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# Stakeholder Meeting on the WIPP Planned Change Request

## EPA Presentation

Office of Radiation and Indoor Air  
August 26-29, 2024



# Welcome & Introductions



- Staff Introductions: EPA & DOE
- Background: DOE is proposing to add new panels (11 & 12) to the existing WIPP repository
  - New Mexico Environment Department (NMED) approved the panels as part of the operating permit
  - EPA received DOE's planned change request (PCR) for replacement panels on March 14, 2024
- Purpose: Gather comments from the public on the PCR
- Structure: Roundtable structure
  - Open discussion – we want to hear your thoughts/questions at this stage!
  - Be civil - everyone should respect other attendees' rights to both listen and be heard
  - Time - ~5 minutes per speaker to give everyone in attendance opportunities; we can come back to you, time permitting
- Follow-up: Future actions
  - All presentations and any written comments submitted during the meeting will be docketed
  - Recording of the Zoom sessions will be made available on the WIPP website

# EPA WIPP PCR Communications



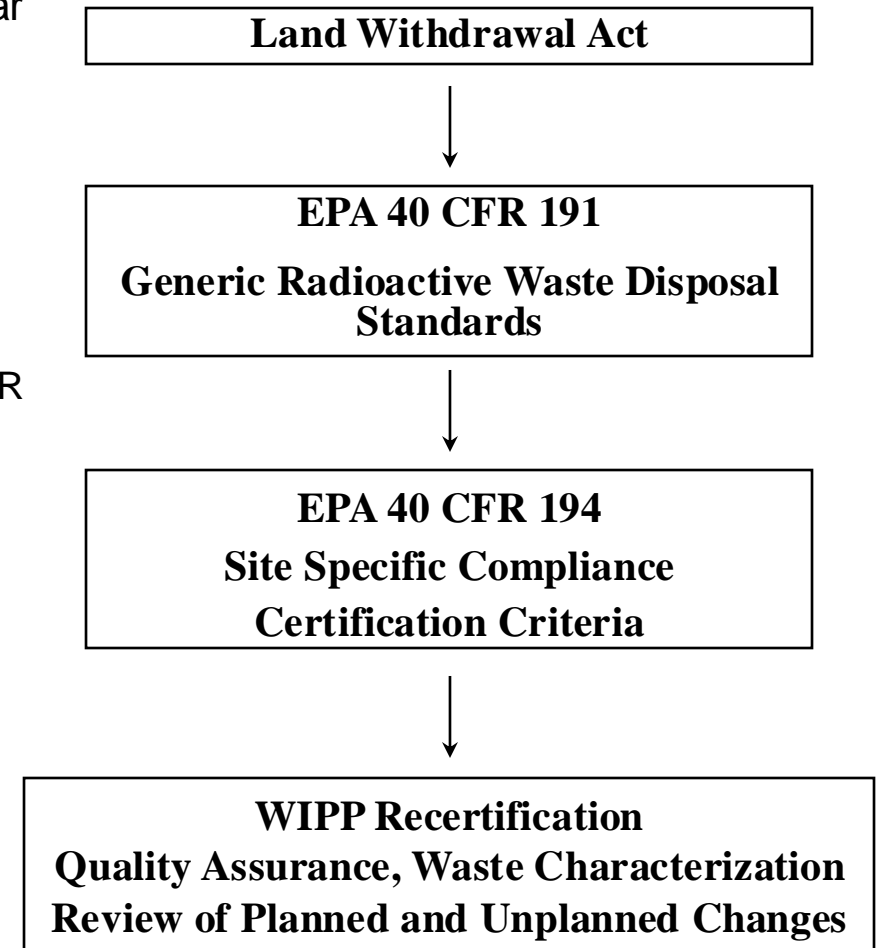
- FR notice published July 16, 2024
  - <https://www.regulations.gov/document/EPA-HQ-OAR-2024-0309-0001>
  - Establishes 60-day comment period (July 16 to September 16, 2024)
- EPA has an official docket for all received materials and public comment
  - <https://www.regulations.gov/docket/EPA-HQ-OAR-2024-0309>
  - EPA has received and docketed stakeholder letters from June 24 and July 24, 2024
  - All public comments will be considered and addressed in EPA's Response to Public Comment document
- EPA's WIPP webpage dedicated to the PCR will continue to be updated
  - <https://www.epa.gov/radiation/wipp-news#WIPP-PCR>

