Permit Attachment D, Section D-2 and D, Section D-9?				
44	Permit Attachment D, Section D-9 - Location o fthe RCRA Contingency Plan and Plan Revisions, 20.4.1.500 NMAC (incorporating 40 CFR §264.53(b))	Is there a procedure/program in place to ensure that the RCRA Contingency Plan is updated in accordance with the provisions in Permit Attachment D, Section D-9 (e.g., emergency coordinators change, the plan fails)?				

	Triennial Review Checklist					
	RCRA Permit Attachment E - Inspection Schedule, Process and Forms					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment E**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment E Section E-1- Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Select equipment/systems from Tables E-1 for an in depth review of historical inspections to determine compliance with recordkeeping, frequency, problems identified with resulting work requests, out of service periods and return to service documentation.				RHTRU related equipment removed - Not in scope
2	Permit Attachment E Section E-1- Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Confirm that inspection and maintenance records are maintianed as active for three years, and that records beyond three years are stored either onsite or are acrhvied offsite at a facility that is temperature and humidity controlled.				
3	Permit Attachment E Section E-1- Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Are operating personnel thoroughly familiar with the inspection and maintenance procedures including logging, limitations to authority, and return of equipment to service?				
4	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Are pre-operational inspections performed and logged using the approved procedure?				
5	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Is there evidence that increasing trends are logged and noted and communicated?				
6	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	If a negative inspection cannot be corrected by the inspector or only requires monitoring, are appropriate actions taken?				
7	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(c)))	Are post-repair inspections with approval to return equipment to service documented?				
8	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 270.42))	Have non-administrative changes to equipment inspection forms been implemented and, if so, have these changes been submitted to NMED in accordance with the governing documents?				
9	Permit Attachment E Section E-1 - Inspection Schedule (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(a-d), 40 CFR § 264.174, and 40 CFR § 264.602))	Select equipment/systems from Tables E-1 that are subject to preventative maintenance for an in depth review of historical maintenance to determine compliance with recordkeeping, frequency, problems identified, out of service periods and return to service documentation.				RHTRU related equipment removed - Not in scope

	Triennial Review Checklist					
	RCRA Permit Attachment E - Inspection Schedule, Process and Forms					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment E**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
10	Permit Attachment E Section E-1a - General Inspection Requirements (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b)(4))~~)~~	Are daily inspections of designated areas such as loading and unloading areas of the WHB unit documenting conditions of structures and equipment, as well as spills, completed and				
11	Permit Attachment E Section E-1a - General Inspection Requirements (20.4.1.500 NMAC (incorporating 40 CFR § 264.33))	Are inspections, testing and maintenance of communication and alarm systems, fire-protection equipment, and spill and decontamination equipment performed as scheduled and appropriately documented?				
12	Permit Attachment E Section E-1a(2)Frequency of Inspections (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b)(4))+B470	Have the more extensive annual inspections of the RH Complex been performed, and have areas requiring attention that were not identified using video inspection found?	NA			Deals exclusively with RHTRU - Not in scope
13	Permit Attachment E Section E-1b(1) Container Inspection (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b)(4))	Do containers managed by the WIPP facility meet the descriptions found in this section?				
14	Permit Attachment E Section E-1b(1) Container Inspection (20.4.1.500 NMAC (incorporating 40 CFR § 264.15(b)(4))	Is there evidence that inspections of containers that are required by procedure are being performed and documented?				
15	Permit Attachment E Section E-1b(2) -Miscellaneous Unit Inspection (20.4.1.500 NMAC (incorporating 40 CFR § 264.602))	Is there evidence that inspections of the miscellaneous unit including the geomechanical monitoring system are being conducted?				

	Triennial Review Checklist					
	RCRA Permit Attachment F - Personnel Training					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment F**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment F - Personnel Training (20.4.1.500 NMAC (incorporating 40 CFR § 264.16 and 20.4.1.900 NMAC, incorporating 40 CFR § 270.14))	Perform overall review of the WIPP facility training program documentation and recordkeeping process.				
2	Permit Attachment F - Personnel Training (20.4.1.500 NMAC (incorporating 40 CFR § 264.16 and 20.4.1.900 NMAC, incorporating 40 CFR § 270.14))	Select specific personnel for a minimum of fifteen (15) job titles from Table F-1 for an in depth review of training records as compared to the respective Training (Type/Amount) requirements of the Permit Job Description for those positions.				For the most part, training was proven to be in compliance with the Permit. However, some discrepancies were identified and reported in Finding 3 of the Report.
3	Permit Attachment F Section F-1a - Personnel Training Job Title/Job Description (20.4.1.500 NMAC (incorporating 40 CFR § 264.16)	Is there an up-to-date list of personnel assigned to the job titles in Table F-1?				When requested, no current list was available. Subsequently, a list was provided and used in the review of Attachment F requirements. This discrepacny was reported in Finding 2 of the
4	Permit Attachment F Section F-1a Personnel Training Job Title/Job Description (20.4.1.500 NMAC (incorporating 40 CFR § 264.16)	Are changes that affect the type or decrease the amount of training given to employees handled as Class 2 Permit modifications, and other changes handled as Class 1 Permit modifications? How are those changes documented?				
5	Permit Attachment F, Section F-1b(1) - Training Content	Have facility employees who will be on site longer than 30 days received the facility-specific training listed in the Permit?				
6	Permit Attachment F, Section F-1b(2) - Training Frequency	Is there a process to assure new hires or transfers receive relevant training with in 6 months of assuming their new position?				
7	Permit Attachment F, Section F-1b(2) - Training Frequency	Is there a process or procedure for notifying managers when personnel are transferred into or out of a position associated with hazardous waste management?				
8	Permit Attachment F, Section F-1b(3) - Training Techniques	Are training techniques stipulated for each course listed in the Permit and do they include the methods listed in the Permit?				
9	Permit Attachment F, Section F-1c - Training Manager	Has an individual been designated as the Technical Training Manager and does this person direct the RCRA Training Program?				
10	Permit Attachment F, Section F-1c - Training Manager	Is the Technical Training Manager trained in hazardous waste management and is he/she knowledgeable of the appliclable regulations, orders, guidelines, and specific training processes employed at the WIPP facility?				

	Triennial Review Checklist					
	RCRA Permit Attachment F - Personnel Training					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment F**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
11	Permit Attachment F, Section F-1e - Training for Emergency Response	Select specific Emergency Response personnel for an in depth review of training records as compared to the respective Training (Type/Amount) requirements of the Permit Job Description for those personnel.				
12	Permit Attachment F, Section F-2 - Implementation of Training Program	Are training records maintained at the facility for current employees and for three years after an employee leaves?				

	Triennial Review Checklist					
	RCRA Permit Attachment G - Closure Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment G**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment G Section G-1d(1) Schedule for Panel Closures	Have panel closures occurred within the start and end dates in Table G-1 of the Attachment? If not, have requests for Permit modification(s) been submitted?				
2	Permit Attachment G Section G-1d(1) Schedule for Panel Closures	Has a Permit modification request been submitted for anticipated delays in start/end dates related to the remaining unclosed panels?				
3	Permit Attachment G Section G-1d(1) Schedule for Panel Closures	For panels that have undergone closure, is there documentation that supports adherance to the specific process for closure included in the section?	NA			

	Triennial Review Checklist					
	RCRA Permit Attachment H - Post Closure Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment H**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment H Section H-1 Post-Closure Plan	Do the Permittees have a process/procedure to routinely inspect openings in the vicinity of panel closures				
2	Permit Attachment H Section H-1 Post-Closure Plan	Do the Permittees have a process/procedure to sample ventilation air for harmful constituents?				
3	Permit Attachment H Section H-1 Post-Closure Plan	Do the Permittees have a VOCMP in place to minitor releases from closed panels?				

	Triennial Review Checklist					
	RCRA Permit Attachment K - SWMU and AOC Tables					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment G**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment K Table K-4 Hazardous Waste Management Units	Have any new AOC's been identified? If so, has a Permit modification been submitted to add them to the permit?	NA			
2	Permit Attachment K Table K-4 Hazardous Waste Management Units	Has closure been completed on any of the listed panels?	NA			
3	Permit Attachment K Table K-4 Hazardous Waste Management Units	Has a Permit amendment been submitted to add panels 8-10 to the permit?	NA			Panel 8 has been added to the Permit

	Triennial Review Checklist					
	RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment L**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment L, Section L-2, 20.4.1.500 NMAC (incorporating 40 CFR §§264.600 through 264.603 & §§264.90 through 264.101)	Through what means do the Permittees flow down the groundwater monitoring requirements necessary to meet the requirements of §§264.90 through 264.101?				
2	Permit Attachment L, Section L-3a, 20.4.1.500 NMAC (incorporating 40 CFR § 264.97 and 264.98 (f))	Do the Permittees use Attachment L as the Groundwater Detection Monitoring Program and the Water Level Monitoring Program for the WIPP facility or are there separate procedures/programs that outlines these requirements?				
3	Permit Attachment L, Section L-4a – Monitoring Frequency	Do the Permittees monitor the groundwater surface elevations at the six DMWs on a monthly basis and prior to each annual sampling				
4	Permit Attachment L, Section L-4b – Analytical Parameters & Hazardous Constituents	Do the Permittees monitor for the parameters and hazardous constituents listed in Permit Part 5, Tables 5.4a and 5.4b?				
5	Permit Attachment L, Section L-4b – Analytical Parameters & Hazardous Constituents	When additional hazardous constituents are identified, how do the Permittees make changes to Tables 5.4.a and 5.4.b?				
6	Permit Attachment L, Section L-4c(1) – Groundwater Surface Elevation Monitoring Methodology	Do the Permittees measure the groundwater surface elevations in each DMW prior to groundwater sample collection and on a monthly basis?				
7	Permit Attachment L, Section L-4c(1) – Groundwater Surface Elevation Monitoring Methodology	Do the Permittees only collect serial samples until field indicator parameters stabilize or three well bore volumes are purged? What field indicator parameters are used?				
8	Permit Attachment L, Section L-4c(1), 20.4.1.900 NMAC (incorporating 40 CFR §270.41(a)(2))	Do the Permittees have a process established in the event a cumulative groundwater surface elevation change of more than 2 feet is detected in any DMP well over the course of one year which is not attributable to site tests or natural stabilization of the site hydrologic system?				
9	Permit Attachment L, Section L-4c(1) - Groundwater Surface Elevation Monitoring Methodology	Do the Permittees measure density in the DMWs annually?				
10	Permit Attachment L, Section L-4c(1)(i) – Field Methods & Data Collection Requirements	Do the Permittees use an SOP (s) when making the groundwater surface elevation measurements? Which SOP(s)?				

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	RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment L**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
11	Permit Attachment L, Section L-4c(1)(i) – Field Methods & Data Collection Requirements	How often do the Permittees calibrate the water-level measuring device used to collect groundwater surface elevation measurements?	NA			This only applies to DMWs
12	Permit Attachment L, Section 4c(1)(ii) – Groundwater Surface Elevation Records & Document Control	Do the Permittees use an SOP(s) when administering and managing the field data sheets? Which SOP(s)? Is the computerized work sheet under appropriate QA control?				
13	Permit Attachment L, Section 4c(2)(i) – Groundwater Pumping & Sampling Systems	Do the Permittees use a dedicated insulated sampling line, that has a flow-control valve, to collect water samples that will undergo				
14	Permit Attachment L, Section L-4c(2)(ii) – Serial Samples	Do the Permittees use an SOP(s) when collecting serial samples? Which SOP(s)?				
15	Permit Attachment L, Section L-4c(2)(iii) – Final Samples	Do the Permittees use an SOP(s) when collecting final samples? Which SOP(s)?				
16	Permit Attachment L, Section L-4c(2)(iii) – Final Samples	Do the Permittees collect and analyze a serial sample for each day of final sampling to ensure samples collected for laboratory analysis are representative of stable conditions?				
17	Permit Attachment L, Section L-4c(2)(iii) – Final Samples	Is sample integrity ensured in accordance with the Permit?				
18	Permit Attachment L, Section L-4c(2)(iv) – Sample Preservation, Tracking, Packaging & Transportation	Do the Permittees use an SOP(s) for sample preservation, tracking, packaging and transport? Which SOP(s)?				
19	Permit Attachment L, Section L-4c(2)(v) – Sample Documentation & Custody	Do the Permittees use an SOP(s) to document sample collection, handling and custody? Which SOP(s)?				
20	Permit Attachment L, Section L-4c(2)(v) – Sample Documentation & Custody	Does the following documentation exist for each sampling event reviewed? - Sample numbers and Labels - Custody Seals - Sample Identification and Tracking - Chain of Custody and Request for Analysis				

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	RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan					
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21	Permit Attachment L, Section L-4c(3) – Laboratory Analysis	Do the laboratory selection criteria specify that the laboratory follow the procedures specified in SW 846 and that the laboratory follow EPA protocols unless alternate methods or protocols are approved by the NMED?				
22	Permit Attachment L, Section L-4d(1) – Sampling and Groundwater Elevation Monitoring Equipment Calibration & L-4d(2) - Groundwater Surface Elevation Monitoring Equipment Calibration Requirements	According to existing SOPs, how often must sampling and groundwater elevation monitoring equipment be calibrated?				
23	Permit Attachment L, Section L-4e(1) – Temporal & Spatial Analysis	Do the Permittees evaluate changes relative to baseline on an individual basis and report the concentrations of constituents as a time series, either in tabular form or in time plots?				
24	Permit Attachment L, Section L-4e(2) – Distribution & Descriptive Statistics	Do the Permittes use the 95th UTLV for those data sets where target analytes are measured at concentrations above method detection				
25	Permit Attachment L, Section L-4e(3) – Action Levels	Is there a procedure for conducting an outlier test should the groundwater concentration of a constituent identified in Part 5, Table 5.6 is found to exceed an action level?				
26	Permit Attachment L, Section L-4e(4), 20.4.1.500 NMAC (incorporating 40 CFR §264.97(h)(4))	Do the Permittees compare the results from groundwater hazardous constituents of ongoing annual groundwater sample analysis to baseline values and report the results annually to NMED?				
27	Permit Attachment L, Section L-5a – Laboratory Data Reports	How do the Permittees ensure that analytical laboratories comply with the hard copy reporting requirements (e.g., summary, results of QC sample analyses) in section L-5a?				
28	Permit Attachment L, Section L-5c – Semi-Annual Groundwater Surface Elevation Report & Annual Culebra Groundwater Report	Does the Annual Culebra Groundwater Report submitted to NMED on an annual basis include the information listed (e.g., DMW & WLMP well configuration changes, pumping activities) in section L-				
29	Permit Attachment L, Section L-5c – Semi-Annual Groundwater Surface Elevation Report & Annual Culebra Groundwater Report	Is the Annual Culebra Groundwater Report maintained as part of the WIPP facility Operating Record?				

