Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221
July 12, 2022

Mr. Rick Shean, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

Subject: Response to the Referenced Technical Incompleteness Determination - Non-Asterisked Items, Waste Isolation Pilot Plant Hazardous Waste Facility Permit Number: NM4890139088-TSDF

Reference 1: New Mexico Environment Department correspondence from Rick Shean, Chief, Hazardous Waste Bureau, to Reinhard Knerr, Manager, and Sean Dunagan, President and Project Manager; Subject: Technical Incompleteness Determination Permit Renewal Application, Waste Isolation Pilot Plant, EPA I.D. Number NM4890139088, dated May 13, 2022

Reference 2: Permittees' letter CBFO:ERCD:MG:MC:22-0225:UFC 5487.00 from Reinhard Knerr, U.S. Department of Energy Carlsbad Field Office, and Sean Dunagan, Nuclear Waste Partnership LLC, to Rick Shean, Chief, Hazardous Waste Bureau; Subject: Response to the Referenced Technical Incompleteness Determination – Asterisked Items, Waste Isolation Pilot Plant Hazardous Waste Facility Permit Number: NM4890139088-TSDF, dated June 27, 2022

Dear Mr. Shean:

Enclosed is the Permittees' response to the referenced (Reference 1) Technical Incompleteness Determination (TID) for non-asterisked items. Additional information to the Permittees' June 27, 2022 response to TID asterisked items (Reference 2) 35* and 36* is also included.

We certify under penalty of law that this document and all enclosures 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. Ed. Garza at (575) 234-8368.

Sincerely,

Reinhard Knerr
Manager
Carlsbad Field Office

MARK PEARCY (Affiliate)
Digitally signed by MARK PEARCY (Affiliate)
Date: 2022.07.12 15:03:12 -06'00'

Sean Dunagan
President and Project Manager
Nuclear Waste Partnership LLC

Enclosures (3)

cc: w/enclosures
R. Maestas, NMED * ED
D. Biswell, NMED ED
M. McLean, NMED ED
CBFO M&RC
*ED denotes electronic distribution

Response to Technical Incompleteness Determination

On May 13, 2022, the New Mexico Environment Department (NMED) requested information regarding the Permittees' Renewal Application. Below are the Permittees' responses to the items not marked with an asterisk. Initial responses to Items 35 and 36 were provided to the NMED in a June 27, 2022 letter from the Permittees. Subsequently, NMED made a verbal request for some additional information. The additional information to the Permittees' June 27, 2022, responses to Technical Incompleteness Determination (TID) asterisked Items 35* and 36* is also included pursuant to the NMED's verbal request. Direct quotations are in italicized text.

2. Please provide a breakdown, itemized annually, of the emplacement schedule through the proposed operating period closure date of WIPP, as bound by the volume limits set by the LWA, to provide justification for this date.

RESPONSE: The Permittees are not proposing a final closure date for inclusion in the Permit (refer to the Permittees' June 27, 2022, response to TID Item 1). However, in the interest of providing the NMED with information, an example emplacement schedule, based on publicly available information from the WIPP home page, is provided:

As of July 2, 2022, the WIPP facility has emplaced (disposed) 71,489.25 cubic meters (m^3) of Land Withdrawal Act (LWA) transuranic (TRU) waste volume. This information is from a recent Waste Data System (WDS) Weekly Status Report (see screen shot below).

The WDS Weekly Status Report is found at the following link:

https://www.wipp.energy.gov/general/GenerateWippStatusReport.pdf

REPOSITORY

Emplaced Waste	Panel 1 CLOSED	Panel 2 CLOSED	Panel 3 CLOSED	Panel 4 CLOSED	Panel 5 CLOSED	Panel 6 CLOSED	Panel 7 ACTIVE	Total
# of 55-GALLON DRUMS	38,139	23,865	8,394	12,858	21,255	12,317	14,775	**131,603**
# of STANDARD WASTE BOXES	1,239	3,176	1,730	1,405	2,200	3,033	767	**13,550**
# of TEN DRUM OVERPACKS	35	1,451	2,227	1,048	788	459	993	**7,001**
# of 85-GALLON DRUM - TALLS	2	0	0	3	0	0	0	**5**
# of 100-GALLON DRUMS	0	1,278	5,409	11,050	9,951	6,546	1,958	**36,192**
# of STANDARD LARGE BOX 2S	0	0	0	0	0	220	19	**239**
# of REMOVABLE-LID 72-B	0	0	0	198	246	239	18	**701**
# of FIXED-LID 72-B CANISTERS	0	0	0	0	18	0	0	**18**
# of SHIELDED CONTAINERS	0	0	0	0	0	9	47	**56**
TMW CH container volume (m^3)	10,496.65	17,997.67	17,092.06	14,257.54	15,926.93	14,467.39	9,897.66	**100,135.90**
TMW RH container volume (m^3)	0.00	0.00	0.00	176.22	234.96	214.60	25.89	**651.67**
TMW Total Volume (m^3)	**10,496.65**	**17,997.67**	**17,092.06**	**14,433.76**	**16,161.89**	**14,681.99**	**9,923.55**	**100,787.57**
LWA CH container volume (m^3)	7,563.33	13,102.55	9,862.75	10,419.86	12,112.52	11,427.82	6,638.68	**71,127.52**
LWA RH container volume (m^3)	0.00	0.00	0.00	84.24	153.37	112.99	11.13	**361.73**
LWA Total Volume (m^3)	**7,563.33**	**13,102.55**	**9,862.75**	**10,504.10**	**12,265.89**	**11,540.81**	**6,649.81**	**71,489.25**

TMW – TRU Mixed Waste volume as defined in the WIPP Hazardous Waste Facility Permit section 1.5.21
LWA – Land Withdrawal Act volume as defined in the WIPP Hazardous Waste Facility Permit section 1.5.22

The Permittees started receiving TRU waste shipments in March 1999 for emplacement. The period from March 1999 through June 2022 is approximately 23.25 years. The historical facility emplacement rate is as follows:

(71,489.25 m^3 / 23.25 years) = 3,074.8 $\frac{m^3}{yr}$

The WIPP LWA total capacity limit for TRU waste is 6.2 million cubic feet (ft^3) (175,564 m^3). The remaining LWA TRU waste volume, which is eligible to be emplaced at WIPP is as follows:

(175,564 m^3) – (71,489.25 m^3) = 104,074.8 m^3

If the historical facility emplacement rate is maintained throughout the operating period to accommodate the remaining LWA TRU waste volume, then the operating period from June 2022 can be no shorter than the following:

$$(104{,}074.8\ m^3)\ x\ \left(\frac{year}{3{,}074.8\ m^3}\right) \cong 34\ years$$

Therefore, one possible emplacement schedule is a constant rate of 3,074.8 m^3/year through CY2056.

However, the actual annual WIPP waste emplacement rate is variable as it depends upon waste generation/characterization activities at respective generator/storage sites, including anticipated

facility availability. The Annual Transuranic Waste Inventory Report (ATWIR) Table 4-4 indicates that waste streams categorized as WIPP-bound will be generated up to CY2070 and waste streams categorized as potential will be generated up to CY2083.

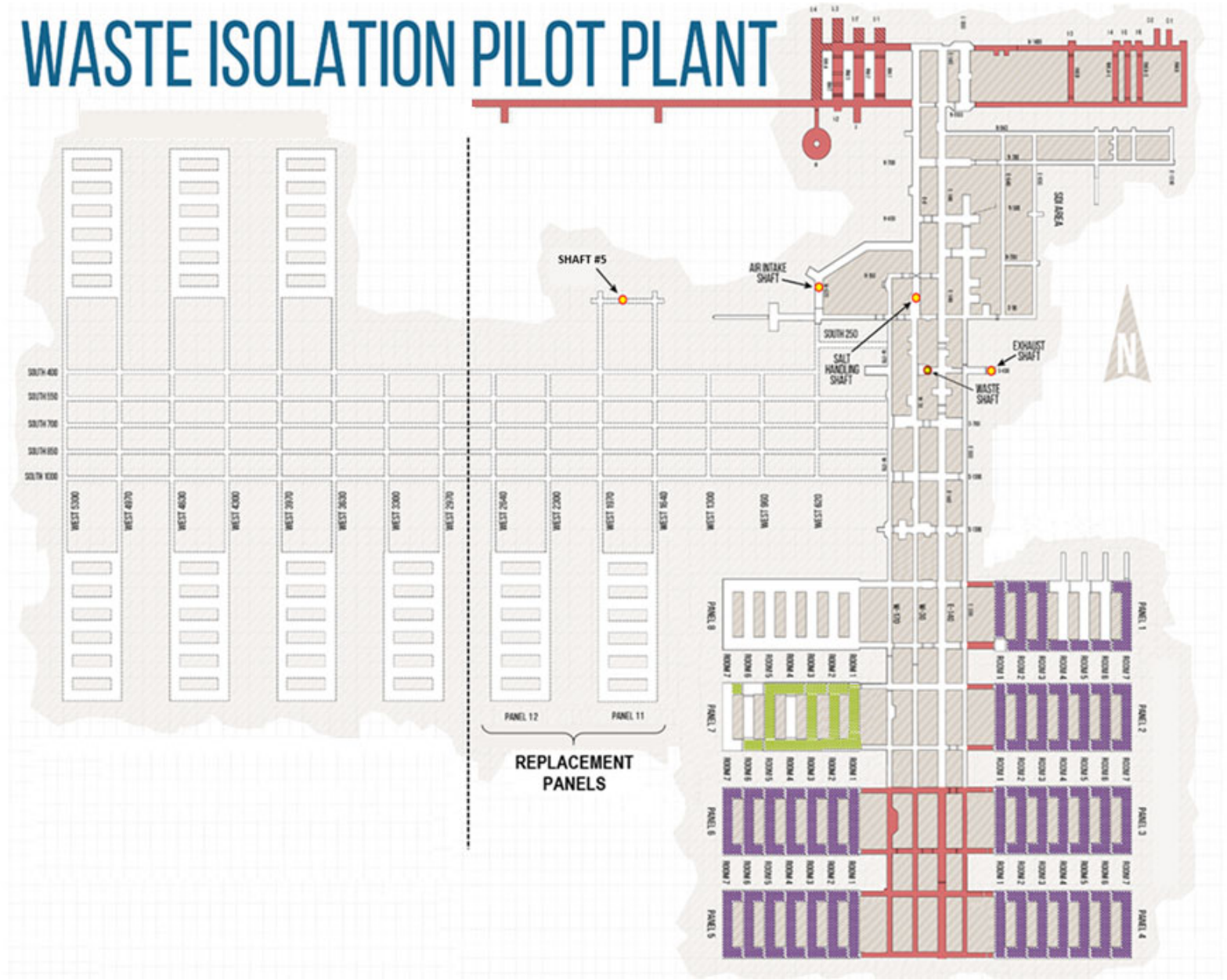
Emplacement rates are anticipated to peak at some point and then gradually decline as the stored TRU waste inventory at generator/storage sites is depleted.