- EPA's role at the Waste Isolation Pilot Plant (WIPP)
- Overview of DOE's Planned Change Request for approval to add panels 11 and 12 to WIPP
- EPA's review process
- "Significant departure" in EPA regulations
- Basis of EPA's decision
- WIPP performance assessment
- EPA's observations on the PCR
- Status of review

# EPA's Role at the WIPP



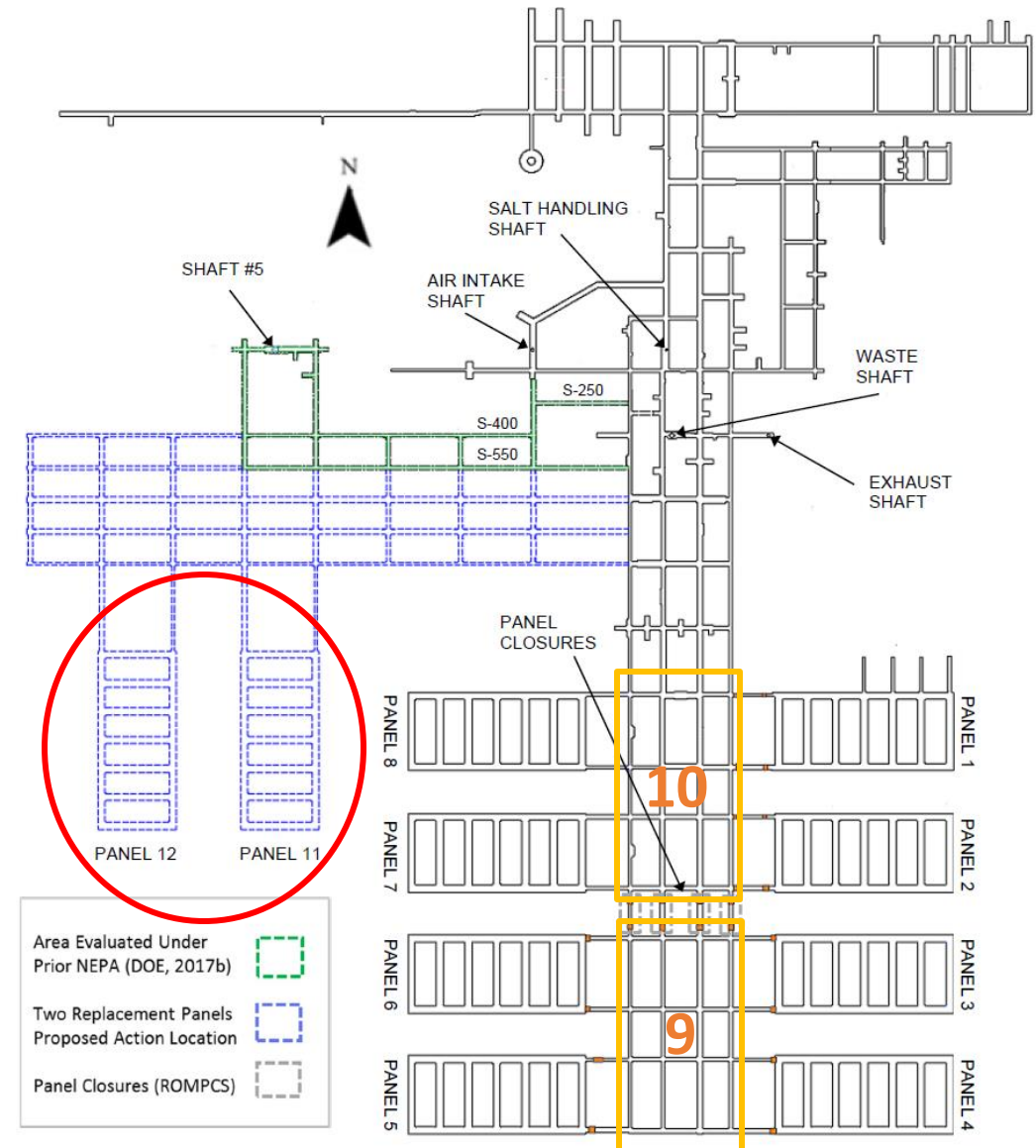
- EPA's primary oversight role is reviewing DOE compliance with our 10,000-year radioactive waste disposal standards (40 CFR Parts 191 & 194)
  - Primary oversight of the WIPP facility and waste generator sites
  - EPA does not oversee transportation – responsibility lies with DOE, DOT, and NRC (shipping containers)
- Recertification (194 Subpart C)
  - Process restarts every five years, with most recent recertification May 3, 2022 (87 FR 26126)
- Continuing Compliance
  - Waste Characterization (194.8(b), 194.24)
  - Quality Assurance (194.8(a), 194.22)
  - Site Inspections (194.21, 194.42, 61 Subpart H, 191 Subpart A)
  - • Review of planned/unplanned changes (194.4(b)(3), 194.65)
  - Biennial Environmental Compliance Report—reviewed every 2 years, letter to DOE signed by Admin. (Section 9 *WIPP Land Withdrawal Act*)
- Outreach and Stakeholder Engagement