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	RCRA Permit Attachment L - WIPP Groundwater Detection Monitoring Program Plan					
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Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
30	Permit Attachment L, Section L-6 – Records Management	Do the Permittees maintain records generated during groundwater sampling and water level monitoring in project files or the Operating Record? Do they include the information (e.g., SAPs, SOPs) listed in section L-6?				
31	Permit Attachment L, Section L-7a(1) – L-7a(2)(vi) – Data Quality Objectives	How do the Permittees ensure that the DMP and the WLMP comply with the quality assurance requirements identified in section L-7?				
32	Permit Attachment L, Section L-7a(1) – L-7a(2)(vi) – Data Quality Objectives	How do the Permittees ensure that the DMP and the WLMP comply with the data quality objectives identified in section L-7a(1)?				
33	Permit Attachment L, Section L-7c – Instructions, Procedures and Drawings	Does WIPP facility document WP 13-1 outline the preparation and use of instructions and data quality procedures at the WIPP facility?				
34	Permit Attachment L, Section L-7d – Document Control	How do the Permittees ensure that the latest approved versions of WIPP facility SOPs are used in performing groundwater monitoring functions and that obsolete materials are adequately identified or removed from work areas?				
35	Permit Attachment L, Section L-7e – Inspection and Surveillance	Do the Permittees conduct inspection and surveillance (related to groundwater monitoring) activities in accordance with WIPP document WP 13-1?				
36	Permit Attachment L, Section L-7f – Control of Monitoring & Data Collection Equipment	Do the Permittees control, calibrate and maintain monitoring and data collection equipment in accordance with document WP 13-1?				
37	Permit Attachment L, Section L-7g– Control of Nonconforming Conditions	Do the Permittees control and prevent the use of defective equipment in accordance with WP 13-1?				
38	Permit Attachment L, Section L-7h– Corrective Action	How do the Permittees document and report conditions adverse to acceptable quality in accordance with corrective action procedures and correct these conditions as soon as possible?				
39	Permit Attachment L, Section L-7i– Quality Assurance Records	Do the Permittees identify prepare, collect, store, maintain, dispose, and permanently store QA and RCRA records in accordance with WP 13-1?				

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	RCRA Permit Attachment N - VOC Monitoring Plan					
	RCRA Permit Attachment N1 - Hydrogen & Methane Monitoring Plan					
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	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment N & N1**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment N, Section N-1b – Objectives of the Volatile Organic Compound Monitoring Plan	Through what means do the Permittees flow down the VOC monitoring requirements necessary to meet the objectives of section N-				
2	Permit Attachment N, Section N-2 (and Table N-1) – Target Volatile Organic Compounds	Do the Permittees monitor for the target VOCs for repository monitoring and disposal room monitoring listed in Table N-1?				
3	Permit Attachment N, Section N-3a(1) – Sampling Locations for Repository VOC Monitoring	Do the Permittees collect air samples at Station VOC-C (west of air intake at bldg 489) to quantify VOCs in ambient air?				
4	Permit Attachment N, Section N-3a(1) – Sampling Locations for Repository VOC Monitoring	Do the Permittees collect air samples at StationVOC-D (at groundwater pad WQSP-4) to quantify background VOCs?				
5	Permit Attachment N, Section N-3a(2) – Sampling Locations for Disposal Room VOC Monitoring	How do the Permittees flow down the requirements for VOC monitoring of airborne VOCs in underground disposal rooms in which waste has been emplaced listed in section N-3a(2)?				
6	Permit Attachment N, Section N-3a(3) – Ongoing Disposal Room VOC Monitoring in Panels 3 through 8	Are the Permittees conducting VOC monitoring in Room 1 of Panels 3, 4, and 6?				
7	Permit Attachment N, Section N-3b – Analytes to be Monitored	How are non-target VOCs, that meet the criteria in section N-3b, added to the analytical laboratory target analyte list for both repository and disposal room VOC monitoring programs?				
8	Permit Attachment N, Section N-3c – Sampling & Analysis Methods	Do the Permittees use section N-3c to establish the VOC sampling and analysis methods or is there a separate procedure/program that outlines these requirements?				
9	Permit Attachment N, Section N-3d(1) – Sampling Schedule for Repository VOC Monitoring	Do the Permittees collect a 24-hour time-integrated sample two times per week in accordance with section N-3d(1)?				
10	Permit Attachment N, Section N-3d(2) – Sampling Schedule for Disposal Room VOC Monitoring	Do the Permittees collect VOC samples in disposal rooms with open panels at least once every two weeks in accordance with section N-3d(2)?				

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11	Permit Attachment N, Section N-3d(2) – Sampling Schedule for Disposal Room VOC Monitoring	Do the Permittees collect VOC samples in disposal rooms with filled panels 3, 4, and 6 (unless an explosion-isolation well is installed) at least once a month in accordance with section N-3d(2)?				
12	Permit Attachment N, Section N-3e(1) – Data Evaluation & Reporting for Repository VOC Monitoring	Do the Permittees evaluate air sampling data to determine whether VOC emissions from the Underground HWDUs exceed the action levels Permit Section 4.6.2.3?				
13	Permit Attachment N, Section N-3e(1) – Data Evaluation & Reporting for Repository VOC Monitoring	Do the Permittees calculate the carcinogenic risk for the non-waste surface worker for each target VOC using the the equations in section N-3e(1)?				
14	Permit Attachment N, Section N-3e(1) – Data Evaluation & Reporting for Repository VOC Monitoring	Do the Permittees notify NMED in writing, within seven calendar days of obtaining validated analytical results, whenever the risk or HI exceeds the action levels?				
15	Permit Attachment N, Section N-3e(2) – Data Evaluation & Reporting for Disposal Room VOC Monitoring	Do the Permittees evaluate the validated data to determine whether the VOC concentrations in the air of any closed room, the active open room, or the immediately adjacent closed room exceeded the Action Levels for DRVMP?				
16	Permit Attachment N, Section N-3e(2) – Data Evaluation & Reporting for Disposal Room VOC Monitoring	Is there a procedure for notifying NMED in writing, within seven calendar days of obtaining validated analytical results, whenever the concentration of any VOC specified in Permit Part 4, 34 Table 4.4.1 exceeds the action levels specified in Permit Part 4, Table 4.6.3.2?				
17	Permit Attachment N, Section N-4a - N-4a(3) – Sampling Equipment	Does the SOP(s) for air sampling equipment provide detailed information about sample canisters, sample collection units and sample tubing as described in sections N-4a-N-4a(3)?				
18	Permit Attachment N, Section N-4b – Sample Collection	Does the SOP(s) for VOC sampling specify that Repository VOC samples will be 24 -hour time-integrated samples for each sampling event?				
19	Permit Attachment N, Section N-4b – Sample Collection	Does the SOP(s) for VOC sampling specify that field duplicate samples will be collected (two canisters filled simultaneously) for each VOC monitoring program at an overall frequency of at least 5				

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	Citation	Required Program				
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20	Permit Attachment N, Section N-4b – Sample Collection	Does the SOP(s) for VOC sampling require that the sample lines be purged to ensure that the air collected is not air that has been stagnant in the tubing?				
21	Permit Attachment N, Section N-4c – Sample Management	Is there a procedure for how field sampling data sheets are to be completed to document the sampler conditions under which each VOC sample is collected?				
22	Permit Attachment N, Section N-4c – Sample Management	Is there a procedure for how VOC sample containers are to be labeled, maintained, tracked and shipped in accordance with section N-4c?				
23	Permit Attachment N, Section N-4d – Maintenance of Sample Collection Units	Is there a procedure for how periodic maintenance for sample collection units and associated equipment will be performed?				
24	Permit Attachment N, Section N-4e – Analytical Procedures	How do the Permittees ensure that analytical laboratories comply with the methods and reporting requirements in section N-4e?				
25	Permit Attachment N, Section N-4e – Analytical Procedures	Is there a procedure for how the Permittees will preform data validation for VOC laboratory analytical results ?				
26	Permit Attachment N, Section N-4e – Analytical Procedures	Do the Permittees provide SOP updates to the NED on an annual basis by January 31?				
27	Permit Attachment N, Section N-5 (and Table N-2)– Quality Assurance	Is there a procedure to ensure that QA activities for the VOC monitoring programs will be conducted in accordance with the documents: EPA Guidance for Quality Assurance Project Plans QA/G-5 (EPA, 2002) and the EPA Requirements for Preparing Quality Assurance Project Plans, QA/R-5 (EPA, 2001) and the QA criteria for VOC monitoring programs listed in Table N-2?				
28	Permit Attachment N, Section N-5 (and Table N-2)– Quality Assurance	Are the SOPs for QA in the facility Operating Record?				
29	Permit Attachment N, Section N-5a – Quality Assurance Objectives for the Measurement of Precision, Accuracy, Sensitivity & Completeness	Is there a procedure in place ensuring that the QA objectives for the measurement of data quality parameters (e.g., precision, accuracy, sensitivity, and completeness) detailed in section N-5a are achieved?				
30	Permit Attachment N, Section N-5a(1) – Evaluation of Laboratory Precision	Is there a procedure describing how laboratory sample duplicates and blank spike/blank spike duplicate will be used to evaluate laboratory precision in accordance with section N-5a(1)?				

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	Citation	Required Program				
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31	Permit Attachment N, Section N-5a(2) – Evaluation of Field Precision	Is there a procedure describing how field duplicate samples will be collected at a frequency of at least 5 percent for the RVMP and at least 5 percent for the DRVMP in order to achieve the data quality objective for field precision of 35 percent for each set of field duplicate samples?				
32	Permit Attachment N, Section N-5a(3) – Evaluation of Laboratory Accuracy	Is there a procedure describing how quantitative analytical accuracy will be evaluated through performance criteria on the basis of: (1) relative response factors generated during instrument calibration, (2) analysis of laboratory control samples (LCS), and (3) recovery of internal standard compounds?				
33	Permit Attachment N, Section N-5a(4) – Evaluation of Sensitivity	Is there a procedure describing how the sample inlet of the sample collection units will be protected sufficiently from the underground environment to minimize salt aerosol interference and that up to two filters, inert to VOCs, will be installed in the sample flow path to minimize particulate interference?				
34	Permit Attachment N, Section N-5a(5) – Completeness	Is there a procedure describing that the expected completeness for the program is greater than or equal to 95 percent and that data completeness will be tracked monthly?				
35	Permit Attachment N, Section N-5d – Data Reduction, Validation & Reporting	Is there a procedure in place ensuring that the data reduction, validation and reporting requirements of section N-5d are met?				
36	Permit Attachment N, Section N-5e – Performance & System Audits	Do the Permittees perform system audits to evaluate whether the monitoring systems and analytical methods are functioning properly in accordance with Permit Attachment N-5e?				

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	RCRA Permit Attachment N - VOC Monitoring Plan					
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37	Permit Attachment N, Section N-5g – Corrective Actions	How do the Permittees identify, document and report corrective actions necessary to maintain 95% completeness of valid data and laboratory data quality?				
38	Permit Attachment N, Section N-5h – Records Management	Through what means do the Permittees maintain records control systems that provide adequate control and retention for program-related information in accordance with the requirements of section N-				
39	Permit Attachment N, Section N-6 – Sampling & Analysis Procedures for Disposal Room VOC Monitoring in Filled Panels	Do the Permittees collect disposal room VOC samples using the subatmospheric pressure grab sampling technique described in section N-6?				
40	Permit Attachment N1, Section N1-2 – Parameters to be Analyzed & Monitoring Design	Do the Permittees monitor for hydrogen and methane in Panels 3, 4, and 6 in accordance with Permit Attachment N1, section N1-2?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
41	Permit Attachment N1, Section N1-3 – Sampling Frequency	Do the Permittees sample for hydrogen and methane in accordance with Permit Attachment N1, section N1-3? Is there a procedure which flows down this requirement?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
42	Permit Attachment N1, Section N1-4 – Sampling	Do the Permittees collect samples for hydrogen and methane using the subatmospheric pressure grab sampling method as described in Permit Attachment N-1, section N1-4? Is there a procedure which flows down this requirement?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
43	Permit Attachment N1, Section N1-5a – SUMMA® Canisters	Do the Permittees utilize stainless-steel canisters with passivated or equivalent interior surfaces (i.e., SUMMA® Canisters) to collect and store gas samples for hydrogen and methane analyses collected as part of the monitoring processes? Is there a procedure which flows down this requirement?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
44	Permit Attachment N1, Section N1-5b – Sample Tubing	Do the Permittees utilize treated stainless steel tubing as a sample path? Is there a procedure which flows down this requirement?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.