3. Please provide a schematic of the conceptual plan for the anticipated final facility footprint.

RESPONSE: The Permittees did not propose a facility footprint beyond replacement Panels 11 and 12 in the updated Redline Strikeout (RLSO). The Permittees object to any inclusion or reference to a final facility footprint beyond Panels 11 and 12 in the Administrative Record for Renewal, since a conceptual anticipated final facility footprint first requires *National Environmental Policy Act* (NEPA) action pursuant to 10 CFR 1021.210, *DOE decisionmaking*.

The Permittees provided a layout for the underground repository in the updated RLSO. This layout includes Panels 11 and 12. The Permittees are only requesting authorization for construction and use of Panels 11 and 12. However, Panels 11 and 12 will not accommodate the LWA total volume capacity. Additional panels beyond Panels 11 and 12 would be subject to a future Class 3 Permit Modification Request (PMR).

The U.S. Department of Energy (DOE) is planning NEPA action to evaluate continued operation for disposing defense TRU waste, up to the LWA volume capacity limit, which includes panels beyond Panels 11 and 12. A conceptual plan with an anticipated final facility footprint may be available depending upon the NEPA decision. However, in the interest of providing the NMED with information, the Permittees provide the following pre-decisional conceptual illustration of a footprint as an example:


WASTE ISOLATION PILOT PLANT
SHAFT #5
AIR INTAKE SHAFT
SOUTH 250
SALT HANDLING SHAFT
EXHAUST SHAFT
WASTE SHAFT
N
SOUTH 400
SOUTH 550
SOUTH 700
SOUTH 850
SOUTH 1030
WEST 5300
WEST 4970
WEST 4630
WEST 4300
WEST 3970
WEST 3630
WEST 3300
WEST 2970
WEST 2640
WEST 2300
WEST 1970
WEST 1640
WEST 1300
WEST 960
WEST 620
PANEL 12
PANEL 11
REPLACEMENT PANELS
PANEL 8
PANEL 7
PANEL 6
PANEL 5
PANEL 1
PANEL 2
PANEL 3
PANEL 4

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4. Please provide the most current anticipated physical capacity (Final TRU Mixed Waste Volume) needed for underground hazardous waste units, above and beyond Panels 11 and 12, both over the next ten years and at final facility closure.

RESPONSE: The Permittees did not propose a facility footprint beyond replacement Panels 11 and 12 in the updated RLSO. The Permittees object to any inclusion or reference to a final facility footprint beyond Panels 11 and 12 in the Administrative Record for Renewal, since a conceptual anticipated final facility footprint first requires NEPA action pursuant to 10 CFR 1021.210, *DOE decisionmaking*.

The Permittees provided a layout for the underground repository in the updated RLSO. This layout includes Panels 11 and 12. The Permittees are only requesting authorization for construction and use of Panels 11 and 12. However, Panels 11 and 12 will not accommodate the LWA total volume capacity. Additional panels beyond Panels 11 and 12 would be subject to a future Class 3 PMR.

Over the next ten years (2023 to 2033), Panels 8, 11, and 12 are required. Subsequent panels may have to be finished and be ready for emplacement (mined, outfitted, certified, and permitted) before the end of this ten-year period pending the NEPA decision. These subsequent panels are not authorized, are not being requested at this time, and are not the subject of this renewal application.

5. Please provide analyses demonstrating how WIPP structures, both surface and underground, can be safely maintained and operated through the proposed closure date.

RESPONSE: The DOE requires that DOE property be maintained in accordance with applicable DOE orders and directives. In response to this request, the Permittees provide the following analysis.

DOE Order 430.1C, *Real Property Asset Management*, is applicable to the surface structures at the WIPP facility. This directive establishes an integrated corporate-level, performance-based approach to the life-cycle management of real DOE property assets. It links real property asset planning, programming, budgeting, and evaluation to the DOE's multi-faceted missions. Successful implementation of this order enables the DOE to carry out stewardship responsibilities, and ensures that facilities and infrastructure are properly sized and in a condition to meet their mission requirements today and in the future.

The Order specifically addresses maintenance in Section 4.c., *Sustainment*. The Order states the following:

> *DOE real property assets must be sustained by maintenance, repair and renovation activities to ensure: mission readiness; operational safety; worker health, environmental protection and compliance; security; and property preservation to cost-effectively meet program missions. DOE elements must:*
>
> (1) *maintain real property assets, including the mechanical and electrical systems that are installed as part of basic building construction and are essential to the normal functioning of the facility, in a condition suitable for its intended use;*

Examples of “renovation activities” include the Permanent Ventilation System (PVS) upgrades and the integrated fire water loop, both of which are currently being constructed.

The underground infrastructure is maintained as described in the Permit. For example, geotechnical monitoring is described in Permit Attachment A2, Section A2-5b(2).

> *A2-5b(2) Geomechanical Monitoring*
>
> *The geomechanical monitoring program at the WIPP facility is an integral part of the ground control program (See Figure A2-13). HWDUs, drifts, and geomechanical test rooms will be monitored to provide confirmation of structural integrity. Geomechanical data on the performance of the repository shafts and excavated areas will be collected as part of the geotechnical field-monitoring program. The results of the geotechnical investigations will be reported annually. The report will describe monitoring programs and geomechanical data collected during the previous year.*

Results of geotechnical monitoring are assessed to determine where underground maintenance/ground control is required. The Permit also requires visual inspection of the underground area and applicable maintenance.

Furthermore, the WIPP implements an extensive ground control inspection and maintenance program as described in Permit Attachment A2, Section A2-2a:

> *A2-2a Geologic Repository Design and Construction*
>
> *The ground-control program at the WIPP facility mitigates the potential for roof or rib falls and maintains normal excavation dimensions, as long as access to the excavation is possible.*

In addition, Permit Attachment E, Table E-1, requires inspection of underground openings, roof bolts, and travel ways, and inspection of the Exhaust Shaft.

6. Please provide a plan and budget for WIPP transportation routes through the operating period closure date of WIPP.

RESPONSE: The Permittees provided the applicable facility traffic pattern information, pursuant to 20.4.1.900 NMAC (incorporating 40 CFR 270.14(b)(10)). This information is in the updated RLSO, Permit Attachment A3. The Resource Conservation and Recovery Act (RCRA) regulations address waste transport traffic patterns within the hazardous waste management facility. These regulations are not applicable to transport routes to the WIPP facility, nor do they address funding for these routes. Permitted facilities are not expected nor required to include maintenance of public right-of-ways. It is the responsibility of the US and State Department of Transportation to design, build, and maintain public highways. The New Mexico Department of Transportation maintains the transport routes within New Mexico to the WIPP facility. The DOE worked directly with all transportation corridor States and State Regional Groups to designate specific routes. The Permittees object to any inclusion or reference to funding for WIPP transportation routes to the facility in the Administrative Record for Renewal.

7. Please discuss how the proposed end date of the operating period for the WIPP facility will impact the public along WIPP transportation routes.

RESPONSE: The Permittees only accept TRU mixed waste from authorized transporters. Requirements applicable to transporters of hazardous waste are found in 20.4.1.400 NMAC (incorporating 40 CFR Part 263). According to 20.4.1.400 NMAC (incorporating 40 CFR 263 Subpart C), discharges of hazardous waste during transportation are the responsibility of the transporter and not the treatment, storage, or disposal facility. There is no RCRA requirement to address transportation routes beyond those roadways and transport routes that are within the facility boundary. The Permittees object to any inclusion or reference to transportation routes to the facility in the Administrative Record for Renewal. However, in the interest of providing the NMED with information regarding impact to the public along WIPP transportation routes outside the facility boundary, the Permittees provide the following:

The WIPP Final Environmental Impact Statement (FEIS) and two Supplemental Impact Statements (SEIS-I and SEIS-II) evaluated transportation risks. The SEIS-II, Vol II, Appendix E, *Transportation*, provides a comparison of impacts across different action alternatives, which considered shipping campaigns that extended beyond CY2100.

8. Please provide a list of risk analyses for human health and the environment proceeding from the proposed date of the operating period for the WIPP facility (i.e., title of document, date conducted); please provide the referenced studies upon request.