# DOE Planned Change Request



- DOE proposes adding Panels 11 and 12 to replace space lost from abandoning Panel 9, and losing portions of Panels 1, and 7
  - Panels 11 and 12 design are similar to Panels 1 through 8
  - DOE is expanding the repository footprint into a new area not covered in the original certification
- WIPP Land Withdrawal Act provides limits on amount of waste that can be disposed at WIPP
- EPA and the New Mexico Environment Department have approved the mining of the drifts



# History of EPA Reviews of DOE Requests



- EPA's general review process
  - Receive DOE request and documentation notifying EPA of change
  - Review documentation, request additional information from DOE (as needed)
  - Solicit public comment (when appropriate)
  - Determine if this is a *significant departure* from the most recent recertification
  - Draft supporting materials outlining review findings
  - EPA makes decision documenting in letter and in supporting information. Information is also posted on the website and in the docket

## Examples of Past DOE planned changes

- Addition of new shielded container variants (2023)
- Addition of new west main access drifts (2021)
- Change to calculating repository waste volumes (2018)
- Addition of a new ventilation shaft (2017)
- Update to the existing panel closure system (2014)\*
- Use of shielded containers to emplace remote handled (RH) waste (2011)\*
- Update to the MgO engineered barrier safety factor (2008)\*
- Disposal of supercompacted waste (2003)
- Receive and dispose of RH waste (2003)\*