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45	Permit Attachment N1, Section N1-5b – Sample Tubing	Is there a procedure identifying the steps taken when the Permittees suspect that a line is not useable when it is purged prior to sampling?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
46	Permit Attachment N1, Section N1-6 – Sample Management	Do the Permittees seal and uniquely mark sample containers at the time of sample collection and complete a "Request for Analysis Form"? Is there a procedure which flows down this requirement?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
47	Permit Attachment N1, Section N1-7 – Analytical Procedures	How do the Permittees ensure that analytical laboratories comply with the methods outlined in Permit Attachment N1, section N1-7?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.
48	Permit Attachment N1, Section N1-8 – Data Evaluation & Notifications	Is there a procedure in place ensuring that the Permittees notify NMED if any action level is exceeded or if sampling line loss occurs?	NA			The monitoring is not being conducted pursuant to NMED Administrative Order and because filled Panels 3 and 4, are not accessible for monitoring.

	Triennial Review Checklist					
	RCRA Permit Attachment O - WIPP Mine Ventilation Rate Monitoring Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Resource Conservation and Recovery Act and New Mexico Hazardous Waste Act - Attachment O**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Permit Attachment O Section O-3a(1) Test and Balance Process	Is there documentation supporting that the testing and balancing of the mine ventilation system results meet the specific requirements of the section?				
2	Permit Attachment O Section O-3a(2) Test and Balance Schedule	Is there documentation supporting the testing and balancing of the mine ventilation system at intervals of less than eighteen months?				
3	Permit Attachment O Section O-3c(1) Ventilation of Active Room Minimum Air Flow	Is there a log which documents that minimum air flow of 35,000 scfm through active room(s) exists at the start of each shift, operational mode changes and configuration changes?				
4	Permit Attachment O Section O-3c(1) Ventilation of Active Room Minimum Air Flow	Is there a record of occurances for times when the minimum flow rate cannot be achieved including reason and actions taken?				
5	Permit Attachment O Section O-5a Reporting	Has an annual report on Mine Ventilation Rate Monitoring Plan results been submitted to NMED annually, including Testing and Balancing results, when applicable?				
6	Permit Attachment O Section O-5a Reporting	Does the annual report on Mine Ventilation Rate Monitoring Plan results include reporting of failure to achieve the permitted flow rate when applicable?				
7	Permit Attachment O Section O-5a Reporting	Has placement of waste ocurred when air flow rate was below 35,000 scfm and, if so, was NMED notified by e-mail within 15 calenndar days for the start of placement?				
8	Permit Attachment O Section O-5b Recordkeeping	Does the Operating Record include the CRMO operating log that documents the ventilation system operating mode?				
9	Permit Attachment O Section O-5b Recordkeeping	Does the Operating Record include a log sheet documenting ventilation flow rate readings and applicable information listed in				
10	Permit Attachment O Section O-5b Recordkeeping	Does the Operating Record include flow verification check and associated documentation?				
11	Permit Attachment O Section O-6 Quality Assurance	Are personnel conducting ventilation flow measurements cleary identified and have their qualififcations been verified?				
12	Permit Attachment O Section O-6 Quality Assurance	Are instruments used in ventilation flow measurement calibrated as required, and is that information marked on the instruments?				

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	RCRA Permit Attachment O - WIPP Mine Ventilation Rate Monitoring Plan					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
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Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
13	Permit Attachment O Section O-6 Quality Assurance	Is information on the calibration of instruments used in ventilation flow measurements documented as a part of the measurement process?				
14	Permit Attachment O Section O-6 Quality Assurance	How is ventilation simulation software used in ventilation flow management controlled?				

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	TSCA Permit					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Toxic Substances Control Act**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	40 CFR §761.40-Marking Requirements	Are all PCB NRC Type B Packages, DOT Type A CH Packages, over the road vehicles and storge areas properly marked as required by 40 CFR 761.40?				
2	40 CFR §761.45 – Marking Formats		NA			Greg Edwards - This was included in error and will not be assessed
3	40 CFR §761.60 – Disposal Requirements		NA			Greg Edwards - This was included in error and will not be assessed
4	40 CFR §761.61 – Remediation Waste		NA			Greg Edwards - This was included in error and will not be assessed
5	40 CFR §761.65 – Storage for Disposal	Does storage of PCB/TRU waste comply with 40 CFR 761.65 (c)(5) and (c)(6) (Storage for Disposal) requirements?				
6	40 CFR §761.180 - Post-Closure Care	Are records required under 40 CFR 761.180 (d) and (f) maintianed for the time specified for closed panels?				
7	Permit Part III, Section A 1 - PCB/TRU Authorized Storage Areas	Is there a system for maintaining a live-time inventory of waste stored in the Parking Area Container Storage Unit and does that system demonstrate that storage has not exceeded 8,863 cubic feet of				While the system currently in use meets the minimum requirements of the Permit, areas for improvement have been identified and included in Observation 1 of the Report.
8	Permit Part III, Section A 2 - PCB/TRU Authorized Storage Areas	Is there a system for maintaining a live-time inventory of waste stored in the Waste Handling Building Container Storage Unit and does that system demonstrate that storage of CHTRU and RHTRU have not exceeded 6,466.3 and 387.7 cubic feet of waste,				While the system currently in use meets the minimum requirements of the Permit, areas for improvement have been identified and included in Observation 1 of the Report.
9	Permit Part III, Section B&C - PCB/TRU Addition or Expansion of Authorized Storage Areas	Have aditional storage areas, or expansion in size or capacity of permitted storage areas been requested, and, if so, has approval been received as prescribed prior to operation of those areas?				
10	Permit Part III, Section D 2 - PCB/TRU - General Storage Requirements	Are all waste packages received in approved casks and containers?				
11	Permit Part III, Section D 3 - PCB/TRU - General Storage Requirements	Are all packages in storage properly marked in accordance with 40 CFR §761.40 (except PCB/RHTRU Type 7A containers)?				
12	Permit Part III, Section D 4 - PCB/TRU - General Stroage Requirements	Are all PCB items identified in the WIPP Waste Data System including all required dates?				
13	Permit Part III, Section D 5 - PCB/TRU - General Storage Requirements	Is there a system in place to identify containers that are approaching maximum storage durations for CH and RHTRU of 60 and 25 days, respectively?				

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	TSCA Permit					
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	REVIEW TOPIC	**Toxic Substances Control Act**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
14	Permit Part III, Section D 5 - PCB/TRU - General Stroage Requirements	Is there an established process for identifying containers that will exceed maximum storage durations and initiate corrective actions?				
15	Permit Part III, Section E 1 - PCB/TRU - Storage Area Operating Requirements	Is there an established process for handling PCB items in the case of manifesting discrepancies?				
16	Permit Part III, Section E 2 - PCB/TRU - Storage Area Operating Requirements	Is there a clear definition of "adequate aisle space, and has adequate aisle space been maintained in the WHB Unit PCB/TRU waste storage areas?				
17	Permit Part III, Section E 3 - PCB/TRU - Storage Area Operating Requirements	Are waste containers stacked no more than two high in the operating area, or three high in the hot cell?				
18	Permit Part IV, Section B 2 - PCB/TRU Disposal Requirements - Operating Requirements	Are responses to PCB spills documented to an extent that compliance with permit requirements can be verified?				
19	Permit Part IV, Section B 4 - PCB/TRU Disposal Requirements - Operating Requirements	Is there documentation of the total quantities of CH and RH TRU disposed of in completed panels, and are those quantities within the permitted amounts?				
20	Permit Part IV, Section B 6 - PCB/TRU Disposal Requirements - Operating Requirements	Are waste disposal record prepared and maintained in accordance with Part 761 Subpart K requirements?				
21	Permit Part V, Section B - PCB/TRU - Notice of Closure	Has EPA Region 6 been notified at least 30 days prior to closure of the completed disposal Panels?	NA			No HDWUs have undergone closure to-date
22	Permit Part V, Section C - PCB/TRU - Post-Closure Care	Are records maintained for closed Panels as required under 40 CFR §761.180(d) and (f)?	NA			No HDWUs have undergone closure to-date
23	Permit Part VI, Section E 1 - PCB/TRU - Standard Approval Conditions -Operation and Maintenance	Does a system exist to track and control the maintenance of all systems to assure timely response to issues that would affect proper operation?				
24	Permit Part VI, Section E 2 - PCB/TRU - Standard Approval Conditions -Operation and Maintenance	Is there a system to track compliance of training requirements for all personnel that handle, transport, store, and/or dispose of PCB TRU waste and are all personnel current with that training?				Requirements under this criterion have been evaluated as a part of the RCRA Permit Attachment F – Personnel Training
25	Permit Part VI, Section I 2 - PCB/TRU - Standard Approval Conditions -Monitoring and Records	Are records maintained in compliance with 40 CFR §761.180(b)				
26	Permit Part VI, Section I 3 - PCB/TRU - Standard Approval Conditions -Monitoring and Records	Are all records written in ink, typed. Or put into electronic format?				

	Triennial Review Checklist					
	TSCA Permit					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Toxic Substances Control Act**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
27	Permit Part VI, Section K - PCB/TRU - Standard Approval Conditions -Twenty-Four Hour Reporting	Does documentation exist that supports compliance with the reporting requirements for non-compliances?				
28	Permit Part VI, Section N 2 - PCB/TRU - Standard Approval Conditions -Spills	Does documentation exist that supports compliance with the reporting requirements for notifications for spill cleanups that exceed the permitted time, if any have occurred?				

Triennial Review Checklist
Atomic Energy Act

	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK LIST	
	REVIEW TOPIC	**Atomic Energy Act**
Number	Citation	Required Program

While the Atomic Energy Act (AEA) is listed within the SOW as a relevant regulatory document, involving responsibilities and authorities for both DOE and EPA, it does not warrant or lend itself to a specific compliance checklist. The WIPP Triennial Review Team has reviewed the AEA as amended and confirmed that any WIPP-related requirements, including waste type definitions and references to transuranic waste management and disposal, are also included in other statutory and regulatory requirements within the Triennial Review SOW. Further, the responsibilities assigned to the EPA within the AEA relate to regulation of uranium production and enrichment facilities and the disposal of by-product materials. As such, the AEA has no apparent relevance to the WIPP Triennial Review in regard to EPA authorities. Rather, the EPA authorities are clearly established within the WIPP Land Withdrawal Act (LWA) and 40 CFR 191.

For purpose of the WIPP Triennial Review, the team will consider the AEA as the foundational regulatory basis by which DOE, as the successor to the Atomic Energy Commission, is self-regulating in its management of radioactive wastes and materials. In regard to WIPP, this self-regulation is augmented by the EPA's direct regulatory responsibilities for the certification of WIPP as a disposal facility pursuant to the WIPP LWA, as well as their regulatory roles in the review approval of DOE TRU waste inventories and specific RH waste streams. In contrast, the regulatory authority for the hazardous/chemical aspects of DOE TRU waste inventories, including WIPP's Hazardous Waste Permit, rest with the New Mexico Environment Department.

A comprehensive understanding of the AEA is necessary for the WIPP Triennial Team to fully understand the complex regulatory framework in play at WIPP; yet, it does not require a formal compliance checklist as part of the WIPP Triennial Review.

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	NMAC 20.6.2.1201 (A) – Notice of Intent to Discharge	How do the Permittees ensure compliance with the requirement to file a notice with the groundwater quality bureau (GWQB) for discharges that may affect groundwater and/or the surface water quality bureau (SWQB) for discharges that may affect surface water?				
2	NMAC 20.6.2.1201 (C) – Notice of Intent to Discharge	Is there a process in place for ensuring that notices of intent (NOI) to discharge include all the required information outlined in 20.6.2.1201, subsection C?				
3	NMAC 20.6.2.1202 (A) – Filing of Plans and Specifications – Sewerage Systems	Have the Permittees had to file plans and specifications in accordance with 20.6.2.1202 , subsection A? If so, how do the Permittees ensure compliance with the requirement to file plans and specifications for modifying a sewerage system in a manner that will substantially change the quantity or quality of discharge to either groundwater or surface water?				
4	NMAC 20.6.2.1202 (C) – Filing of Plans and Specifications – Sewerage Systems	When applicable, how do the Permittees ensure compliance with the requirement to file plans and specifications for modifying a sewerage system prior to construction?				
5	NMAC 20.6.2.1203 (A) – Notification of Discharge-Removal	Should there be a discharge from the facility of oil or other water contaminant, is there a process in place to ensure compliance with the requirements of 20.6.2.1203, subsection A?				
6	NMAC 20.6.2.3103 (A-C) - Standards for Groundwater of 10,000 mg/l TDS concentration or less	How do the Permittees ensure that groundwater meets the human health standards, standards for domestic water supplies and standards for irrigation use outlined in 20.6.2.3103, subsections A-C NMAC?				
7	NMAC 20.6.2.3107 (A) – Monitoring, Reporting and Other Requirements	Does the Permittees' discharge plan meet the requirements of 20.6.2.3107, subsections A NMAC?				
8	NMAC 20.6.2.3107 (B) – Monitoring, Reporting and Other Requirements	Do the Permittees' sampling and analytical techniques meet the requirements of 20.6.2.3107, subsections B NMAC?				
9	NMAC 20.6.2.3107 (C) – Monitoring, Reporting and Other Requirements	Is there a process in place ensuring that the Permittees notify NMED of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants?				