RESPONSE: The Permittees are not proposing a final closure date for inclusion in the Permit (refer to the Permittees' June 27, 2022, response to TID Item 1). This request is overly broad and could include analyses under other regulatory authorities (*e.g.*, NEPA). The list provided includes risk analyses conducted in support of the Permit, as well as documents that contain risk analyses or exposure assessments that are applicable to the WIPP facility, are associated with the original Permit Application, Renewal Application(s), and the Permit.

- U.S. Department of Energy, Carlsbad Area Office, Waste Isolation Pilot Plant, RCRA Part B Permit Application, DOE WIPP 91-005 Revision 6, May 29, 1996. (Chapters D and I and Appendices).

- U.S. Department of Energy, Carlsbad Area Office, *Final No-Migration Variance Petition*, DOE/CAO-96-2160 June 18, 1996, Carlsbad, New Mexico (Chapter 5).

- U.S. Department of Energy, Carlsbad Area Office, Waste Isolation Pilot Plant Safety Analysis Report (DOE/WIPP-95-2065, Rev. 1, Carlsbad, NM, April 1997.

- U.S. Department of Energy, Carlsbad Area Office, Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement Volume I, Chapters 1-6, DOE/EIS-0026-S-2, September 1997, Carlsbad, New Mexico.

- U.S. Department of Energy, "WIPP Safety Analysis Report," DOE/WIPP-95-2065. Rev. 4, 1999, Washington, D.C.

- U.S. Department of Energy. "WIPP Remote-Handled Waste Preliminary Safety Analysis" (RH PSAR), 2000. Washington, D.C.

- U.S. Department of Energy, Carlsbad Field Office, Title 40 CFR Part 191: Subparts B and C Compliance Recertification Application for the Waste Isolation Pilot Plant, 10 vols. DOE/WIPP 2004-3231, March 2004 Carlsbad, NM.

- U.S. Department of Energy (DOE). 2009. Title 40 CFR Part 191: Subparts B and C Compliance Recertification Application for the Waste Isolation Pilot Plant, DOE/WIPP 09-3424, March 2009. Carlsbad, NM.

- U.S. Department of Energy, Carlsbad Field Office, WIPP Hazardous Waste Facility Permit Amended.

- Renewal Application, 2009, Carlsbad, New Mexico. Addendum N1.

- URS, July 2010. Human Health Protectiveness Evaluation, VOC Releases to Atmosphere, Waste Isolation Pilot Plant, Prepared for Washington TRU Solutions/U.S. DOE.

- Golder Associates Inc. (Golder), Design Report – WIPP Panel Closure report number 0632213 R1 Rev 1, Lakewood, Colorado, October 2016.

- URS, September 2014. Air Quality Analysis for the DOE Waste Isolation Pilot Plant (WIPP) Repository Vent Stack Modeling, Prepared for Nuclear Waste Management LLC.

- U.S. Department of Energy (DOE). 2014. Title 40 CFR Part 191: Subparts B and C Compliance Recertification Application for the Waste Isolation Pilot Plant, DOE/WIPP 14-3503, 2014. Carlsbad, NM.

- U.S. Department of Energy, Carlsbad Field Office, WIPP Hazardous Waste Facility Permit Renewal Application, Carlsbad, New Mexico, March 2020, Addendum N1.

- U.S. Department of Energy, Carlsbad Field Office, Title 40 CFR Part 191 Subparts B and C. Compliance Recertification Application for the Waste Isolation Pilot Plant DOE/WIPP 2019-3609, March 26, 2019, and December 18, 2019, Carlsbad, NM.

9. Please provide documentation of DOE's engagement with other states regarding the construction and operation of another geologic repository for transuranic waste.

RESPONSE: The topic of other repositories is not a part of the Renewal Application, nor is it a requirement of RCRA. The Permittees object to any inclusion or reference to other repositories in the Administrative Record for Renewal. Any available information would be in the public record (*e.g.*, the DOE Office of Scientific and Technical Information (OSTI) web site [www.osti.gov]).

10. Please provide documentation of feasibility studies conducted by DOE relating to the construction and operation of another geologic repository for transuranic waste.

RESPONSE: The topic of other repositories is not a part of the Renewal Application, nor is it a requirement of RCRA. The Permittees object to any inclusion or reference to construction and operation of another repository in the Administrative Record for Renewal. Any available information would be in the public record (*e.g.*, the DOE Office of Scientific and Technical Information (OSTI) web site [www.osti.gov]).

13. Please provide revisions to the WIPP Community Relations Plan, with milestones and timelines, to increase public participation efforts related to the following:

RESPONSE – **General**: The Permittees held a public pre-submittal meeting for the Renewal Application and the required public meeting for the Class 3 PMR, Construction and Use of Hazardous Waste Disposal Units 11 and 12. The NMED acknowledged that the public participation requirement for the Renewal Application and the Class 3 PMR had been met in their December 17, 2021 letter to the Permittees. No additional Renewal Application public meetings are required by RCRA; however, in the interest of providing the NMED with information regarding the WIPP Community Relations Plan, the Permittees provide the following information:

a. Class 2 and 3 Permit Modification Request (PMR) submittals, particularly at the pre-submittal stage. (NMED encourages any plan to bring back the productive stakeholder pre-submittal meetings once conventionally held.)

RESPONSE: The Community Relations Plan has been prepared to meet specific requirements in Permit Part 1, Section 1.15. The Permittees implement the Community Relations Plan pursuant to the Permit. The existing plan meets the Permit requirements and already contains the information stakeholders and members of the public need to participate in a meaningful way in WIPP Project activities.

b. Increasing the public's understanding of the Permit and helping the public identify which issues are not Permit-related and are best addressed directly to DOE and how that may be accomplished.

RESPONSE: The Permittees are committed to increasing the public's understanding of the Permit and to help the public identify which issues are not Permit-related.

c. Quarterly public meetings to explain and discuss upcoming PMRs and other planned activities at WIPP.

RESPONSE: Periodic public meetings are currently held. They are referred to as WIPP Community Forums. These meetings are held using a hybrid format, allowing for stakeholders to attend either in person or virtually. These meetings provide an update on current status and operations at the WIPP facility. During these meetings, attendees receive additional clarification on activities at the WIPP facility.

14. Please describe the role the Consultation and Cooperation Agreement has in DOE's plans for WIPP's present and future operations.

RESPONSE: The Consultation and Cooperation Agreement (C&C Agreement) (AR 880501) has no current role in DOE's present or future plans for the WIPP Project. This is based on the regulatory history and the fact that the commitments contained in the C&C Agreement have been effectively superseded and preempted by binding and enforceable regulatory requirements, as discussed below.

The C&C Agreement was developed during a time when the State had little regulatory authority regarding DOE activities within the Sate or the ability to resolve disputes in order to execute its duty to protect the health and safety of the citizens of New Mexico. *See* Stipulated Agreement in State of New Mexico v. U.S. Dep't of Energy, No. 81-0363, at 3 (D. N.M. Jul. 1, 1981) ("*[T]he United States Department of Energy and the State of New Mexico shall execute a consultation and cooperation agreement which shall provide for the timely exchange of information about the WIPP project and the procedures for them to follow to attempt to resolve conflicts between them relating to the public health, safety, and welfare of the citizens of the State should any such conflicts arise during the course of the project*.") The C&C Agreement addressed that concern and resolved the judicial challenge brought by the State prior to WIPP construction.[1]

Article VI, Section E. 1, of the C&C Agreement required DOE compliance with applicable laws and regulations as follows:

> *In carrying out this stated mission, DOE and WIPP will comply, at a minimum, with all applicable state, federal, and local standards, regulations, and laws, including any applicable regulations or standards promulgated by the Environmental Protection Agency. Compliance by way of grandfathering, variance, waiver, or exemption shall in no way prevent or stop the State from requiring any similar health and safety measures at WIPP under separate applicable authority, nor shall such compliance prevent or stop the State from seeking conflict resolution under Article IX, herein. to resolve disputes about such health and safety measures.*

The C&C Agreement also contemplated that future changes in the law may require modification of the C&C Agreement, the way it would be implemented, and whether the State and DOE should be bound to it in the future. *See* C&C Agreement, Article I, Section B ("*It is recognized that WIPP was an ongoing project at the time the parties commenced their negotiations of this Agreement. In the event the WIPP mission as described in Article VI of this Agreement is substantially changed, whether by amendment to P. L. 96-164 or otherwise, the parties may mutually agree to no longer be bound by this Agreement or provisions of it and the parties shall not be bound to comply with certain provisions of the Agreement if such change in the WIPP mission make a particular provision impossible to perform or enforce. Any such agreement shall be reflected in a modification to this Agreement*."); *id*., Article V, Section A ("*The parties to this Agreement recognize that future developments,* ***including but not limited to changes in***

[1] The 1980 WIPP Final Environmental Impact Statement (FEIS) prepared prior to WIPP construction set forth a short list of applicable state standards, regulations, and laws applicable at that time relating to groundwater extraction wells, air emissions, and water discharges subject to state permitting. The FEIS specifically noted that the WIPP facility was exempt from regulation under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Radiation Protection Act. *See* WIPP FEIS, Chapter 14 (1980).

***applicable law**, including but not necessarily limited to P. L. 96-164, may make it desirable or necessary for one or both parties to seek to modify this Agreement*.") (emphasis added).