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
10	NMAC 20.6.2.3107 (D) – Monitoring, Reporting and Other Requirements	Is there a process in place ensuring that any authorized representative of NMED can conduct the activities (e.g., inspect relevant records) identified in 20.6.2.3107, subsection D?				
11	DP-831, Section A, condition 3 -	Is there a procedure/program in place ensuring that the Permittees maintain the impoundment liners in such a manner as to avoid conditions (e.g., erosion damage, animal burrows) which could affect the structural integrity of the impoundment(s) and/or impoundment liner(s)?				
12	DP-831, Operational Plan, Part A, condition 3 -	Is there a procedure/program in place ensuring that the Permittees routinely control vegetation by mechanical removal in a manner that is protective of the impoundment liner(s)?				
13	DP-831, Operational Plan, Part A, condition 4 -	How do the Permittees preserve a minimum of one foot of freeboard between the liquid level in all impoundments and the elevation of the top of the impoundment liners?				
14	DP-831, Operational Plan, Part B, condition 5	Do the Permittees maintain fences around the Facultative Lagoon System to control access by the general public and animals?				
15	DP-831, Operational Plan, Part B, condition 6	Do the Permittees maintain signs around the Facultative Lagoon System indicating that the wastewater at the facility is not potable?				
16	DP-831, Operational Plan, Part B, condition 7	Do the Permittees utilize certified operators to operate the wastewater collection, treatment and disposal systems?				
17	DP-831, Operational Plan, Part B, condition 8	Have the Permittees measured the thickness of the sludge blanket in each pond of the Facultative Lagoon System? If not, will it be completed before the end of 2018?				
18	DP-831, Operational Plan, Part B, condition 8	Is there a process/procedure in place describing how sludge will be removed from the pond in a manner protective of the liner?				
19	DP-831, Operational Plan, Part B, condition 8	Is there a procedure/process in place describing the requirements for containing, transporting, disposing and reporting/documenting of removed sludge solids?				
20	DP 831, Operational Plan, Part D, condition 9	Have the Permittees measured the thickness of the solids blanket in each of the storm water runoff impoundments? If not, will it be completed before the end of 2018?				

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
21	DP 831, Operational Plan, Part D, condition 9	Is there a procedure/process in place describing the requirements for containing, transporting, disposing and reporting/documenting of removed solids?				
22	DP 831, Operational Plan, Part D, condition 10	Do the Permittees inspect the leak detection systems for Salt Storage Ponds 2 & 3 on a monthly basis for the presence of liquid?				
23	DP 831, Operational Plan, Part D, condition 10	Do the Permittees keep an inspection log of findings and repairs made and include those logs in the semiannual report submitted to NMED?				A recommendation related to fence and sign inspection and documentation have been included as Finding 5 and Observation 2 in the
24	DP 831, Operational Plan, Part D, condition 11	Do the Permittees conduct regular maintenance of the earthen cover on the Salt Cell 1 and the SPDV material pile?				
25	DP 831, Operational Plan, Part D, condition 11	Do the Permittees conduct inspections monthly and after storm events of 2 inches or greater in a 24-hour period to evaluate potential erosion and vegetation success of the cover at the Salt Cell 1 and the SPDV material pile?				A recommendation related to fence and sign inspection and documentation have been included as Finding 5 and Observation 2 in the Report.
26	DP 831, Operational Plan, Part D, condition 11	In the event there is significant erosion or failure of vegetation success, is there a procedure/process for providing a plan and schedule for repair to NMED within 90 days of discovery and then reporting those cover repairs to NMED?				
27	DP 831, Monitoring & Reporting, Part A, condition 13	Do the Permittees have a process/procedure for sampling and analysis that incorporates the sampling methodology requirements of this permit part?				
28	DP 831, Monitoring & Reporting, Part A, condition 14	Do the Permittees conduct semiannual monitoring and submit a semiannual monitoring report to NMED in accordance with the timeframes and dates listed in this permit part?				
29	DP 831, Monitoring & Reporting, Part B, condition 15	Do the Permittees measure the domestic influent discharge to the Facultative Lagoon System on a monthly basis using a totalizing flow meter either on the influent line or one that measures the total domestic water usage?				
30	DP 831, Monitoring & Reporting, Part B, condition 15	Do the Permittees measure other authorized discharges to the Facultative Lagoon System by calculating the time/volume or volumetric measurement of the transport containers?				

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
31	DP 831, Monitoring & Reporting, Part B, condition 15	Do the Permittees include monthly meter readings, the units of measurement, monthly discharge volumes and other volumetric calculations in the semiannual monitoring report submitted to				
32	DP 831, Monitoring & Reporting, Part B, condition 16	Do the Permittees collect a wastewater sample every 6 months from the influent to the Facultative Lagoon System and analyze the sample for TKN, No3-N, SO4, TDS and Cl?				
33	DP 831, Monitoring & Reporting, Part B, condition 16	Is there a procedure/process for preserving, transporting and analyzing the sample?				
34	DP 831, Monitoring & Reporting, Part C, condition 17	Do the Permittees measure the volume, using a time/volume method volumetric measurement of the transport container calculation, of all wastewater discharged to the Evaporation Pond H-19 that is derived from miscellaneous non-hazardous sources and reported to NMED?				
35	DP 831, Monitoring & Reporting, Part C, condition 18	Do the Permittees collect a sample semiannually from the Evaporation Pond H-19 and analyzed for SO4, TDS and Cl?				
36	DP 831, Monitoring & Reporting, Part C, condition 18	Is there a procedure/process for collecting samples annually after a significant storm event from Storm Water Ponds 1, 2 & 3 and analyzed for SO4, TDS and Cl?				
37	DP 831, Monitoring & Reporting, Part C, condition 18	Is there a procedure/process for preserving, transporting and analyzing the sample?				
38	DP 831, Monitoring & Reporting, Part C, condition 19	Do the Permittees measure the water depth, on a monthly basis, to the nearest tenth of a foot in Storm Water Ponds 1, 2 and 3 and report the approximate volume of storm water to NMED in the semiannual monitoring report?				
39	DP 831, Monitoring & Reporting, Part D, condition 20	Is there a procedure/process for collecting a sample annually after a significant storm event from Salt Storage Cells 1, 2, and 3 and analyzed for SO4, TDS and Cl?				
40	DP 831, Monitoring & Reporting, Part D, condition 20	Is there a procedure/process for preserving, transporting and analyzing the sample?				
41	DP 831, Monitoring & Reporting, Part D, condition 21	Do the Permittees measure the water depth, on a monthly basis, to the nearest tenth of a foot in Salt Storage Ponds 1, 2 and 3 and report the approximate volume of storm water to NMED in the semiannual monitoring report?				

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
42	DP 831, Groundwater Monitoring & Reports, condition 22	Do the Permittees measure the depth to the water table, on a quarterly basis, to the nearest hundredth of a foot in the piezometers/monitoring wells listed in this permit section?				
43	DP 831, Groundwater Monitoring & Reports, condition 23	Do the Permittees perform semiannual groundwater sampling at the piezometers/monitoring wells listed in this permit section and analyze those samples for temperature, pH, specific conductance, SO4, TDS and Cl?				
44	DP 831, Groundwater Monitoring & Reports, condition 23	Do the Permittees use this permit section as the procedure for collecting, preserving, transporting and analysis of groundwater samples or is there a separate procedure/process which documents this requirement?				
45	DP 831, Groundwater Monitoring & Reports, condition 23	Is there a procedure/process ensuring that the depth-to-most-shallow groundwater measurements, analytical results, including the laboratory QA/QC summary report, and a facility layout map showing the location and number of each well are reported to NMED in the semiannual monitoring reports?				
46	DP 831, Groundwater Monitoring & Reports, condition 24	Do the Permittees preform semiannual groundwater sampling at monitoring well WQSP-6A and analyze the samples for TKN and				
47	DP 831, Groundwater Monitoring & Reports, condition 24	Is there a procedure/process for preserving, transporting and analyzing the sample?				
48	DP 831, Groundwater Monitoring & Reports, conditions 25-28	Do the Permittees annually submit hydrographs, a potentiometric map, water level measurement table and groundwater data table in accordance with the requirements in conditions 25-28 of the permit?				
49	DP 831, Contingency Plan, condition 29	Is there a procedure/process that describes when the contingency plan should be enacted?				
50	DP 831, Contingency Plan, condition 29	Is there a procedure/process that outlines the requirements of a corrective action plan (once the contingency plan has been enacted)?				
51	DP 831, Contingency Plan, condition 30	In the event that an inspection reveals significant damage likely to affect the structural integrity of the lined impoundment(s) or its ability to contain contaminants, is there a procedure/process that outlines the requirements of submittal of a corrective action plan for repair or replacement?				A recommendation related to fence and sign inspection and documentation have been included as Finding 5 and Observation 2 in the Report.

	Triennial Review Checklist					
	Clean Water Act (CWA) & NM Water Quality Act					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**Clean Water Act and the New Mexico Water Quality Act**				
	Citation	Required Program				
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
52	DP 831, Contingency Plan, condition 31	In the event that a minimum of one foot of freeboard cannot be preserved in the impoundment(s), is there a procedure/process that outlines how the Permittees will restore the required freeboard within 72 hours?				
53	DP 831, Contingency Plan, condition 31	In the event that freeboard cannot be restored within 72 hours in the impoundment(s), is there a procedure/process that outlines the requirements for submittal of short-term corrective action plan to restore the freeboard?				
54	DP 831, Contingency Plan, condition 31	In the event that short-term corrective action plan cannot restore the freeboard in the impoundment(s), is there a procedure/process that outlines the requirements for submittal of long-term corrective action plan to restore the freeboard?				
55	DP 831, Contingency Plan, condition 32	In the event that a release occurs that is not authorized under the permit, is there a procedure/process that outlines the requirements to mitigate damage and initiate notifications (e.g., 24-hour verbal) and corrective actions (e.g., submittal of corrective action plan/report within 15-days) in accordance with this permit condition?				
56	DP 831, Contingency Plan, condition 34	In the event of a pipeline break, pump failure, pond overflow or other system failure, is there a procedure/process that outlines the requirements for containing discharged water and repairing replacing failed components within 72 hours?				
57	DP 831, E - General Terms and Conditions, condition 41	Is there a procedure/process that outlines what records are required to be kept at the facility for at least five years?				

	Triennial Review Checklist					
	DOE O 231.1B - Environment Safety and Health Reporting					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**ES&H Peporting**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	4.a	Did WIPP submit its ASER for 2016 by October 1, 2017?				
2	4.a. and Attachment 2, paragragh 1	Is WIPP's ASER developed in accordance with Attachment 2 of the Order? Does is include all required data, including: -- Data effluent releases, environmental monitoring, and types and quantities of radioactive materials emitted or discharged to the environment, the estimated or calculated total effective dose to a representative person or maximally exposed member(s) of the public and the calculated collective dose to members of the public from exposure to radiation sources identified under DOE O 458.1, and, where it is of concern, releases of radon and its decay products from DOE sources and the resultant individual and collective dose from these radionuclides, which need not be combined with dose estimates from other sources?				
3	4.a. and Attachment 2, paragragh 2	Does WIPP's latest ASER include a summary of environmental occurrences and responses reported during the calendar year?				
4	4.a. and Attachment 2, paragragh 3	Does WIPP's latest ASER include a environmental compliance information that confirms compliance with environmental standards and requirements?				
5	4.a. and Attachment 2, paragragh 3	Does WIPP's latest ASER include information on significant programs and efforts that highlights significant environmental performance indicators and/or performance measures that reflect the size and extent of WIPP's programs?				
6	4.a. and Attachment 2, paragragh 5	Does WIPP's latest ASER include information on WIPP's use, if any, of authorized limits?				
7	4.c	Does WIPP's latest ASER include Ionizing Radation Exposure Information in accordance with the Order and Attachment 4?				
8	4.c Attachment 4, paragarph 1	Were annual radiation exposure records for the preceding monitoring year, required to be collected by 10 C.F.R. § 835.702, reported to the REMS repository by March 31?				

	Triennial Review Checklist					
	DOE O 231.1B - Environment Safety and Health Reporting					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK					
	REVIEW TOPIC	**ES&H Peporting**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
9	4.c Attachment 4, paragarph 1	Has WIPP made any revisions to radiation exposure records previously submitted/reported? If so, if the revised dose record resulted in a dose exceeding regulatory dose limits defined in 10 C.F.R. § 835.202, were revised records submitted within 30 days of the revision to the dose record?				
11	4.c Attachment 4, paragarph 2b	How does WIPP confirm that its employees acting in an official capacity at a non- DOE facility and monitored for occupational radiation exposure provide the monitoring results to their employer within 30 days of receipt? How does DOE and NWP instruct individuals of this responsibility prior to directing individuals to conduct such activities at a non-DOE facility?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
12	4.c Attachment 4, paragarph 2c	Do procedures exist to effectively support the collection of dosimetry records in support of this Order's requirements? Are they verified on a regular basis?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
13	4.e and Attachment 5	Do WIPP's operations involve the management of radioactive sealed sources meeting the requirements of IAEA Category 1 and 2 radioactive sealed sources, such that reporting to the NRC National Source Tracking System (NSTS) is required? If so, are the requirements of this Order being met? How is this verified?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.

	Triennial Review Checklist					
	DOE O 458.1 - Radiation Protection of the Public and the Environment					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK LIST					
	REVIEW TOPIC	**Radiological Protection**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
1	Changes	Is there a program in place to ensure that changes to DOE 458.1 are incorporated into flow-down requirements such as procedures, program documents, instructions?				
2	4.a.(1)(a,b)	Has WIPP established an Environmental Radiological Protection Program that (a) fully meets requirements of the Order and (b) is tailored to the hazard and risks of radiological activities conducted at	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
3	4.b.(1)(a)	Are WIPP's operations conducted in manner such that exposure to the pubic to ionizing radiation will (a) i (a) not cause TEC exceeding 100 mrem/yr (and equivalent doses to eye lens and skin)? How is this documented and evaluated?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
4	4.d.	How are the ALARA requirements in paragraph 4.d. of this Order satisfied?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
5	4.e(1-10)	Are dose evaluations completed to demonstrate compliance with the public dose limit in paragraph 4.b? Are they conducted to assess collective dose in order to meet requirements of this pargaragh 4.e.(10) of this Order?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
6	4.e(6)	Is the WIPP model used for dose evaluation calculations appropriate for its purpose? Is it codified or approved for use by regulators of DOE ? Where is this documented?	NA			RES Manager - This is out of scope. This is characterization related and not facility related.
7	4.f.	(1) Are WIPP's radiological activities conducted in a manner such that the release of radioactive material to the atmosphere are maintained ALARA? (2) Are airborne radioactive effluents controlled to avoid radon-222 flux rates in excess of 20 pCi)/m2-sec? (3) Do airborne effleuents meet compliance agreements under 40 CFR Part 61, Subparts H, Q, and T?(4) Are airborne radioactive effluents controlled to not cause the radon-220 and radon-222 decay product concentration, including background, to exceed 0.03 WL in buildings that are being released from DOE control? (5)... to not exceed 3 pCi/L annual average radon-220 and radon-222 concentration, not including background, at the site boundary if DOE activities release radon-220 and radon-222 or their decay products?				
8	4.g	Are WIPP liquid discharge activities conducted in compliance with all requirements of this paragraph, including: (4) ensuring that liquid discharges containing radionuclides from DOE activities do not exceed an annual average (at the point of discharge) of either of the following: (a)5 pCi (0.2 Bq) per gram above background of settleable solids for alpha-emitting radionuclides. (b)50 pCi (2 Bq) per gram above background of settleable solids for beta-gamma-emitting radionuclides?				

	Triennial Review Checklist					
	DOE O 458.1 - Radiation Protection of the Public and the Environment					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK LIST					
	REVIEW TOPIC	**Radiological Protection**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
9	4.h(1)(a)	Are WIPP's radiological activities conducted in a manner such that radiation exposure to members of the public from management and storage of radioactive waste complies with ALARA process requirements and does not result in a TED greater than 25 mrem (0.25 mSv) in a year from all exposure pathways and radiation sources associated with the waste, except for transportation and radon and its decay products? How is this evaluated and documented?				
10	4.h(1)(b)	Is management of...transuranic waste at a WIPP (a disposal facility not regulated by the NRC) compliant with the requirements of this Order and 40 CFR Part 191, Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-level and Transuranic Radioactive Wastes?				
11	4.h(1)(c)	Are LLW's generated by WIPP managed and stored in a manner such that exposure to members of the public to radiation from radioactive waste complies with mrem (0.25 mSv) in a year from all exposure pathways and radiation sources associated with the waste, except for transportation and radon and its decay				
12	4.i (2)	What actions are taken and processes in place to protect groundwater near WIPP from radiological contamination and ensure compliance with dose limits in the Order and consistent with ALARA process requirements? How does WIPP ensure that:(a)baseline conditions of the ground water quantity and quality are documented? (bPossible sources of, and potential for, radiological contamination are identified and assessed? (c)Strategies to control radiological contamination are documented and implemented? (d) Monitoring methodologies are documented and implemented? and (e) Ground water monitoring activities are integrated with other environmental monitoring activities?				
13	4.j (1)	Has WIPP identified biota that may be impacted by WIPP's radiological activities? How are WIPP's activities conducted in a manner that protects populations of aquatic animals, terrestrial plants, and terrestrial animals in local ecosystems from adverse effects due to radiation and radioactive material released from DOE operations?				
14	4.k	To the extent that WIPP receives or generates personal property that contains or is contminated with residual readioactive materials, how is such property managed and cleared/released?				
15	4.l	(1) Does WIPP maintain sufficient records to document compliance with the requirements of this Order? (2) Do these records include: (a) Information and data necessary to identify and characterize releases of radioactive material to the environment, their fate in the environment, and their probable impact on radiation dose to members of the public, and any impacts on ecological systems; (b) Documentation of individual and collective dose to members of the public due to radiological activities;..(d) identification of radiological activities subject to environmental radiological protection program requirements, and descriptions of the measures to be used in implementing these requirements)				

	Triennial Review Checklist					
	DOE O 458.1 - Radiation Protection of the Public and the Environment					
	WASTE ISOLATION PILOT PLANT 2018 TRIENNIAL REVIEW CHECK LIST					
	REVIEW TOPIC	**Radiological Protection**				
	Citation	Required Program				Notes/Comments
Number		In Compliance? NA=Not Applicable ND=Not Determined	NA or ND	Y E S	N O	
16	4.l *(continued)*	(1) Does WIPP maintain sufficient records to document compliance with the requirements of this Order? (2) Do these records include: (e) documentation of actions taken to implement the ALARA process; (f) documentation of actions taken to demonstrate compliance with the public dose limit;... (h) effluent monitoring and environmental surveillance information and data; (i) Documentation related to the long-term management of radioactive waste and residual radioactive material; (j) final documentation for clearance of property containing residual radioactive material?				
17	CRD (1)(b) - General Requirements	(b) Has NWP provided DOE a schedule for full implementation of the Specific Requirements of this Order?				
18	CRD (1)(b) - General Requirements	(d) Has NWP obtained DOE line management approval of the documentation demonstrating compliance with the Specific Requirements in this CRD?				

ATTACHMENT D

REVIEW TEAM QUALIFICATIONS

Anne Weaver

Transportation Compliance Specialist

FireWater

SUMMARY

- Ms. Weaver has over 25 years of diverse experience in Transportation and Waste Management for government and commercially generated wastes.
- She has worked on multiple Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) sites, and managed shipment of wastes/materials to all U.S. treatment and disposal facilities.
- Experience providing regulatory compliance for transport, packaging and waste characterization for radioactive (including transuranic) and hazardous wastes/materials including profiling to landfills/disposal sites including providing shipping documentation, package design and transportation. Expert in radioactive air transport to meet international standards.

EDUCATION

B.A., English & Biology
University of Alabama

PROFESSIONAL EXPERIENCE

Separations Process Research Unit (SPRU) - Niskayuna, New York D&D Project: AECOM contract consisted of Managing IWITS database, managing mixed waste 90-day storage area and Hazardous waste storage areas. Performed shipments of Mercury (Hg) mixed waste to Perma-Fix treatment facility. Site moved from small quantity generator to large generator.

NNSA/Department of Energy: Characterized, profiled, packaged, manifested and dispositioned DOE equipment fabricated by AEC containing radioactive sealed sources to Nevada Nuclear Security Site (NNSS).

Safety-Light Corporation: Provided technical support for waste profiling and transportation to Energy Solutions for EPA site remediation project located in state of Pennsylvania.

BWXT Y-12/NNSA: Project consisted of equipment removal from various contaminated buildings at the Y-12 Security Complex. Performed shipments of surface contaminated equipment from the Y-12 site to Energy Solutions (Bear Creek and Clive). In addition, applied for a DOT Special Permit for the use of Type A packages for fissile material. Wrote the waste profile for the microencapsulation at Energy Solutions.

National Aeronautics Space Administration (NASA): Characterized, profiled, designed and oversaw fabrication of inner package for Type A cask transport and manifest for transport of Cadmium Control Rods removed from the Plumbrook Reactor Station at Sandusky, Ohio. Duties included researching to prove a DOE nexus for NNSS disposal.

- CDM Federal: Generated mixed waste profile for treatment of multiple waste streams generated at Portsmouth Gaseous Diffusion Plant. Prepared Hazardous wastes manifests for mixed waste and rad waste shipments to Energy Solutions in Clive, Utah.

- Performance Development Corporation: Compliantly shipped Low Level Waste (LLW) repackaged waste from DOE Oak Ridge K-25 facilities to Energy Solutions of Utah. Duties included selection of compliant containers, dispatching carriers, ensuring waste stream conformed to Bechtel Jacobs Corporation (BJC) LLW profiles, marking/labeling/placarding shipments, and ensured load was compliant with Federal Motor Carrier Safety Regulations. Duties also consisted of shipping nonconforming items removed from the LLW waste stream, air shipments for sample analysis, and sample validation shipments for mixed waste treatment and disposal facilities.

- US Navy, Rock Island Arsenal: Performed Historical Radiological Assessments for several Naval Bases on the California Coast and Desert. Duties consisted of accumulating records from National Archive storage areas, each site, and RASO. Provided assessments of radioisotopes of potential concern and writing a comprehensive report for submittal and approval of uses and determination of areas that contain residual radioactive contamination.

- Canberra: Provided assessment and managed a Type B shipment of five high activity calibration sources using the 10-160B cask from Dover, NJ to Oak Ridge, TN. This was safely achieved with very dated and little or no fabrication data.

- DEMCO: Profiled and shipped lead Shielding contaminated from the Hydrofracture Facility at Oak Ridge National Laboratory to Energy Solutions (Clive) for macroencapsulation.

- DRMS: Responsible for profiling, providing the hazardous waste manifest and shipment/disposal of Department of Defense (DOD) generated hazardous waste for three Tennessee locations.

- FLUOR: Responsible for shipping and transporting contaminated equipment for reuse from the Fernald Closure Project to Energy Solutions. Performed the determination of proper packaging for surface contaminated objects to be recycled.

- National Institute of Standards and Technologies: Contract consisted of designing packages and shipping fresh fuel elements from BWXT-Lynchburg to the National Institute of Standards and Technology. Activities included safeguarded shipment in accordance with NRC regulations, and performed escort activities with team driving activities. Performed all NRC advance and post-delivery notifications within OCONUS domestic transport IDIQ Scope of Work.

- NNSA/GTRI: Duties include the following:
  - Assessments for UF_6 recovery in international locations;
  - Physical assessments of Co^{60} and Cs^{137} sealed sources stored in medical and industrial equipment in various locations across the continental U.S.;
  - Provided costing, characterization, and disposition activities, such as interim storage, recycle/reuse options, and final disposal at DOE-owned for sealed sources on the Source Device Registry.
  - Managed a Gammacell 1000 Blood Irradiator Recovery from Tufts New England Medical Center in Boston, MA, which contained a Type B quantity of Cs^{137} and performed shipment and transport activities to Southwest Research Institute.

- NNSA/FRRF: Foreign Repatriation of Spent Nuclear Fuel from Indonesia to Savannah River Site. Duties included OCONUS transportation plan write up, NRC Route approval, NRC notifications, three domestic shipments of Spent Nuclear Fuel, highway route controlled quantities, and three equipment shipments from the Naval Weapons Station – Charleston port to Savannah River Site.

- Northrup Grumman: Managed and performed site assessment, and decontamination activities to remove spent hazardous and radioactive infrared lenses from defense-related target systems for recycle and reuse project.

Technical Writer/Trainer, WESKEM, LLC

- Prepared waste management administrative and operating procedures for the Waste Disposition project for ETTP, ORNL, and Y-12 with WESKEM guidelines. Incorporated Safety Determinations and criticality evaluations within facility operating procedures.
- Created lesson plans to incorporate training for upper-tier procedures written by the BJC and WESKEM.
- Prepared WESKEM for Readiness Reviews to perform new scopes of work for spent fuel canister retrievals and shipment to Idaho (ORNL); Chemical Detonation Facility (ORNL), Shock Sensitive treatment activities (OR Reservation), Closure of Mixed Oxide Vaults (Y-12), and flammable facility construction (ETTP).
- Assisted with the implementation, readiness, and approval of BJC NTS Generator Program.

- Provided technical support for the Nuclear Facilities Assessment for the precursor to the Defense Board Audit for ORNL Nuclear Facilities.
- Reviewed technical changes submitted by the Unreviewed Safety Question Determination (USQD) process, writing USQD screens for all procedural changes.

CERTIFICATIONS, AWARDS, AND TRAINING

Radiological Worker II
NQA-1 Lead Auditor Training
Nuclear Criticality Safety Training
Nuclear Material Control and Accountability
Material Balance Custodian and Waste Account Rep.
Waste Certification Program Awareness Training
Energetic Hazardous Materials Basic Chemistry Training
McCoy's RCRA Training
RCRA Satellite Accumulation Area
PCB Awareness Training
Basic Hazardous Materials Transportation
IATA: Transport of Dangerous Goods by Air Shipper Certification
IMDG: International Maritime Dangerous Goods Code
Security of Nuclear and Other Radioactive Materials During Transport
Advanced DOT Hazardous Material Workshop
Federal Motor Carrier Safety Regulations
Unreviewed Safety Question Determination
Facility Authorization Basis Training
Technical Safety Requirements Training
Hazard Review
Beryllium-Safe Handling
HAZWOPER 40-Hr. Training

FIREWATER

BEN C. ROGERS, PHD, CHMM, REP

ENVIRONMENTAL SCIENTIST

SUMMARY

- Internationally known Subject Matter Expert (SME) in radioactive and hazardous waste management; process knowledge; forensic analysis of nuclear processes; and, preparation of National Environmental Policy Act (NEPA) documentation including supplemental analyses.
- Over 40 years' experience in managing radioactive, mixed and transuranic wastes; nuclear facility operations; decontamination and decommissioning of nuclear facilities; and, declassification and demilitarization of nuclear weapons components.
- Senior Scientist, Advisor and Mentor to Transuranic Waste Processing Facility, Oak Ridge, TN.
- Experienced in health and safety compliance, health physics, nuclear criticality safety calculations, quality assurance program writing, and training program development.

EDUCATION

Ph.D., Environmental Sciences, 2003
Tennessee Technological University, Cookeville, TN

Radiochemistry, Certificate, 1975
Carnegie Mellon University, Pittsburgh, PA

B.S., Chemistry, 1972
University of Memphis, Memphis, TN

PROFESSIONAL EXPERIENCE

Dr. Rogers has more than forty years of experience in handling and managing radioactive, mixed and TRU waste including plant operations, decommissioning, and decontamination of nuclear facilities as well as the declassification and demilitarization of nuclear weapons components. He is a subject matter expert (SME) in process knowledge, forensic analysis of nuclear processes and components and preparation of NEPA documentation. Most recently he served as the Senior Scientist, Advisor and Mentor to the Transuranic Waste Processing Complex at Oak Ridge, TN. He served as NDA Manager for the D&D of K-25 in the identification of uranium oxide holdup residue. Dr. Rogers was project manager for the 2003 Mercury Due Diligence Study of the lithium isotope separation process at the Y-12 Plant. Proficient user of RESRAD and RADCALC analytical software tools for the management and analysis of residual radioactive materials.