Subsequently, various regulatory developments occurred that superseded the process and substantive regulatory requirements applicable to the WIPP facility and obviated the need for the C&C Agreement. First, in 1986 the Environmental Protection Agency (EPA) clarified that radioactive waste mixed with hazardous waste would be subject to RCRA regulation and authorized states to regulate and enforce such requirements. *See* 51 Fed. Reg. 24,504 (Jul. 3, 1986) ("State Authorization to Regulate the Hazardous Components of Radioactive Mixed Wastes Under the Resource Conservation and Recovery Act"). The DOE subsequently agreed that "byproduct material" containing hazardous waste should be regulated under both the Atomic Energy Act and RCRA. *See* 52 Fed. Reg. 15,937 (May 1, 1987) This led to the State of New Mexico obtaining authorization to implement the permitting requirements of RCRA on the WIPP facility as a treatment, storage, and disposal facility for TRU mixed waste. (55 Fed. Reg. 4604 (Feb. 9, 1990) (permit authority); 55 Fed. Reg. 28397 (July 11, 1990) (effective July 25, 1990, EPA authorized New Mexico, to implement and enforce its hazardous waste program, in lieu of the federal program, with respect to TRU mixed waste)).

In 1992, Congress passed the WIPP LWA, which it amended in 1996. Section 9 of the LWA required that DOE comply with a broad spectrum of environmental laws and regulations and obtain required permits. As such, to the extent the State is authorized to implement a federal law, the DOE is subject to state permit and enforcement requirements. In addition, Section 9 requires the DOE to submit a statement of compliance with these laws to the EPA and the State every two years.

This report can be found at:
https://www.emcbc.doe.gov/SEB/WIPPContract/Documents/Document%20Library/Waste%20Isolation%20Pilot%20Plant%20Biennial%20Compliance%20Report.pdf.

The NMED review of this report is AR210115. In 1996, NMED advised the New Mexico Attorney General that "DOE is free to disregard [the C&C Agreement] in operating WIPP" (AR 960316). The Permittees concur with this approach. Specifically, the RCRA implementing regulations have their own requirements defining interfaces between the Permittees and the regulatory agency, as well as requirements for public involvement. A full range of RCRA requirements governs waste characterization, waste management, operations, disposal, closure, and post-closure in far greater detail than is contemplated in the C&C Agreement. Therefore, the commitments in the C&C Agreement regarding hazardous waste management are redundant to requirements in the Permit and far less stringent than RCRA requirements and the Permit.

Prior Implementation of the C&C Agreement Commitments

The C&C Agreement describes the purpose and intent as follows:

A. *This Agreement affirms the intent of the Secretary to consult and cooperate with the appropriate officials of the State with respect to the public health and safety concerns of the State, and to give consideration to such concerns and cooperate with such officials in resolving such concerns consistent with P. L. 96-164. It also affirms the intent of the Governor of the State to express such concerns in a timely manner and to make all reasonable efforts to cooperate with DOE in resolving such concerns.*

B. *It is recognized that WIPP was an ongoing project at the time the parties commenced their negotiations of this Agreement. In the event the WIPP mission as described in Article VI of this Agreement is substantially changed, whether by amendment to P. L. 96-164 or otherwise, the parties may mutually agree to no longer be bound by this Agreement or provisions of it and the parties shall not be bound to comply with certain provisions of the Agreement if such change in the WIPP mission make a particular provision impossible to perform or enforce. Any such agreement shall be reflected in a modification to this Agreement.*

C. *The purpose of this Agreement, in carrying out the intent expressed in Paragraph A of this Article, is to designate Key Events; set time frames for review, comment and resolution of comments; and establish procedures for review of WIPP and for resolving conflicts.*

C&C Agreement, Article I.

With regard to Item A, the purposes of the C&C Agreement were previously satisfied as documented in numerous reports, submittals, and consultations and are now implemented through the various permit activities and consultations mandated by the LWA and required regulations and the WIPP RCRA Permit. With regard to Item B, the mission of the WIPP facility has not changed except that the high-level waste experiments have been eliminated and shipping such waste to the WIPP facility is prohibited by the LWA. Accordingly, the WIPP facility is solely used for the management and disposal of TRU waste as mandated by P.L. 96-164 and the LWA.

With regard to Item C, only one Key Event in the Working Agreement for Consultation and Cooperation (Working Agreement) has not been implemented: Decontamination and Decommissioning (D&D) of the WIPP facility. However, all substantive elements of D&D to protect the health and safety of New Mexicans are captured in the Permit, the ("Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes" (40 CFR Part 191), the annual Compliance Certification program, and the LWA mandated D&D report. These subsequent requirements supersede and preempt the remaining Key Event because they are more detailed and stringent, and are fully enforceable by NMED under the RCRA program. Remaining commitments with regard to transportation of waste in NRC containers has been codified in the LWA (see LWA Sec. 16 (a)). Commitments regarding transportation monitoring and environmental monitoring are ongoing through separate agreements with the State.

Conclusion

For the reasons set forth above, the current regulatory framework, as mandated by the LWA and RCRA, fully cover and govern the transportation, operations, closure, and post-closure of the WIPP facility to ensure health and safety of New Mexicans, thereby meeting the intent of the C&C Agreement.

15. Please provide a breakdown, itemized annually and projected over the next ten years, of the waste streams coming to WIPP, specifying whether they are stored (legacy) waste or projected to be generated waste; and, if projected to be generated, whether from pit production or research.

RESPONSE: The DOE reports anticipated (i.e., WIPP-bound) TRU waste volume estimates in the ATWIR based on information collected from generator/storage sites. The ATWIR is reviewed, updated annually and is publicly available. Anticipated inventory is the sum of the stored volume and projected volume through CY2033. The WIPP-bound TRU waste volume estimates through CY2033 by generator/storage site sum to approximately 42,600 m^3 (refer to Tables 3-1 and 3-2 in the 2021 ATWIR). For a detailed breakdown of anticipated TRU waste volume estimates by waste stream over the next ten years, refer to Appendix A of the 2021 ATWIR. The 2021 ATWIR can be found at the following link:

https://wipp.energy.gov/Library/TRUwaste/ATWIR-2021_CBFO_Final.pdf

16. Please provide DOE documents that govern the prioritization of generator site waste cleanup and generator site waste shipments to WIPP.

RESPONSE: The prioritization of generator site waste cleanup and generator site waste shipments to the WIPP facility is not a part of the Renewal Application, nor is it a requirement of RCRA. The Permittees object to any inclusion or reference to prioritization of generator site waste cleanup and generator site waste shipments to the WIPP facility in the Administrative Record for Renewal. Based on the WIPP cleanup mission and subject to generator site and mission-related considerations, the Permittees prioritize Los Alamos National Laboratory (LANL) shipments and routinely remove the TRU waste as it becomes certified.

17. Please provide estimates for currently known projected WIPP waste streams, sometimes considered in DOE or Government Accountability Office (GAO) reports, that may or may not be included in the most recent Annual Transuranic Waste Inventory Report (ATWIR), through final facility closure.

RESPONSE: The Permittees rely on the ATWIR for waste stream inventory information and not GAO reports. See response to Item 15.

18. Please provide an explanation of how the change in the "high-level waste" definition will affect waste shipments planned for WIPP on a site-by-site basis for each generator site that currently utilizes or plans to utilize WIPP for disposition.

RESPONSE: There has been no change to the high-level waste definition. The Atomic Energy Act of 1954[1] [Public Law 83-703, 68 Stat. 919] and the Nuclear Waste Policy Act of 1982[2] [Public Law 97-425, 96 Stat. 2201 *et seq.,* 42 U.S.C. 10101 *et seq*.] define high-level radioactive waste as follows:

> *(12) The term "high-level radioactive waste" means—*
>
> *(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and*
>
> *(B) other highly radioactive material that the [NRC], consistent with existing law, determines by rule requires permanent isolation.*

On December 21, 2021, the Department of Energy provided an assessment of their interpretation of the definition of high-level radioactive waste [86 FR 72220]:

> *Specifically, as stated in the Supplemental Notice [84 FR 26835], DOE interprets the statutes to provide that a reprocessing waste may be determined to be non-HLW if the waste meets either of the following two criteria: (I) Does not exceed concentration limits for Class C low-level radioactive waste as set out in section 61.55 of title 10, Code of Federal Regulations, and meets the performance objectives of a disposal facility; or (II) Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable requirements. Reprocessing waste meeting either I or II of the criteria is non-HLW, and— pursuant to appropriate processes—may be classified and disposed of in accordance with its radiological characteristics in an appropriate disposal facility provided all applicable requirements of the disposal facility are met.*
>
> *At this time, DOE is not proposing to implement the [high-level radioactive waste interpretation] at any other site or for any other waste stream.[3] DOE will continue to evaluate its waste inventories and related management and disposal options, and expects to engage openly with stakeholders regarding potential future opportunities to implement the [high-level waste interpretation] more broadly. Any decisions, however, about whether and how the interpretation will apply to other wastes at any specific site and whether such waste may be managed as non-HLW will be the subject of subsequent actions.*

[1] As amended through Public Law 117-81, 135 Stat. 1541, enacted December 27, 2021.

[2] It consists of the Act of Jan. 7, 1983 (Public Law 97-425; 96 Stat. 2201), as amended by P.L. 100-203, Title V, Subtitle A (December 22, 1987), P.L. 100-507 (October 18, 1988), and P.L. 102-486 (The Energy Policy Act of 1992, October 24, 1992). The Act is generally codified at 42 U.S.C. 10101.

[3] DOE initiated a public process pursuant to the NEPA to analyze the potential environmental impacts associated with disposing of up to 10,000 gallons of stabilized (grouted) Defense Waste Processing Facility (DWPF) recycle wastewater from the Savannah River Site (SRS) at a commercial low-level radioactive waste (LLW) disposal facility located outside of South Carolina licensed by either the NRC or an Agreement State.

In summary, implementation of the [high-level radioactive waste interpretation] is based on waste characterization and analysis performed in accordance with rigorous quality assurance requirements; is consistent with the existing framework of statutes, regulations, and policies, including NEPA, RCRA, and CERCLA; is consistent with the recommendations of, or has been affirmed by, highly technical and influential organizations such as the Blue Ribbon Commission on America's Nuclear Energy Future, six National Laboratories, the International Atomic Energy Agency, the NRC staff, and independent technical reports.

The DOE's interpretation of the high-level radioactive waste definition will not affect waste shipments planned for WIPP [84 FR 26835; 86 FR 72220]. The Permittees shall not accept TRU mixed wastes at the WIPP facility for storage, management, or disposal, which fail to meet the treatment, storage, or disposal facility waste acceptance criteria as presented in Permit Part 2.3.3., Sections 2.3.3.1 through 2.3.3.10.

Furthermore, as stated in the Supplemental Notice [84 FR 26835]:

…transuranic waste generated from atomic energy defense activities to be disposed of at WIPP must comply with the WIPP Land Withdrawal Act, as amended, the WIPP Hazardous Waste Facility Permit, the WIPP waste acceptance criteria, and other applicable requirements. Currently, any reprocessing waste that may be determined to be non-HLW could not be disposed of at WIPP because the WIPP permit specifically prohibits tank waste from disposal at WIPP.

19. Please provide a chronology of public engagement and tribal consultation meetings conducted to date, as well a list of associated public materials (i.e., presentations, factsheets, etc.), regarding the "dilute and dispose" program for surplus plutonium waste streams from the Savannah River Site (SRS) in South Carolina; please provide the referenced materials upon request.

RESPONSE: The requested information is not applicable to the Permit. The Permittees object to any inclusion or reference to public engagement and tribal consultation meetings conducted to date by other DOE sites in the Administrative Record for Renewal. However, in the interest of providing the NMED with information about the "dilute and dispose" program, the Permittees provide the following examples of public materials and meeting information:

- Public Involvement **(**Federal Register / Vol. 81, No. 65 / Tuesday, April 5, 2016 / Notices).

  Since the announcement of the first notice of intent to prepare the SPD Supplemental EIS in 2007 (72 FR 14543), DOE/NNSA has provided three scoping periods during which DOE/NNSA held public scoping meetings and actively solicited scoping comments from Federal agencies, state and local governmental entities, American Indian tribal governments, and members of the public. The public scoping periods extended from March 28, 2007 through May 29, 2007; July 19, 2010 through September 17, 2010; and January 12, 2012 through March 12, 2012. Meetings were held in Aiken, Columbia, and North Augusta, South Carolina; Tanner, Alabama; Chattanooga, Tennessee; and Carlsbad, Santa Fe, Espanola, and Pojoaque, New Mexico.

- In April 2015, the DOE/NNSA issued the *Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD SEIS, DOE/EIS–0283–S2). In the SPD SEIS, the DOE/NNSA evaluated the environmental impacts of alternatives to disposition 13.1 metric tons (MT) of surplus plutonium. On December 24, 2015 (80 FR 80348), the DOE/NNSA announced that its preferred alternative for disposition of 6 MT of non-pit plutonium was disposal at the WIPP facility. In 2016, the NNSA announced its decision (ROD [81 FR 19588, April 4, 2016]) to implement the dilute and dispose method (plutonium downblending process) at the Savannah River Site near Aiken, South Carolina for the disposition of 6 MT of non-pit plutonium at the WIPP facility. In 2020, the DOE/NNSA decided to dispose of an additional 7.1 MT of non-pit plutonium at the WIPP facility using the dilute and dispose method, rather than using this non-pit plutonium to manufacture mixed-oxide fuel [85 FR 53350].

- In accordance with DOE regulations implementing the NEPA at 10 CFR 1021.314, the DOE/NNSA prepared a Supplement Analysis (DOE/EIS-0283-SA-04 [August 2020]) to consider if the proposal to prepare and dispose of additional non-pit plutonium (rather than the pit plutonium described in the 2015 SPD SEIS), using the WIPP Disposal Alternative, represented new information relevant to environmental concerns. Given that the process steps and facilities would be the same as (or fewer than) those assessed for processing 7.1 MT of pit plutonium, the DOE/NNSA concluded that the impacts of the proposed preparation of an additional 7.1 MT of non-pit plutonium for disposal as CH–TRU waste at WIPP had been addressed in the 2015 SPD SEIS, and that no additional NEPA review was required. Lastly, the DOE has previously disposed of non-pit plutonium at the WIPP facility before (*Supplement Analysis for the Disposal of Certain Rocky Flats Plutonium-Bearing Materials at the Waste Isolation Pilot Plant*, DOE/EIS-0026-SA-3, 2002).

- The 7.1 MT of non-pit plutonium that was the subject of the 2020 AROD [85 FR 53350] is currently in non-pit form and does not require pit disassembly. However, some of this material may have been in the form of pits prior to this decision being announced, and disassembly for those pits was covered under prior NEPA analysis (refer to 63 FR 44851; 73 FR 55833).

- In 2020, the DOE/NNSA prepared a Supplement Analysis (DOE/EIS-0380-SA-06) to reevaluate adopting elements of the Expanded Operations Alternative from the 2008 LANL Site-Wide Environmental Impact Statement (SWEIS). The NNSA's AROD (85 FR 54544, September 2, 2020) enabled the production of a minimum of 30 pits/year during 2026 at LANL with additional surge capacity, if needed, to meet the programmatic requirements of producing pits at a rate of no fewer than 80 pits/year during 2030. The NNSA evaluated the potential environmental impacts of producing up to 80 pits/year at LANL.

- Public Involvement (Federal Register / Vol. 85, No. 171 / Wednesday, September 2, 2020 / Notices)

  The Draft 2008 LANL SWEIS included a robust public participation process. NNSA received comments from Federal agencies; state, local, and tribal governments; public and private organizations; and individuals. In addition, during the three public meetings that NNSA held, in Santa Fe, Española and Los Alamos, on the Draft 2008 LANL SWEIS, more than 100 speakers made oral comments and nearly 2100 public comment documents were received. NNSA reviewed and

considered all comments received on the Draft 2008 LANL SWEIS, including those received after the comment period ended, before finalizing the 2008 LANL SWEIS and issuing associated RODs.

- Also in 2020, the DOE/NNSA prepared the Savannah River Site (SRS) Pit Production Environmental Impact Statement (DOE/EIS-0541) to evaluate the potential environmental impacts of repurposing the Mixed-Oxide Fuel Fabrication Facility (MFFF) to produce pits. In 2020, the NNSA announced its decision (ROD [85 FR 70601, November 5, 2020]) to implement the proposed action to repurpose the MFFF to produce pits. The NNSA must implement a strategy to provide the enduring capability and capacity to produce plutonium pits beginning during calendar year 2026.

- The impact to the WIPP facility is the potential disposal of TRU waste by-products from the pit production process after 2026. The by-product waste would be prepared and packaged to meet the WIPP WAC for CH TRU waste and other regulatory requirements, including a TRU waste determination through Acceptable Knowledge and nondestructive analysis.

NEPA documentation regarding this topic is publicly available at the following link: https://www.energy.gov/nepa/office-nepa-policy-and-compliance under the NEPA DOCUMENTS tab.

26. Please provide current projections for all projects for underground ventilation on-going at the site to include proposed completion dates.

RESPONSE: The PVS upgrade consists of two DOE capital projects, the construction of the Utility Shaft (Shaft #5) and the construction of the Safety Significant Containment Ventilation System (SSCVS). The anticipated construction completion date for Shaft #5 and the SSCVS is late CY2024. The PVS is anticipated to be operational in CY2026 after testing, readiness activities, and NMED inspections are performed.

27. Please provide general configurations for underground ventilation in a timetable format until the final configuration is in service.

RESPONSE: The underground ventilation system description in Permit Attachment A2, Section A2-2a(3), describes operations with a 4-shaft configuration and a 5-shaft configuration. The specific modes of operation are also described therein. The facility is operated in filtration mode whenever waste is being handled in the underground and may be operated in other modes as needed when waste is not being handled. The underground ventilation system will operate in the 4-shaft configuration until Shaft #5 and the SSCVS are online. The underground ventilation system operating in the 5-shaft configuration will be the standard configuration once the PVS is online which is anticipated in CY2026.

28. Please describe whether sufficient redundancy in underground ventilation capabilities for waste management operations exists in the case that one or more fans in any configuration at any given time would experience a failure.

RESPONSE: Redundancy in ventilation capabilities is not a requirement of the Permit. The underground ventilation system consists of a total of five filtration fans that support waste management operations. Three filtration fans provide sufficient airflow to achieve 35,000 standard cubic feet per minute (scfm) to the active room for waste disposal pursuant to Permit Part 4, Section 4.5.3.2. Therefore, sufficient redundancy in underground ventilation capability for waste management operations exists.

29. Please respond as to how and why the current test and balance schedules for each underground ventilation configuration remain appropriate.

RESPONSE: The test and balance schedule described in Permit Attachment O, Section O-3a(2), remains appropriate. As described in Permit Attachment O, Section O-3a(2), historic test and balance results confirm that changes between test and balances fall within anticipated values. Note also that the condition in the Permit relevant to ventilation flow rate is in Permit Part 4, Section 4.5.3.2., *Ventilation*, which states the following:

> *The Permittees shall maintain a minimum active room ventilation rate of 35,000 standard ft3/min (scfm) in each active room when waste disposal is taking place and workers are present in the room, as specified in Permit Attachment A2, Section A2-2a(3), "Subsurface Structures (Underground Ventilation System Description)," and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601(c)). If an active room ventilation rate of 35,000 scfm cannot be met, actions as described in Permit Attachment O shall be taken during waste disposal operations when workers are present.*

Regardless of the test and balance, the Permittees verify the airflow to an active room prior to commencing waste emplacement operations. This ensures that Permit Part 4, Section 4.5.3.2., is met. Therefore, the current test and balance schedules are more than adequate.