During 2016, Dr. Rogers was project coordinator of the Oak Ridge Reservation Annual Site Environmental Report for 2015[1]. He has experience in classroom settings having taught the elements of water chemistry and radiochemistry to radiochemical laboratory technician candidates at various nuclear power facilities including TVA's Sequoyah & Watts Bar nuclear plants and Koeberg nuclear power station, Cape town, South Africa. He also served as Ad Hoc Instructor at Chattanooga State Community College 40-Hour hazardous materials management refresher courses. He has experience in site remediation work which includes recovery from emergency situations, removal and replacement of radioactive and hazardous process systems, on-site water treatment, excavation of buried debris, packaging and transport of radioactive and hazardous materials, feasibility studies, records of decision, and site closures. He has a detailed working knowledge of federal, state, and local environmental laws and applicable U.S. Department of Energy (DOE) Orders and requirements at DOE facilities. He has experience in spent fuel handling, high density spent fuel rack design and installation, and volume reduction of spent fuel channels for disposal. He also has experience in health and safety compliance, health physics, nuclear criticality safety calculations, quality assurance program writing, training program development, procedure writing, alternative disposal options, and preparation of National Environmental Policy Act (NEPA) documentation including supplemental analyses and supplemental regulations.

Dr. Rogers was a member of the *Panel of Fourteen* subject matter experts, 2001-2002, from the U.S., Canada, UK, Germany, France, China and Austria who reviewed the Pebble Bed Modular Reactor technology design for the South African Electricity Supply Commission and the Atomic Energy Commission of South Africa.

Dr. Rogers is a former voting member of the American Society for Testing and Materials (ASTM) International Committee D34 on Waste Management. He is experienced in dealing with national and international regulatory agencies, supporting foreign corporations, governments and appearing as a technical witness.

Dr. Rogers was a contributing author and reviewer of NUREG/CR-4450 on the use of solidification agents including cement. His PhD Thesis presented a solidification method for the stabilization of declassified electronic components using unsaturated polyester thermoset resin to allow passage of the TCLP.

Dr. Rogers conducted detailed studies for the use of high-integrity containers for the disposal of radioactive materials for the Central Electricity Generating Board of the United Kingdom. In 1990, he developed a process for profiling and removing precious and strategic materials from nuclear weapons components and successfully applied the process, at DOE Pantex Plant, to more than 250 metric tons of retired and obsolete nuclear weapons components for the DOE.

Dr. Rogers served as the Deputy Project Manager for the Paducah Gaseous Diffusion Plant Northwest Scrap Yard Project and as the SME for the decommissioning of the Homogeneous Reactor Experiment evaporator at Oak Ridge National Laboratory (ORNL). He also provided guidance and direction for the decommissioning and demolition of the High Flux Isotope Reactor ponds at ORNL. Included in this work were the demolition of a 200,000 ft^3 cryogenically frozen

[1] HTTPS://DOEIC.SCIENCE.ENERGY.GOV/ASER/ASER2015/INDEX.HTML

pond that accepted radioactive liquids from the HRE and other locations during the period of 1951 to 1964.

Dr. Rogers served as Senior Consultant for rigor of operations assessments at ETTP and Portsmouth and Paducah Gaseous Diffusion Plants, prepared four analysis tools to evaluate the rigor of operations process, and prepared a database in accordance with management oversight and risk tree analysis techniques. As Senior Environmental Consultant and Project Manager, he was responsible for providing consultation and direction for the construction of the Bear Creek Environmental Management Waste Management Facility (EMWMF), a mixed waste disposal facility, and for preparing the Report to Congress.

Dr. Rogers served as Technical Director for the Central Interstate Compact Commission in siting and licensing of a 10 CFR Part 61 radioactive waste disposal facility. He also directed an emergency response action at the Maxey Flats LLRW Disposal Facility and designed and contracted the manufacture of reusable molds used in stabilizing 250,000 gallons of tritium contaminated water. He also served as Site Manager, North Hampton, MA in a national cleanup of Polonium-210 contamination caused by multiple ionization-chamber failures.

As Waste Management Discipline Head for the South African Electricity Supply Commission he provided technical guidance in developing a radioactive waste management training program for the Koeberg Nuclear Power Station.

As Manager of Radwaste Operations for TVA he was responsible for managing central office radwaste operations staff, including responsibility for design, review, and operations of radioactive waste systems and transportation casks for seven nuclear power plants.

CERTIFICATIONS, AWARDS, AND TRAINING

- Certified Hazardous Materials Manager, Masters Level
- Hazardous Materials and Radiochemistry Training Ad Hoc Instructor, Chattanooga State Community College.
- Member of "Panel of Fourteen" SME for review of the Pebble Bed Modular Reactor technology design for South African Electricity Supply Commission and the Atomic Energy Commission of South Africa.
- Voting member of American Society for Testing and Materials International Committee D34 o Waste Management.
- Registered Environmental Professional. Prior Q-level security clearance

CHRISTINE MARIE GELLES

EXPERTISE

Christine Gelles has nearly 25 years experience in the US Department of Energy. Her core skills include;

- strategic program planning, policy development and problem solving
- project planning, management, budget formulation, execution and review
- program management and assessment
- comprehensive understanding of environmental laws, regulations and policies, as well as federal budgetary and accounting policy.
- extensive knowledge and understanding of the Department of Energy's waste management and nuclear materials management programs.

Christine has exceptional oral and written communication skills and is a very experienced and accomplished public speaker. She has testified before the US Congress and has provided many briefings to Members of Congress, their staff, and senior officials within U.S. Government.

Christine is experienced in domestic and international cooperative and interagency efforts, including serving as Chairperson of the International Atomic Energy Agency's (IAEA's) PRISM project (Practical Implementation of Safety Case Methodology on Near Surface Disposal Facilities), Chairperson of IAEA's CIDER project (Constraints in Decommissioning and Environmental Remediation) and providing subject matter expertise as a consultant on specific IAEA waste related efforts.

DETAILED EXPERIENCE

Senior Vice President for Operations March 2017-Present
Longenecker & Associates

In this Operations role, Christine coordinates and oversees the L&A program and project managers responsible for implementation of L&A activities, which span a broad range of technical, programmatic and policy support functions. L&A's portfolio includes both prime contracts to DOE and NNSA programs, including numerous complex-wide vehicles, and subcontracts with a large number of strategic industry partners. She ensures L&A's performance consistently exceeds client expectations and works closely with L&A personnel to ensure project and contract success. She is actively engaged in the design of expanded roles for L&A in future DOE and NNSA site contracts and leads corporate efforts to prepare for those future roles, including all required human capital, acquisition and programs support activities. In this position, she works seamlessly with L&A's senior leadership team to continuously assess contract compliance, financial performance and risk management.

Corporate Vice President and Chief Strategy Officer March 2016-March 2017
Longenecker & Associates

Christine led L&A activities to define and implement corporate programs and policies necessary to support company growth. She recruited highly qualified and recognized experts to the team, and expanded L&A's project portfolio in the areas of radioactive waste management and environmental remediation support. She also diversified L&A's commercial industry client base.

Deputy Assistant Secretary (DAS) for Waste Management (ACTING) November 2015-March 2016
Office of Environmental Management, U.S. Department of Energy

Christine led the Office for Waste Management's three diverse technical and policy offices;

- Disposal Operations
- Disposition Policy and Planning and Packaging
- Transportation

Christine's responsibilities included broad policy and resource responsibilities associated with a dozen of EM's cleanup sites including Waste Isolation Pilot Plant, Los Alamos, Nevada National Security Site, Idaho and all small sites and projects. She was also responsible for oversight and resource direction for all EM radioactive waste management projects and programs.

Manager, Environmental Management Los Alamos Field Office (ACTING) March 2015-September 2015
Office of Environmental Management, U.S. Department of Energy

After leading transition planning efforts from EM Headquarters, including development of the reorganization actions necessary to stand up the EM Los Alamos Field Office, Christine served as the interim site manager while a permanent manager was recruited and selected and led the new organization through a turbulent transition period. In this role, her leadership accomplishments spanned programmatic and organizational, regulatory, technical, acquisition and stakeholder matters. Significant examples include:

- Negotiation of sole-source, prime contract for environmental cleanup activities pending the competition of the future contract
- Development of the first lifecycle baseline update for legacy cleanup since 2008
- Negotiation and approval of a Memorandum of Understanding with the National Nuclear Security Administration (NNSA) Field Office, to delineate organizational responsibilities and authorities related to site activities
- Development of the Phase 2 organizational proposal for the EM Los Alamos Field Office, including detailed skills and strategic analysis, for long term program success
- Oversight of the EM budget for Los Alamos activities, including reallocation of FY 2015 funds to address emergent risks of problematic transuranic wastes and contaminated ground water issues, defense of the FY 2016 and formulation of the FY 2017 budget requests

- Led EM efforts to develop corrective action plan in response to the Accident Investigation Board reports on WIPP radiological release event
- Guided EM efforts to develop management and treatment strategies for nitrate salt bearing wastes, the waste stream involved in the WIPP radiological release
- Review and approval of all regulatory documents associated with Los Alamos Consent Order and Individual Permit for Stormwater Management, including development of the characterization and interim measures work plan for chromium plume and the associated Environmental Assessment
- Established a strong working relationship with the site regulator, New Mexico Environment Department, and helped to restore credibility to DOE following the significant regulatory non-compliances associated with the WIPP radiological release and Los Alamos permit violations
- Led EM efforts, in conjunction with NNSA, on the "extent of condition" reviews to identify range of regulatory noncompliance and safety issues
- Led planning and initial regulatory interactions with New Mexico Environment Department negotiation of Los Alamos Consent Order
- Represented DOE in interactions with neighboring Tribal Pueblos, including extensive consultation with Governor of Pueblo de San Ildefonso on development of groundwater monitoring well on Pueblo land and negotiation and signature of updated Memorandum of Understanding
- Extensive interactions with local governments and community organizations
- Extensive interactions with New Mexico Congressional delegates and staff

Associate Deputy Assistant Secretary (ADAS) for Waste Management February 2012-March 2016
Office of Environmental Management, U.S. Department of Energy

As the ADAS, Christine guided the focus and operations of three diverse technical offices -- Office of Disposal Operations, Office of Disposition Policy and Planning, and Office of Packaging and Transportation. Her responsibilities included

- development and implementation of waste treatment, transportation and disposal strategies and plans as well as leadership and advocacy for EM funded activities at nearly a dozen EM sites.
- implementation and oversight of several DOE Orders
- co-lead of a senior management effort to synthesize the transportation related orders between EM and the National Nuclear Security Agency.

The breadth of the office portfolio spanned uranium management, scrap metal management, low-level waste, transuranic (TRU) waste, and high level waste management, including the optimization of operations of over a dozen treatment and/or disposal facilities. Christine provided leadership to the National TRU Waste Management Program, which includes operation of the nation's sole geologic disposal facility. Her Office also maintains and risk-informs the technical requirements for disposal of high level waste and spent nuclear fuel and fulfills the Department of Energy's statutory responsibilities related to commercial low-level waste disposal, including development of a disposal facility for greater-than-class C low-level waste and the associated environmental impact analyses.

Christine also guided the human capital strategy for the Office of Waste Management, ensuring technical and professional staff is fully trained and capable of fulfilling the important missions of the office. Christine has recruited diverse technical staff over the last two years and diversified the skills and competencies of our Federal staff in order to ensure continued success despite the high rate of federal retirements from incumbent staff.

Director, Office of Disposal Operations May 2006-January 2012
Office of Environmental Management, US Department of Energy

As the Office Director, Christine directed and oversaw EM's complex-wide radioactive waste management efforts and led fifteen senior technical staff assigned to these activities. Christine developed policies, procedures and guidance for EM sites' high-level, transuranic, mixed and low-level waste disposition projects. Christine integrated site-specific project plans and conduct analysis on the complex-wide waste disposition system. Christine continuously reviewed projects to ensure compliance with regulatory requirements and the Department's radioactive waste management policies and also reviewed cost- benefit analyses and provided guidance on evaluation and selection of waste management alternatives.

In this role Christine;

- reviewed and approved annual execution plans related to waste disposition, including the treatment schedule for the Department's sole radioactive waste incinerator (the Toxic Substances Control Act Incinerator) and the shipping and disposal plans for the nation's sole geologic repository (the Waste Isolation Pilot Plant) and the Department's two regional low-level waste disposal facilities.
- continuously analyzed and monitored EM sites' baseline and contract plans to ensure wastes generated through environmental cleanup activities are safely and efficiently managed and disposed.
- led EM's efforts to identify problematic waste streams and develop treatment and disposal solutions.
- served as the primary liaison with the other Departmental organizations on planning for future high level waste disposal and repository planning and compliance.
- developed and maintained a partnership with the leading companies within the commercial radioactive waste management industry, including treatment vendors, brokers, transporters and disposal facilities.
- developed and maintained a strong working relationship with the key State and Federal regulators involved in radioactive waste management and interacted extensively with other Federal agencies, including the Environmental Protection Agency and the Nuclear Regulatory Commission.
- was responsible for the implementation of the Department's statutory responsibilities pursuant to the Low-Level Radioactive Waste Policy Act Amendments of 1985.

- directed and oversaw the development of the Environmental Impact Statement for the Disposition of Greater-Than-Class C Low Level Waste, and managed the Department's interactions with State and Regional Disposal Compacts.
- led the EM program's efforts to minimize volumes of wastes requiring disposal. These efforts include leadership of a complex-wide project to decontaminate and convert contaminated scrap metals recovered through cleanup activities, include a large inventory of high-value nickel. Additionally, Christine promoted utilization of alternate disposition methods, to reduce costs and enable project acceleration.