30. Please provide further explanation for how the exposure information submitted in the Application meets Resource Conservation and Recovery Act (RCRA) requirements.

RESPONSE: The Permittees provided the required exposure information in the Renewal Application pursuant to 20.4.1.900 NMAC (incorporating 40 CFR 270.23(c)). This is the applicable requirement because the WIPP underground disposal facility is defined as a miscellaneous unit under 20.4.1.100 NMAC (incorporating 40 CFR 260.10). The requirement pursuant to 40 CFR 270.23, Specific part B information requirements for miscellaneous units, are specific to miscellaneous units such as the WIPP underground disposal facility. The requirement in 20.4.1.900 NMAC (incorporating 40 CFR 270.10(j)) to provide exposure information is not applicable because the WIPP facility is not a surface impoundment or a landfill.

The exposure information and analysis provided in the original application, subsequent Permit modifications, and technical reports, demonstrates that the primary exposure pathway and

associated risk to human health and the environment are Volatile Organic Compound (VOC) emissions from the underground hazardous waste disposal units. The conditions in the Permit assure that human health and the environment are not at risk. The Permittees routinely monitor airborne VOC emissions from the facility to continuously assess the risk to human health. This is pursuant to the VOC repository monitoring program in Permit Part 4, Section 4.6.2:

4.6.2. Repository Volatile Organic Compound Monitoring

4.6.2.1. Implementation of Repository VOC Monitoring

The Permittees shall implement repository VOC monitoring and the Laboratory Performance Evaluation Plan (LPEP) or proficiency testing, as specified in Permit Attachment N (Volatile Organic Compound Monitoring Plan) and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)). The Permittees shall implement repository VOC monitoring until the certified closure of all Underground HWDUs.

4.6.2.3. Notification Requirements

After each sampling event for the compounds listed in Table 4.6.2.3, the Permittees shall calculate the total and running annual averages for the carcinogenic and the total non-carcinogenic risk to the non-waste surface worker, using the methodology in Attachment N and the recommended EPA risk factors listed in Table 4.6.2.3.

Enclosure 2 provides further explanation for how this exposure information meets the RCRA requirements.

31. Please provide updated land use information, specifically regarding oil and gas production on wells surrounding and adjacent to the WIPP LWA boundary.

RESPONSE: To monitor for encroachment and new oil and gas activities, WIPP personnel perform monthly surveillances of oil and gas production wells within a one-mile perimeter outside the LWA boundary. As of June 1, 2022, there are 165 active oil and gas production wells and 6 active salt water disposal wells within a one-mile perimeter outside of the WIPP LWA boundary. For production details, the New Mexico Oil Conservation Division maintains a publicly accessible database where they post the files for all oil and gas drilling in the State. The requested information can be found there.

The website address is: https://wwwapps.emnrd.nm.gov/ocd/ocdpermitting/Data/Wells.aspx

32. Please provide a list of floodplain or earthquake studies that have been performed in the vicinity of the facility over the last ten years; please provide the referenced studies upon request.

RESPONSE: As described in the Permit Attachment A1, Section A1-1c(1), *Waste Handling Building Container Storage Unit (WHB Unit)*, the WIPP facility is about 500 feet above the

Pecos River riverbed and does not lie within a 100-year flood plain. Protection from flooding or ponding caused by probable maximum precipitation (PMP) events is provide by interceptor berms and dikes as described in Permit Attachment A1, Section A1-1c(1):

> *The WIPP facility does not lie within a 100-year floodplain. There are no major surface-water bodies within 5 mi (8 km) of the site, and the nearest river, the Pecos River, is approximately 12 mi (19 km) away. The general ground elevation in the vicinity of the surface facilities (approximately 3,400 ft [1,036 m] above mean sea level) is about 500 ft (152 m) above the riverbed and 400 ft (122 m) above the 100-year floodplain. Protection from flooding or ponding caused by PMP events is provided by the diversion of water away from the WIPP facility by a system of peripheral interceptor berms and dikes. Additionally, grade elevations of roads and surface facilities are designed so that storm water will not collect within the Property Protection Area under the most severe conditions.*

Therefore, the existing information regarding regional floodplains is still adequate and additional technical studies on the regional floodplain have not been directed or sponsored by the Permittees over the last ten years.

As described in the Permit Attachment A1, Section A1-1c(1), *Waste Handling Building Container Storage Unit (WHB Unit)*, the WHB has been designed to meet DOE design and associated quality assurance requirements including the design basis earthquake. Permit Attachment A1, Section A1-1c(1), provides applicable design requirement information.

The WIPP Annual Site Environmental Report (ASER) summarized seismic monitoring activities and events. The 2021 ASER report is publicly available at the following link:

https://wipp.energy.gov/Library/ser/DOE-WIPP-21-3591_Revision_0_Final.pdf

The following excerpt from the 2021 ASER is provided below as an example.

> *5.5 Seismic Activity*
>
> *Currently, seismicity within 300 km (186 mi) of the WIPP site is being monitored by the New Mexico Institute of Mining and Technology using data from a nine-station network approximately centered on the site (Figure 5.6). Station signals are transmitted to the New Mexico Institute of Mining and Technology Seismological Observatory in Socorro, New Mexico. When appropriate, readings from the WIPP network stations are combined with readings from an additional New Mexico Institute of Mining and Technology network in the central Rio Grande Rift. Occasionally, data are exchanged with the University of Texas at El Paso, and Texas Tech University in Lubbock, both of which operate monitoring stations in west Texas. Due to a significant expansion of the Texas seismic monitoring network (TexNet) in west Texas, this network is also used to provide data for event location and analysis.*
>
> *The mean operational efficiency of the WIPP seismic monitoring stations during 2020 was approximately 91 percent. From January 1 through December 31, 2020, locations for 11,396 seismic events were recorded within 300 km (186 mi) of the WIPP site. Recorded data included origin times, epicenter coordinates, and magnitudes. The strongest recorded event (magnitude 4.07) occurred on March 26, 2020; this event was*

approximately 78 km (48 mi) southwest of the site. The closest earthquake to the site was approximately 8 km (5 mi) south and had a magnitude of 1.42.

Earthquake risks were evaluated in the 2021 DOE/EIS-0026-SA-12, *Supplement Analysis for the Waste Isolation Pilot Plant Site-Wide Operations*:

> *The geological system, including seismicity, has been within expected conditions. There are not any active faults (less than 150 years) in the area of the WIPP Site (United States Geologic Society Interactive Fault Map). This geologic media (rock salt) and specific geologic formation and location is specifically chosen to house the WIPP deep geologic repository for TRU waste. Since 1926, seismic events have been recorded in the Delaware Basin (DOE, 2020a)[1]. These events have had no observable effects on WIPP facility structures. In the 30 plus years of site investigations and ongoing awareness of the geologic setting at and around the WIPP facility, no substantive changes have occurred in the understanding of the site and regional and local geology over this time period and since publication of the 1997 SEIS-II.*

Therefore, the existing information regarding earthquakes is still adequate and additional technical studies on seismicity have not been directed or sponsored by the Permittees over the last ten years.

33. Please provide a description of safeguards in place to protect operations from hydraulic fracking, as well as information detailing at what depths and in what formations the fracking is occurring outside the LWA boundary.

RESPONSE: The WIPP LWA, Section 4.(b)(5), prohibits surface or subsurface oil or gas production, including slant drilling from outside the boundaries on lands on or under the LWA area. To monitor for encroachment and new oil and gas activities, WIPP personnel perform monthly surveillances of oil and gas production wells within a one-mile perimeter outside the LWA boundary.

For hydraulic fracking details (well details and depths and formations at which fracking is occurring), the New Mexico Oil Conservation Division maintains a publicly accessible database where they post the files for all oil and gas drilling in the State. The requested information may be found at the following URL/link:

https://wwwapps.emnrd.nm.gov/ocd/ocdpermitting/Data/Wells.aspx

37. The April 2022 Office of Inspector General report [AR 220415.5] found "…significant and recurring issues pertaining to the Fire Department training program..." Please explain if and how these issues and recommendations have been addressed.

RESPONSE: The status of the recommendations and an explanation of how they were addressed are included in Appendix 2 of the April 2022 U.S. Department of Energy Office of

[1] DOE. (2020a). *Waste Isolation Pilot Plant Annual Site Environmental Report for 2019.* DOE/WIPP-20-3591. Carlsbad Field Office, Carlsbad, NM.

Inspector General Inspection Report (DOE-OIG-22-29). This report is publicly available and is found at the following link:

https://www.energy.gov/sites/default/files/2022-04/DOE-OIG-22-29.pdf

Status updates for recommendations 3 and 4 are provided below.

Recommendation 3 Status Update:

In response to CBFO's direction on this recommendation, Nuclear Waste Partnership's Technical Training and Procedures Department developed a Corrective Action Plan to address issues related to training and ensure the WIPP facility Fire Department personnel are compliant with DOE-STD-1078-94, The Systematic Approach to Training and DOE-STD-1074-95, Alternative Systematic Approaches to Training. Currently, three of the six established actions are complete. The remaining three actions are anticipated to be completed Fall of CY2022.

Recommendation 4 Status Update:

Concerning Fire Fighter training, a WIPP Fire Department (FD) Training Implementation Plan (matrix table of training courses and dates) was developed for conducting required Fire Fighter training and an approximate 24-month implementation period was established. The WIPP FD training records are submitted to Technical Training and maintained per the WP 14.01, WIPP Training Program procedure. The FD Training Chief ensures that required training is scheduled and completed. Task and Authorization Cards associated with WP 12-FP.04, WIPP Fire Department Training Plan have been created and are pending approval from the Technical Training Department and will be implemented upon approval.

In addition, the Fire Department has established two NFPA Level I instructor positions, one NFPA Level II instructor position, five WIPP Level 1 instructor positions, and two WIPP Level II instructor positions. Fire Department Officers/Supervisors are at least WIPP Level I instructors to ensure efficient implementation of the WP 12-FP.04, WIPP Fire Department Training Plan.

Currently, the Fire Department has completed task cards and training for confined space rescue (ES-102), apparatus driver training (CEVO 3), rope rescue (ES-106), and annual live burns (ES-107). Medical training has been conducted at the EMT-Basic, EMT-Intermediate, and Paramedic licensure levels as required by the State of New Mexico EMS Bureau, including Pediatric Advanced Life Support, Advanced Cardiovascular Life Support, and Basic Life Support. Additionally, the Fire Department Medical Director conducts quarterly continuing education training and EMS refreshers annually. For incident readiness, the Fire Department also participates in quarterly drills with Emergency Management to ensure fire/rescue and Incident Command response and activities are efficient.

38. Please submit the most up to date list of RCRA Emergency Coordinators when requested by NMED ahead of draft Permit issuance.

RESPONSE: The Permittees will submit the most up to date list of RCRA Emergency Coordinators when requested by NMED.

39. Please submit the updated Part A application when requested by NMED ahead of draft Permit issuance.

RESPONSE: The Permittees will submit the updated Part A application when requested by the NMED. Pursuant to a recent NMED verbal request, the Permittees are providing a redline/strikeout of Permit Attachment B in Enclosure 3. The redline/strikeout includes changes from the Renewal Application Part A and the Class 3 PMR, *Construction and Use of Hazardous Waste Disposal Units 11 and 12*.

Additional Information – Asterisk Items 35 and 36

Initial responses to Items 35 and 36 were provided to the NMED in the June 27, 2022 letter from the Permittees. The information provided below addresses NMED's verbal request for additional information subsequent to the Permittees' June 27, 2022 responses to these two items.

*35. *Please provide the rationale for the proposed removal of descriptive text relating to aisle spacing between the west wall of the CH Bay and facility pallets in Permit Attachment A1, Section A1-1c(1).*

ADDITIONAL RESPONSE: The five-foot aisle spacing was a temporary solution to a nuclear safety concern. This concern was discussed in the 2006 Class 3 PMR public hearing related to the storage and management of remote-handled (RH) TRU mixed waste.

A permanent solution utilizing concrete barriers has been implemented as documented in the WIPP Documented Safety Analysis (DSA).

> *4.4.14.2 System Description*
>
> *Vehicle Barriers are a configured set of concrete barriers (e.g., Jersey type barriers) consisting of two continuous sections. The first section includes two rows of interconnected concrete barriers, installed approximately 5 feet west of the CH Bay/TMF common wall extending south from the TMF exterior wall a minimum distance of 25 feet. The second section consists of one row of interconnected concrete barriers positioned at least 25 feet south of the CH Bay exterior southwest wall extending west between Airlock 100 to a point approximately 5 feet west of the CH Bay/TMF common wall (approximately 85 feet in total length) to intersect with the double row of barriers. An opening with a gap of ≤ 3 feet at the intersection of the east-west barrier and the double row of barriers is permitted for fire department access.*

The 5 foot aisle space is not required by the current WIPP DSA, nor is it specifically required by the RCRA regulations.

*36. *Please provide any administrative or editorial updates or additional technical information necessary to the Renewal Application as appropriate, for example edits related to the explanatory matrix submitted with the updated redline strikeout for the Renewal Application*.

ADDITIONAL RESPONSE: The Class 3 PMR, *Construction and Use of Hazardous Waste Disposal Units 11 and 12*, proposed changes to Permit Attachment J, Table J-3. Although these changes were not included in the RLSO provided to the NMED on March 17, 2022, please consider incorporating the proposed Class 3 PMR changes into the draft Permit Attachment J.

Enclosure 2

Additional Detail and Information for Item 30

ADDITIONAL INFORMATION FOR ITEM 30: Exposure information in the Renewal Application states the following:

> *The Permittees described the potential pathways for exposure of humans or environmental receptors to the hazardous waste or hazardous constituents in TRU mixed waste in Chapter D, Section D-9b of the original Part B Permit Application. This description included the geology and hydrology of the miscellaneous unit and the operational features of the WIPP facility that minimize exposure.*

There is additional exposure information in Renewal Application Addendum N1.

BACKGROUND

When preparing the exposure assessment for the Waste Isolation Pilot Plant (**WIPP**) facility in original Part B Permit Application (AR 960412) the Applicants, as well as the New Mexico Environment Department (**NMED**), relied on an U. S. Environmental Protection Agency (**EPA**) guidance manual entitled *Hazardous Waste Storage and Disposal in Geologic Repositories, Permit Guidance Under the Resource Conservation and Recovery Act*, EPA/530-SW-88-001. (**Guidance Manual**) (AR 880901)[1]. Section 11.0 of the Guidance Manual is entitled *Exposure Information*. The introduction to Section 11 points out that Section 3019 of the Resource Conservation and Recovery Act (**RCRA**) requires exposure information be included in Permit Applications for landfills and surface impoundments. This requirement is codified in 20.4.1.900 NMAC (incorporating 40 CFR 270.10(j)). The Guidance Manual further states in Section 11.0:

> *Similar information requirements are contained In the Subpart X regulations. Specifically. 40 CFR 264.601 and 270.23 require that owners and operators consider and provide information related to the potential for human and animal exposure via the air, surface water, soils and groundwater*.

The Guidance Manual further specifies the contents of an exposure assessment as follows:

> *An exposure assessment involves an assessment of the following factors:*
>
> - *Potential for releases of hazardous waste constituents*
> - *Potential human and animal receptors*
> - *Potential health risks and natural resource damage from exposure*
> - *Other sources of environmental contamination in the area.*

The Guidance states the exposure assessment for geologic repositories must consider potential releases from surface activities as well as subsurface areas. The Guidance Manual then goes on to focus only on the subsurface areas. The Guidance Manual, as well as the 20.4.1.500

[1] Note that the version in the Administrative Record (**AR**) is missing several pages in Section 11 and contains differences in some text. The version used here is the one that was in the possession of the Applicants at the time of Permit Application submittal.

NMAC (incorporating 40 CFR 264, Subpart X) regulations require the consideration of four possible pathways for exposure. These are soil, air, surface water, and groundwater.

Using this list of specific contents for an exposure assessment, the Permittees are providing the following description in order to satisfy this Technical Incompleteness Determination (**TID**) request.

POTENTIAL FOR RELEASES OF HAZARDOUS WASTE CONSTITUENTS

As the first step in determining the *Potential for releases of hazardous waste constituents,* the Permittees identified the potential pathways from the repository that could result in exposure of humans or environmental receptors to the hazardous waste or hazardous constituents in transuranic (**TRU**) mixed waste. This description is in Chapter D, Section D-9b of the original Part B Permit Application (AR 960412). This description considered the geology and hydrology of the miscellaneous unit, the operational features of the WIPP facility that minimize exposure, and the physiochemical properties of the waste.

The Permittees used three different repository configurations for performing the exposure assessment. These configurations included:

- OPEN PANELS, which includes panels that are actively receiving waste and backfill.
- CLOSED PANELS, which includes panels that have been isolated from the underground ventilation system.
- SEALED FACILITY, which occurs when the last of the lowermost short-term shaft seal members are emplaced and are functional.

POTENTIAL HUMAN AND ANIMAL RECEPTORS

The second step in the assessment is to determine *Potential human and animal receptors.*

Consideration of receptors is limited to those that might be exposed via the air pathway as the result of emissions from the WIPP facility ventilation system. In this evaluation, the nearest permanent human receptor is assumed to be a resident at the WIPP Site Boundary. However, other receptors were considered. The area within the WIPP Site Boundary up to the Exclusive Use Area[1] is open for cattle grazing; and game animals such as deer, rabbits, quail, and dove can be hunted outside the Exclusive Use Area. As a consequence, exposures to other classes of public (e.g., hunters, ranch hands, campers, oil field personnel) were considered in evaluating the air pathway. Details can be found in Chapter D9 of the original Part B Permit Application (AR 960412).

Based on the analysis of land uses, three classes of individuals were identified as requiring an exposure assessment. These are:

[1] Note that the previously defined “Exclusive Use Area” has been expanded and is now identified as the “Off-Limits Area.” See Renewal Application Section A-3 and Figure M-65 for the location of the boundaries referred to herein.

- Underground waste handling (requiring protection from acute exposure to volatile organic compounds (**VOCs**)).

- Non-waste workers on the surface (requiring protection from chronic exposure to VOCs).

- Members of the public living beyond the WIPP site boundary (requiring protection from chronic exposure to VOCs).

The Permittees also reached the conclusion that VOCs from the waste do not pose a threat to animals because of the very short period of time they spend in the area and the low dose rates. Furthermore, range animals and game animals are sampled periodically as part of the Environmental Monitoring Program (AR 970514) to determine if any exposure has occurred.