Director, Office of Commercial Disposition Options December 2003-May 2006
Office of Environmental Management, US Department of Energy

As the Office Director, Christine led a staff of ten technical professionals and directed and oversaw EM's low-level and mixed-low level waste efforts, complex-wide. The mission of this office was to identify opportunities to utilize commercial treatment and disposal capabilities to optimize Environmental Management waste management and site cleanup projects. Under her leadership, the office defined the inventory of problematic wastes requiring specialized treatment and disposal solutions. Christine convened and led two national conferences focused on these waste challenges. As a result, dozens of challenging waste streams were resolved and disposed. Additionally, a strong partnership among Federal and commercial waste managers was established.

This office also fulfilled the Department of Energy's statutory responsibilities related to the Low-Level Waste Policy Act. Christine testified before Congress on matters related to the disposition of greater-than-class C (GTCC) wastes. Following direction from the Secretary of Energy, her office assumed responsibilities for the development of the Environmental Impact Statement on the Disposal of GTCC wastes.

Manager, Corporate Project for Integrated/Risk-Driven Disposition of Spent Nuclear Fuel
Office of Environmental Management, U.S. Department of Energy July 2002-December 2003

As Project Manager, Christine led EM's efforts to develop an integrated, national plan for the interim storage and management of approximately 2,500 metric tons of spent nuclear fuel (SNF), a highly-radioactive waste stream. Christine led an integrated project team in the development of the Corporate SNF Disposition Strategy that will align the Department of Energy SNF-related activities with the national priorities of accelerated risk-reduction and cleanup, schedule acceleration and life-cycle cost reduction. Strategy development included the development of integrated project management tools – including integrated work breakdown structure, schedules, basis of estimate, and risk assessment. The content of these tools included the management of liquid high-level waste and certain excess special nuclear material inventories, because these wastes are also targeted for geologic disposal and must be integrated with the SNF project plans. The sum of these tools provides a framework for a Department-wide systems integration of all waste management and disposal activities.

Christine influenced Department of Energy policy through the development of recommendations related to the management and treatment of SNF. Christine identified alternatives to current waste

management strategies and developed baseline change proposals based on comprehensive costs/schedule benefit analysis that further optimize Department of Energy activities. Christine also provided recommendations regarding functional and managerial realignments required to incentivize continual schedule and cost improvements.

The proposed strategy supported additional risk reduction, schedule acceleration and cost savings beyond those identified in the EM Sites' accelerated cleanup plans. When fully implemented, the corporate strategy integrated the activities of four major Department of Energy organizations, and will significant strengthen the Department's waste management and disposal programs.

Program Analyst, Office of Site Closure – Rocky Flats Project Office July 1999-July 2002
Office of Environmental Management, US Department of Energy

As program analyst, Christine was responsible for the review, tracking and reporting of cleanup activities underway at the Rocky Flats Environmental Technology Site. Christine reviewed and analyzed the technical baseline and cost estimate for a $4 billion nuclear production site cleanup project. She co-developed a bottoms-up schedule – including the formulation of detailed work breakdown structure, project management plan, resource documentation and risk analysis – for technical activities required by the Department of Energy complex to support the execution and management of the Rocky Flats Closure Project. This effort was widely recognized by Congressional reviews and senior management within the Department. It entailed the coordination and integration of multiple sites and organizations within the Department, requiring the negotiation and reprioritization Department-wide resources.

Christine coordinated the use of earned value analysis in assessing the Site's execution of the approved baseline. Christine also monitored the project performance against the contract terms and goals, as well as the identified performance goals. Her analysis was considered in the contracting officers' assessment and determination of the contractor's fee earnings.

Christine also served as the Headquarters lead on four major remediation projects underway at the Rocky Flats Environmental Technology Site. Additionally, Christine was responsible for the integration of other projects at the site in support of accelerated cleanup – a major priority within the Administration.

Christine was responsible for the review of all major policy documents and development of policy positions, presentations and recommendations. Christine coordinated the activities of other staff necessary to monitor and execute the Rocky Flats Closure Project. Christine coordinated the use of earned value analysis in assessing the Site's execution of the approved baseline.

Budget Analyst, Office of Budget, Office of the Chief Financial Officer U.S. Department of Energy
June 1993-July 1999

As budget analyst, Christine provided financial oversight of the Office of EM (~$6.0B), the Office of Civilian Radioactive Waste Management (~$400M), and the Office of Environment, Safety and Health (~$150M) through continuous budgetary review and programmatic analysis. Christine understood and considered activities and priorities comprising these programs, as well as the external legislative and political drivers affecting them.

Her responsibilities in the areas of budget formulation included

- conducting in-depth analysis and presenting funding recommendations to the CFO and senior management
- providing guidance and authoritative advice to program personnel
- ensuring requests met the requirements of the U.S. Congress and the Office of Management and Budget (OMB).

In the execution of these responsibilities, Christine planned, modified and re-sequenced the work program of these major environmental programs.

Christine assisted in the development of policy related to the pricing of international spent nuclear fuel disposition activities, the documentation and justification of complex-wide nuclear materials management, and the coordination and allocation of complex-wide resources required to conduct environmental cleanup activities.

Her responsibilities in the area of program execution included the review and approval of contracts, programmatic reports, and Congressional correspondence and reports, as well as participation on various executive boards and work groups. She regularly represented the CFO on teams, in policy meetings and in coordination with Congress and OMB.

Christine has also formulated the proposals required to adjust formal work plans during execution, including very detailed reprogrammings and appropriation transfer actions. Christine has frequently been consulted on providing training on these processes, due to her experience and success.

Christine has monitored the execution of the programs, including a detailed assessment of project performance against project baselines and pre-defined goals and performance objectives.

Christine also conducted complex-wide in-field audits of budget and program execution, participated in budget drills to ensure proper management of federally appropriated funds. On multiple occasions, these audits provided the basis for Departmental policy and budget justification.

Christine often developed and provided presentations and training on the federal budget process and contributed to the development of the Department of Energy budget guidance.

EDUCATION

Mount Saint Mary's College, Emmitsburg, MD
Bachelor of English, magna cum laude, 1992

Federal Executive Institute, *Leadership for a Democratic Society*, Charlottesville, VA (2005)

Completed coursework in *Environmental Law; Project Management, Federal Financial Management; Cost Estimation and Project Validation*; and *Principles of Appropriation Law*

AWARDS AND HONORS

Richard S. Hodes Award for Innovation in LLW Management, from the SE Compact Commission (February 2011)

Secretary of Energy Pride Award

Recognition in the Congressional Record for contribution to closure of Rocky Flats

Outstanding National Achievement Award

Outstanding Performance Awards and Special Act Awards

College Honors Program graduate

Who's Who Among Students in American Colleges and Universities

OTHER LEADERSHIP ROLES

Advisory Board for Liberal Arts College, Mt. St. Mary's University (2014-present)

Adjunct Professor, Catholic University– Masters Program, Nuclear Environmental Protection (2014, 2012)

Chair, IAEA Project on Practical Illustration of Safety Case Methodology for Near Surface Disposal Facilities (PRISM)

Chair, IAEA Project on Constraints in Decommissioning and Environmental Remediation Programs (CIDER)

Chair, Planning Committee for International Conference on Decommissioning and Environmental Remediation Programs

Chair of various consultancies and working groups to address IAEA efforts in waste safety and waste technology projects

SUMMARY

- Over 40 years' experience in management, operations, and oversight of nuclear and chemical facility operations. This experience includes operations at DOE Category 2 nuclear facilities.
- In depth knowledge of U.S. Environmental Protection Agency "Resource Conservation and Recovery Act (RCRA)" and "Toxic Substance Control Act (TSCA)" regulations.
- Managed transition of waste treatment and disposal operations at the DOE Hanford Site to ensure continuity of service for onsite waste generators upon award of the Plateau cleanup contract to CHPRC.
- Developed multiple treatment strategies for orphan mixed radioactive waste streams facilitating disposition of waste streams from DOE sites around the complex.
- Experience with radioactive, mixed, and transuranic operations, packaging, transportation, and regulatory compliance evaluations to identify compliance and improvement for commercial nuclear treatment companies.
- Subject Matter Expert testimony for environmental remediation of radioactive, mixed, and transuranic wastes.
- Design, installation of soil and groundwater remediation programs at a variety of hazardous and radioactively contaminated sites utilizing a wide variety of technologies tailored to specific site conditions.

SECURITY CLEARANCE

Uncleared

EDUCATION

Bachelor of Science, Chemical Engineering
Stevens Institute of Technology, New Jersey

PROFESSIONAL EXPERIENCE

Independent Consultant, Knoxville TN

Management consulting for organizational structure, acquisition evaluation, efficiency/cost improvement, systems development, contract dispute resolution and management. Proposal support including technical approach, cost estimating, schedule development and Technical and Cost Volume for waste management and nuclear facility operations. Current projects include consultation to Oak Ridge National Laboratory on development of waste management

strategy for high activity transuranic waste.

Vice President, Manager of Projects, Nuclear Services
Perma-Fix Environmental Services, Knoxville, TN

Responsible for all aspects of the operation of the Nuclear Services Division, including proposal development, estimating, pricing, procedure and program development, project execution, personnel management and financial performance. Responsible for providing project controls, estimating and scheduling support for Nuclear Services and Waste Services projects.

Led company transition as part of the CH2M Plateau Remediation Company (CHPRC) cleanup team at the Hanford Site. Perma-Fix scope included operation of onsite waste treatment and disposal operations including managing TRU operations at T Plant (Cat 2 nuclear facility), and the Low-Level (LLW) and Mixed Low-Level (MLLW) burial grounds. Led the effort to develop a new strategy for offsite treatment of large CH-TRU containers at the Perma-Fix commercial nuclear facility. This strategy saved DOE over $350Millon by avoiding the cost of building new onsite treatment capabilities for CH TRU wastes.

Developed, engineered, and deployed technical solutions for complex mixed wastes generated during cleanup at government, commercial and international facilities. Examples included developing a system used at the Portsmouth Gaseous Diffusion Plant for down-blending highly enriched Uranium; Mercury (Hg) amalgamation mobile system for treatment of United Kingdom Elemental Hg wastes; and, a system to identify and remove Plutonium contaminated soils on a commercial industrial site.

Responsible for regulatory interfaces, plan development through regulatory approval for remediation of soil and groundwater at Perma-Fix owned sites, as well as Perma-Fix work at customer sites, including both hazardous and radioactive constituents of concern. Managed associated regulatory relationships through acceptance of final closure.

Senior Vice President
ATG Corporation, Oak Ridge TN and Richland WA

Responsible for marketing, sales, strategic planning and material stewardship. Responsible for the full-service radioactive, wet waste processing, equipment and remediation facilities in Tennessee. Responsible for field service operations in the commercial nuclear power and decommissioning arenas. Overall management of the Richland, WA facility, including all aspects of the Low Level and Mixed Radioactive Waste processing facilities, including physical completion and startup of Non-Thermal and Thermal Mixed Waste operations.

Chief Operating Officer

Med Images, Inc., Knoxville, TN

Managed all operations for this image-based, integrated medical documentation and information management startup. Developed software to prolong the life of installed technology.

Consultant
KRR Group

Provided senior level management and technical consulting support to companies involved in industrial manufacturing and services.

Chief Operating Officer
Quadrex Corporation, Oak Ridge, TN

Responsible for all operating divisions of this Corporation, including environmental, nuclear waste processing and nuclear engineering divisions. Responsible for over 500 engineering, technical, health and safety, quality assurance, regulatory compliance, operations, maintenance and accounting personnel. Responsible for turnaround and ultimate success of Quadrex's full-service nuclear decontamination facility in Oak Ridge, TN. The facility operations, governed by radioactive materials licenses in highly regulated and audited industries, served the nuclear power, DOE, and commercial nuclear waste industries.

Plant Manger
FMC Corporation – Chemicals Group

Managed multiple U.S. and international chemical plants.

CERTIFICATIONS, AWARDS, AND TRAINING

- Patent – US9,381,552B1 Method and Apparatus for Recovery of Subsurface Free Mercury and Decontaminating a Substrate
- Radworker II

KATHRYN ROBERTS

EXPERIENCE SUMMARY

Ms. Roberts is a recognized regulatory and public outreach expert with more than 16 years of environmental compliance and technical expertise related to regulatory compliance (e.g., RCRA, CERCLA, NEPA). In addition to serving as a cabinet-appointed regulatory division director, her experience includes 12 years managing, coordinating and communicating between State and Federal agencies (EPA, DOE), Congressional delegation, State legislators and a wide range of stakeholders, including activist groups and local Indian Pueblos. In addition to regulatory compliance and outreach, Ms. Roberts performed within QA/QC/CAS programs at Los Alamos National Laboratory (LANL), and has extensive environmental remediation field experience in New Mexico and New York State.

DETAILED EXPERIENCE

Senior Associate– Longenecker & Associates, Inc.

January 2017- present

January 2017 – June 2017: Public Outreach Liaison for one of the four Deep Borehole Field Test (DBFT) sites awarded by DOE. The DBFT project was designed to study the feasibility of engineering deep boreholes. One of the field test's main purposes was to collect data on the type of rocks, the chemistry of the water, the depths to these rocks and water, the temperature of the rocks and other geologic data to see if nuclear waste disposal would be feasible in this kind of geology. Ms. Roberts was responsible for planning and managing the public outreach activities for the project. She routinely responded to stakeholder inquiries; developed public meeting presentations, coordinated with NM State legislators, local municipal leaders and business owners; and consistently responded to media inquiries.