POTENTIAL HEALTH RISKS AND NATURAL RESOURCE DAMAGE FROM EXPOSURE

The next part of an exposure assessment is an evaluation of the *Potential health risks and natural resource damage from exposure.* The exposure assessment in the original Part B Permit Application. (AR 960412) used the environmental performance standards established by the NMED in order to assess health risk. Meeting these environmental performance standards prevents adverse effects to human health or the environment.

For human exposures to hazardous waste emissions, environmental performance standards are defined in two categories. The first category is for occupational exposures to waste emissions, and the standard imposed by the U. S. Department of Energy (**DOE**) at the WIPP facility is consistent with standards codified by the Occupational Health and Safety Administration (**OSHA**) in 29 CFR 1910. The second category is for public exposures to waste emissions, and those standards are established by the EPA and implemented by the NMED.

For public exposures, the performance standards are based on the health effects of the exposure and are defined for carcinogenic (cancer-causing) effects and for non-carcinogenic (other health effects). The methodology for assessing health risks is referred to as a risk assessment. The term "health risks" is used to describe occupational risk and public risk. Occupational risk is typically assessed by comparing actual or anticipated exposure to a concentration of a hazardous substance in the workplace. The performance standard for environmental exposure to carcinogens has been established by the EPA and is based on excess risk of developing cancer in a population. The acceptable excess risk for the public to exposures from class A and B carcinogens is 1×10^{-6}, (i.e., one chance in one million of developing cancer) and class C carcinogens is 1×10^{-5}. The acceptable level of risk for the public to exposures from non-carcinogens is expressed in terms of a hazard quotient. A hazard quotient of less than 1.0 from exposure to emissions poses no known health risk and is acceptable.

Since the only substances to be released are waste-related gases captured the headspace of waste containers, the assessment focused on the release of those VOCs in the gas phase that represent approximately 99 percent of the risk to human health. The only pathway assessed is the atmosphere, or releases to the air, from the mine ventilation system.

Occupational exposures are assessed from potential VOC concentrations in the mine ventilation air underground and in the atmosphere on the surface of the facility. Public exposures are assessed at all locations where public exposure can occur from potential VOC concentrations.

The assessment is documented in the original Part B Permit Application (AR 960412) as Appendix D9. Based on estimated maximum VOC emissions from emplaced waste, there are no significant exposures expected to occur to the public or workers. These calculations have been updated several times as the EPA has reassessed the health impacts of VOC.

The results of the exposure assessment indicate the most exposed Individual on the surface works in the Training Building. The maximum estimated environmental health VOC emissions is to a resident is at the WIPP Site Boundary. The risk levels are below acceptable levels for carcinogens and for non-carcinogens.

In a related exposure assessment, it was determined that a waste worker could be subjected to an acute exposure to VOCs in the event a roof fall in a room adjacent to an active room pushed high levels of VOC into the workspace.

The results of this exposure assessment is the establishment of action levels based on routine monitoring of VOC emissions, both underground and on the surface. Monitoring details are in the Permit in Part 4 and Renewal Application Attachment N.

OTHER SOURCES OF ENVIRONMENTAL CONTAMINATION IN THE AREA

In completing the exposure assessment as specified in the Guidance Manual, the Applicants conducted a survey to determine other sources of contamination in the vicinity of the WIPP facility. With regard to the non-atmosphere pathways, the Applicants conducted an extensive background environmental characterization program. The results of the environmental sampling program indicated no significant sources of underground contamination were found with the exception of one livestock watering well at a nearby ranch which showed relatively high nitrate values, likely due to its proximity to livestock corrals. With regard to air emissions, the Applicants compiled list of Air Quality Permits issued to oil and gas companies in the area. Oil and gas emissions continue to be present. The Permittees distinguish between VOCs in the background and those emitted from the waste by using an upwind background VOC monitoring station.

CONCLUSION

Because of the unique nature of RCRA Miscellaneous Units, such as the WIPP facility, the EPA prepared a Guidance Manual for preparing RCRA Permit Applications for Mined Geologic Repositories. The Permittees (Applicants at the time) followed this Guidance Manual in preparing the original Part B Permit Application (AR 960412). The Applicants likewise followed Section 11.0 of the Guidance Manual in order to satisfy the reporting of exposure information required by Section 3019 or RCRA. The NMED found this approach adequate and prepared an operating Permit that incorporated the necessary elements of the original Part B Permit Application (AR 960412) including the Applicants' approach to protect human health and the environment from harmful exposure to hazardous waste and hazardous waste constituents associated with TRU mixed waste.

Summary Table of Potential for Releases of Hazardous Waste Constituents

CONFIGURATION	PATHWAY FROM WASTE HANDLING BUILDING OR UNDERGROUND REPOSITORY				CONCLUSION
	SOIL	SURFACE WATER	GROUNDWATER	AIR	
OPEN PANEL	In order for soil to become contaminated, hazardous waste would have to be released from the Waste Handling Building (**WHB**). Such releases will not occur because the waste is always managed in closed containers, and the building is constructed to withstand the natural forces (earthquake, tornado, probable maximum precipitation, and snow loads) that are reasonably expected to occur during operations. No contaminated materials are	Waste Isolation Pilot Plant (**WIPP**) facility design and operational considerations with regard to surface water pathway are the same as for the soil pathway. The use of sealed containers, the lack of lines that discharge liquids from the WHB to the environment prevent releases. There is insufficient water in disposal rooms to form a leachate. Furthermore, any produced waters collected in the underground and brought to the surface are tested for hazardous	The lack of water discharges from the WHB prevents the contamination of groundwater. Groundwater from the underground is controlled in two ways. First, any brine that may seep into the facility as the result of excavation and the development of the disturbed rock zone around excavations will be evaporated by the ventilation system so that waste leachates cannot form. Second, brine or other groundwater known to exist in the horizons above the repository are controlled by shaft	Transuranic mixed waste containers destined for shipment to the WIPP facility will be vented with a carbon composite filter which prevents pressure buildup in the container. During the WIPP operational period, volatile organic compounds (**VOCs**) in the vapor state may diffuse across these filters and migrate via the air pathway. The air pathway includes the movement of VOCs through the WIPP underground in the ventilation system and their discharge to the atmosphere at the mine ventilation	For the Open Panel configuration, the only viable exposure pathway is the Air Pathway. This is the subject of the exposure assessment for this configuration.

CONFIGURATION	PATHWAY FROM WASTE HANDLING BUILDING OR UNDERGROUND REPOSITORY				CONCLUSION
	SOIL	SURFACE WATER	GROUNDWATER	AIR	
	excavated from transuranic (**TRU**) mixed waste disposal rooms and deposited on the surface, thereby eliminating a soil pathway from the underground.	constituents before being dispositioned.	liners and by grouting.	exhaust fans. Based on an exemption in 40 CFR 264.1080(a)(7) emissions from these containers in the WHB are not regulated under RCRA.	
CLOSED PANEL	For soil to become contaminated from waste in the closed panel configuration, contaminants would have to be released from the closed panels. Experiments conducted in Panels 3 and 4 indicated that the likelihood of a deflagration or other event associated with the buildup of flammable gasses are during operations is	The modeling conducted by the DOE to predict performance over the long-term shows that the disposal region serves as a brine "sink" during the early years after closure. There will be insufficient hydrostatic head needed to move brine from a disposal area into the adjacent rock or into open areas of the mine. This is documented in	The groundwater is protected from releases of contaminants from closed panels for the same reasons surface water is protected. That is, during the operational and post-closure periods, there is insufficient brine and pressure to drive contaminants out of the disposal system and into nearby groundwaters.	Emissions from waste containers in the closed panel configuration are added to those from the open panel configuration for the purposes of assessing compliance to the environmental performance standards. .	For the Closed Panel configuration, the only viable exposure pathway is the Air Pathway. This is the subject of the exposure assessment for this configuration.

CONFIGURATION	PATHWAY FROM WASTE HANDLING BUILDING OR UNDERGROUND REPOSITORY				CONCLUSION
	SOIL	SURFACE WATER	GROUNDWATER	AIR	
	insignificant. The details of the design of the closure are presented in Renewal Application Attachment G and Appendix G1. Based on the design, no contaminants will be released from the panel, therefore, contamination of any soil that is part of an exposure pathway is not possible.	Renewal Application Addendum N1.			
SEALED SHAFT	Once the shafts are sealed, there is no soil pathway unless contaminants can escape as either liquids or gases, which subsequently are deposited on the ground surface. The potential for	Once the shafts are sealed, there is no surface water pathway unless contaminants can escape as either liquids or gases, which subsequently are deposited in surface waters. The	An analysis of post-closure performance was conducted using a computer simulation as discussed in Renewal Application Addendum N1. The	As with brine, gas will not move out of the disposal region without a pathway and a driving force. Since pressure does not exceed near field lithostatic pressures during the post-closure	There are no viable pathways to consider after final facility closure.

CONFIGURATION	PATHWAY FROM WASTE HANDLING BUILDING OR UNDERGROUND REPOSITORY				CONCLUSION
	SOIL	SURFACE WATER	GROUNDWATER	AIR	
	such releases are evaluated in Renewal Application Addendum N1.	potential for such releases are evaluated in Renewal Application Addendum N1.	pertinent results are examined for the first 300 years in after the shafts are sealed. Input parameters and other key assumptions are summarized in the original Part B Permit Application Appendix D6 (AR 960412). Based on these results, there are two reasons why the groundwater pathway is not viable. First. there is insufficient pressure during the post-closure period to drive brine from the disposal region. Second, no leachate can form.	period, gas will only accumulate within the disposal region. the post-closure period to drive brine from the disposal region.	