Director, Resource Protection Division – New Mexico Environment Department (NMED)
Santa Fe, NM

January 2015-January 2017

Performed oversight of four Bureaus (Hazardous Waste; Solid Waste, Petroleum Storage Tanks; DOE-Oversight) comprising the Resource Protection Division of the New Mexico Environment Department (NMED). Oversaw regulatory oversight of generators and owners/operators of RCRA permitted facilities, all owners/operators of solid waste facilities, all owners/operators of underground and aboveground petroleum storage tanks, and independent air, water and soil sampling at federal facilities (Los Alamos National Laboratory (LANL), Sandia and Waste Isolation Pilot Plant) to support both federal and state regulatory decisions. Was also the New Mexico representative to the Rocky Mountain Low Level Radioactive Waste Board.

- Primary liaison for the Resource Protection Division with local stakeholders, community groups, regulated entities, State legislators and New Mexico's Congressional delegation on a wide range of environmental compliance issues associated with hazardous waste management and storage facilities. Interactions occurred on a daily basis.
- Frequently requested to present at State Legislative Committees, community meetings and to the public to address hazardous waste management, waste storage and related implementing laws and regulations.

- Successfully negotiated/implemented the following:
  - Settlement agreements between the State of New Mexico and the DOE for both LANL and WIPP for violations of RCRA.
  - Oversaw development of the Work Plans and Scope and Guidelines documents for the Supplemental Environmental Projects and Triennial Reviews at WIPP and LANL.
  - 2016 Compliance Order On Consent (Consent Order) for LANL legacy cleanup.
  - Cooperative Agreement and Memorandum of Agreement with the United States Air Force for $750K in supplemental fees to fund NMED staff.
  - Settlement of legal mediation with Western Refining, Inc.

Group Leader – Los Alamos National Laboratory (LANL)-Environmental Programs
Los Alamos, NM

September 2010-December 2014

Served as Group Leader for the Regulatory Support and Performance group within the Associate Directorate for Environmental Programs (ADEP) at LANL. Responsible for interpretation, development and implementation of regulatory programs under RCRA and the Clean Water Act (CWA) including strategic direction and implementation. Managed performance evaluations and work assignments for 20 people. Managed regulatory support and deliverable compliance for legacy cleanup work conducted under the Consent Order, CWA and the processing and shipping of hazardous waste associated with those projects. Acted as primary liaison between LANL, state agencies and stakeholders including elected officials, community groups, and Native American Pueblos bordering LANL on a wide range of environmental compliance issues. Negotiated with state and federal agencies (e.g., NMED, DOE, and EPA) on technical and regulatory issues related to environmental cleanup. Provided regulatory support and expertise for remediation projects across LANL. Managed the Quality Assurance (QA) and Contractor Assurance programs and staff for ADEP. Managed budget, schedule, cost commitments and resource planning.

Supervisor – New Mexico Environment Department (NMED)-Hazardous Waste Bureau
Santa Fe, NM

May 2004-September 2010

Supervised four project leaders on corrective action under the Consent Order and permitting activities for LANL and White Sands Missile Range under the RCRA. Reviewed all assigned permit applications, permit modification requests, corrective action work plans, corrective action reports, and other documents submitted by LANL for evaluation of technical adequacy. Drafted correspondence such as, Notices of Deficiency, letters of approval and disapproval regarding technical and regulatory adequacy issues, Notices of Violation, and other compliance and enforcement documents. Inspected, toured, and consulted with LANL regarding various corrective action sites. Frequent interactions and meetings between DOE (and its contractor).

Environmental Compliance Analyst – Hawk Engineering, P.C.
Binghamton, NY

June 2001-November 2003

Completed Environmental Assessment Forms, Draft Environmental Impact Statements (DEIS) and Phase 1 Environmental Site Assessments; performed annual inspections for landfills involved in post-closure care activities and supervised drilling operations, evaluated soil samples and supervised installation of

groundwater monitoring wells.

EDUCATION

Master of Science, Environmental Management, 2011, Duke University
Bachelor of Arts, Environmental Geography, 2001, Colgate University

SPECIAL TRAINING

- OSHA-40 Hour Hazwoper
- RCRA Hazardous Waste Regulations
- Former Q Clearance

SUMMARY

- 30 years of quality assurance, auditing, and quality control experience at commercial, industrial, institutional, and US DOE nuclear facilities and activities
- 30 years of successful implementation of various QA Programs in order to reduce risk of personnel injury and equipment failure
- 29 years of DOE construction experience including:
  - Development of the quality program for Spallation Neutron Source Target Systems' group,
  - over-sight of all SNS conventional facilities construction and engineering performed by Jacobs Construction Company and its subcontractors leading to successful startup and operation of the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL)
- NQA-1 certified Lead Auditor identifying organizations' vulnerabilities for 30 years
- 5 years of QA over-sight of Waste Management/Waste Disposition, and D&D Projects at East Tennessee Technology Park, including Melton Valley Hydrologic Isolation cap construction at ORNL
- Implementation of QA Programs for all construction, and operations support at Transuranic Waste Processing Facilities
- Numerous Commercial Grade Surveys and Vendor Site Source Verifications as part of Commercial Grade Dedication for NQA-1 Category II Nuclear Systems, Structures, and Components
- Over 100 Supplier Quality Evaluations and inspections at subcontractor's sites in Europe and North America
- Project management and project controls responsibilities with relation to planning, estimating, scheduling, cost control, as well as coordination of industrial projects
- Implementation of construction and fabrication codes and standards including ACI, ASTM, ASME Section VIII B&PVC, AWS D1.1, AWS D1.6, ASME B31.3, ASME B31.1 and ISO 9001Standards.

SECURITY CLEARANCE

Current DOE "Q" Clearance

EDUCATION

University of Tennessee
Bachelor of Science – Sciences

University of Tennessee
Master's Program Courses - Statistics

Kennedy Western University
Reliability Engineering Courses

U.S. Navy Reserve
Honorable Discharge

PROFESSIONAL EXPERIENCE

QUALITY CONSULTANT
Knoxville, TN

Perform full programmatic audits, small scale "snap shot" surveillances, nuclear commercial grade surveys, commercial grade item dedication, source verification, and readiness reviews to identify organizational vulnerabilities so that management can mitigate risks in order to improve safety and performance. Auditing standards used include DOE 414.1D, ISO 9001:1994, 2000, 2008 (QMS) and NQA-1 since 1989. Codes include 10CFR 830 Subpart A, 10 CFR 835, and ASME Section VIII B&PVC (QCS).

QUALITY ENGINEER, INSPECTION LEAD
TRANSURANIC WASTE PROCESSING CENTER (TWPC), OAK RIDGE, TN

Responsible for administering and overseeing QA Program implementation and compliance for construction projects at ETTP, Y12, and ORNL. Performed numerous vendor source verifications of non-NQA-1 suppliers and witnessed factory acceptance tests for unique equipment for installation in facilities with failing infrastructure.

Responsible for administering and overseeing QA Program implementation and compliance for storage, disposition, and shipping of CH-TRU, RH-TRU, Newly Generated, legacy and MLLW, and site construction. Lead Auditor for audits of TWPC QA Program including elements of the WIPP Waste Acceptance Criteria (WAC). Responsible for auditing to requirements NQA-1, 10 CFR 830.122, and DOE O 414.1D for TWPC Operations, SWSA-5, Melton Valley Sludge Project, and all other construction/fabrication projects and commercial grade dedication.

QA PROJECT MANAGER II – WASTE MANAGEMENT
WASTE MGMT/WASTE DISPOSITION (BECHTEL JACOBS CO. LLC) OAK RIDGE, TN

Responsible for administering and overseeing QA Program for D&D, storage, disposition, and shipping of CH-TRU, RH-TRU, Newly Generated, legacy and MLLW. Maintained NQA-1 Lead Auditor status through this period.

QA PROJECT MGR II/ QC ENGINEER – CAP CONSTRUCTION
MELTON VALLEY HYDROLOGIC ISOLATION PROJECT (BJCLLC), OAK RIDGE, TN

Responsible for inspecting ongoing construction by BJC and its subcontractors for D&D Projects under Civil and Structural codes, standards, drawings and specifications. Additional responsibilities included managing the QA Subcontractor performing Title III Inspection of construction; as well as serving as subcontract coordinator, responsible for performing accruals, writing daily reports, approving invoices for payment, STAR data base input, and final contract closeout. Closure of environmental caps was successful with DOE, EPA, and TDEC all approving final disposition.

QA PROJECT MANAGER II – REMEDIAL ACTION
ETTP CLOSURE (BJCLLC), OAK RIDGE, TN

Responsible for overseeing the BJC asbestos abatement contractor, Duratek Federal Services, and other subcontractors' quality assurance programs and administrative controls for K-25 building demolition and remedial action projects.

SENIOR TECHNICAL STAFF - QUALITY ASSURANCE REP
SPALLATION NEUTRON SOURCE (UT-Battelle), OAK RIDGE, TN

Responsible for writing and managing quality assurance program and administrative controls for design, fabrication, and construction of equipment associated with the Target Systems' portion of the SNS Project. Providing over-sight of the conventional facilities group and field implementation of subcontractors' construction QA/QC programs including approval of technical specifications, drawings, and calculations. Responsible for performing numerous evaluations and audits of prospective suppliers in the USA, Canada, and Europe to requirements including ISO 9001, NQA-1, ASME B&PVC, and 10CFR 830.120. Validated the execution of WBS cost account plans and schedule commitments using P3 and MS Project. Training all personnel to the QA, ASME, ACI, and ANSI administrative controls. Interfaced directly with diverse disciplines including scientists, engineers, project controllers, procurement, manufacturers, and fabricators. Performed shop inspections, validation of tests, weld inspection oversight, and supplier audits of vendors in the United States and Europe. Operated metrology equipment such as CMM, optical comparator, micrometers, and other equipment in order to verify adequacy of fabricated components. Other responsibilities: tracking, trending, and closing issues within the Target Systems design group. Over-laid the

QA Program for the Target Test Facility to prove that Mercury (Hg) can be safely pumped through a piping loop through electrical transients, leading to successful proof for the SNS Target System operation.

TRU/SNF QA OFFICER – WASTE MANAGEMENT AND REMEDIAL ACTION DIVISION
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN

Responsible for managing compliance assurance through NQA-1 audits of 42 nuclear facilities. Developed compliance programs & NQA-1 Quality Assurance Project Plans (QAPjP) for ORNL Transuranic Waste Operations working with WIPP QA Staff in Carlsbad, as well as the RW-0333P QA program for National Spent Nuclear Fuel Program. Provided QA approval of design drawings, specifications & calculations for various Waste Management Projects. Participated on numerous start-up & readiness review teams interfacing with central engineering & Department of Energy (DOE). Involved in commercial grade dedication for liquid storage instrumentation. Developed lesson plans and provided training to Division personnel. Worked within the issues management system (ESAMS) to close numerous issues and corrective actions.

Lockheed Martin Energy Systems (LMES) ASME SECTION VIII CODE MANAGER
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN

Assigned to manage LMES ASME Section VIII Code Program and lead the program through two successful renewals of ASME "R" and "U" stamps. Responsibilities included tracking expenditures through cost accounts, scheduling all activities including pressure vessel design, manufacturing plan development, material receipt, welding, AI hold-points, and reviews. Performed over-sight of fabrication of pressure vessels. Provided technical support to ORNL Quality Director.

DEPARTMENT MANAGER/QUALITY MANAGER
LOCKWOOD GREENE ENGINEERS, INC., OAK RIDGE, TN

Began as an estimator primarily for DOE CERCLA and CAPCA projects. Appointed to positions including Manager of Specifications, Data Processing, Quality Assurance Departments. Implemented NQA-1, DOE O 5700.6A and B, construction codes and standards and various industrial Quality assurance programs. Developed, reviewed, and approved CSI specifications for industrial (Boeing, Saturn), government (DOE), and institutional (Oak Ridge Schools) clients. Developed and administered Issue Management system to track, close, and trend issues.

CERTIFICATIONS, AWARDS, AND TRAINING

MEMBERSHIPS

- American Society for Testing and Materials (25 YEARS)
  (Secretary of Committee C26 on Nuclear Fuel Cycle)
- American Society for Quality (26 YEARS)
  (Past Chair of Local Chapter 1105)
- American Welding Society

TRAINING/CERTIFICATIONS/PROFICIENCIES

Customer/Supplier Relationships (ASQ)
Kepner Trego (Problem Solving/Decision Making)
Seven Habits Workshop
Basic Instructor Training
ISO 9001 Lead Auditor Training
Certified Lead Auditor Since 1989
Hazwoper
Radworker II
Yellow Belt
VPP Advocate
Certified Auditor for DOE Consolidated Audit Program

Commercial Grade Item Dedication (CGID)
Commercial Grade Surveys and Source Verification:
MBRAUN Corporation (Safety Class Gloveboxes)
MetFab Fabrications (Glovebox Shell Fabrication)
ABC Testing (BBA Leak Testing)
Leak Testing Specialists (Helium Leak Test)
SAS Industries (O-rings and gaskets for Gloveboxes)
Visible Edge (Seismic Design)
Westlake Plastics (Glovebox Windows)
Sigma Power Plant Components (Dedication of swagelok fittings)
Thermo Fisher Scientific (PTFE)
Ithaca Material Research (IMR) (Laboratory Analysis)
Massachusetts Material Research (MMR) (Laboratory Analysis)
Perine Danforth Fasteners

Supplier Audits:
Air Liquide - Grenoble, France (SNS Refrigeration System)
Pilkington British Shielding Windows – Northern Wales (Solid Leaded Hot Cell Windows)
Phonix Armaturen, Volkmarsen, Germany (SNS Valves hydrogen service)

Flow Serve (Valves)
Mid-Columbia Engineering (MCE) (Shielding Blocks)
Edderer Cranes (Target Building Crane)
PaR Systems (Remote manipulator for SNS Hot Cell and TWPC HC)
Eaton Corporation (Motor Control Centers, MCC)
Global Power Components (MCC enclosures)
Avantech (Piping and equipment Skids)