\*Public comment included in EPA's review

# Significant Departure in the Regulations



## 194.4(b)(3)(vi)(a) and (b), 194.65

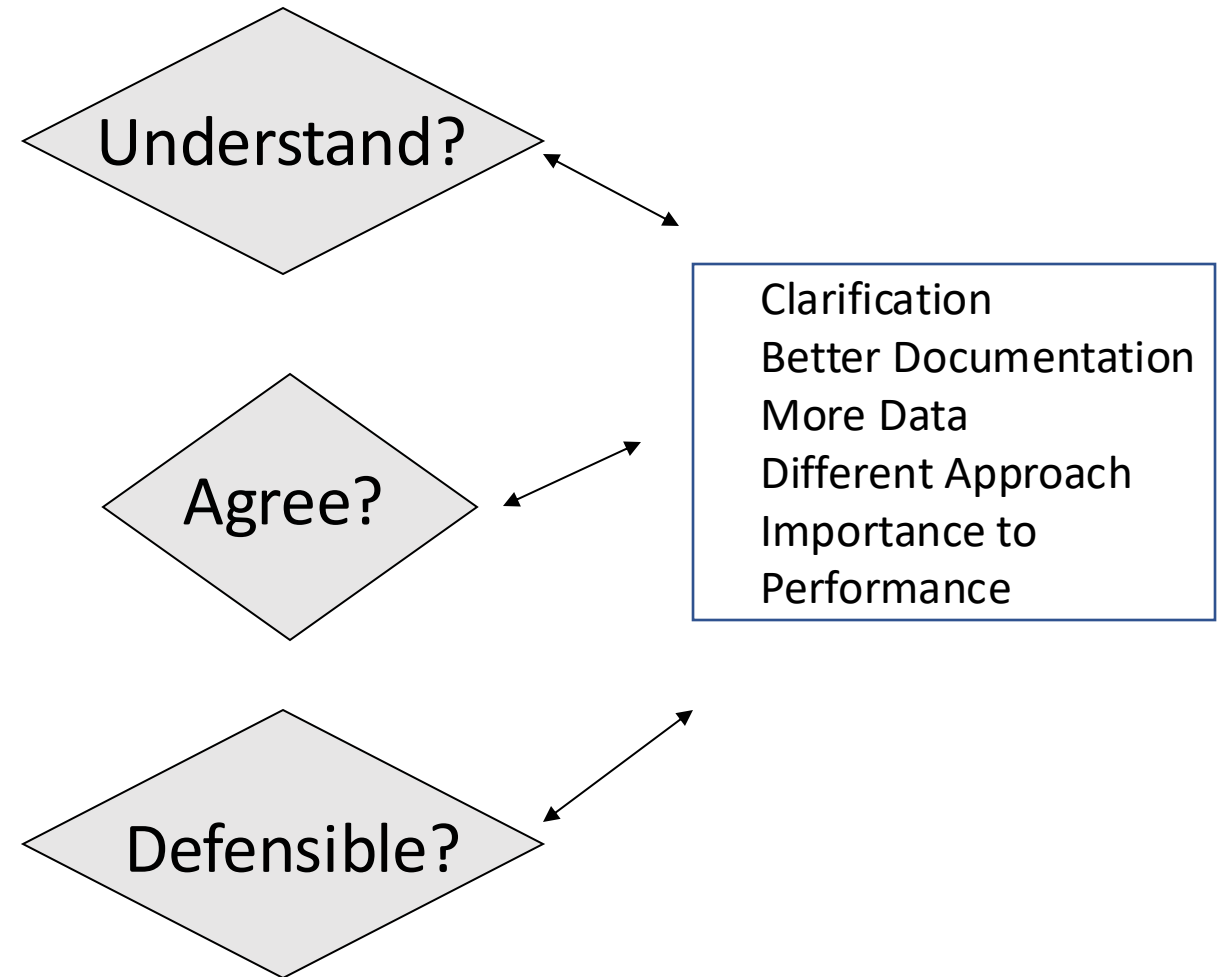
- EPA expects DOE to notify the Agency on any changes via 194.4(b)(3):
  - “...the Department shall **report any planned or unplanned changes** in activities or conditions pertaining to the disposal system **that differ significantly from the most recent compliance application.**”
- EPA determines if a change departs significantly from CRA-2019 via 194.4(b)(3)(vi)(a) and (b):
  - “... the Administrator will notify the Secretary in writing whether any condition or activity...Does not comply with the terms of the certification; and, if it does not comply...**Whether the compliance certification must be modified, suspended or revoked...**”
- If EPA determines a change is a significant departure from CRA-2019, EPA would need to do a rulemaking (194.65(a)):
  - “If the Administrator determines that any **changes in activities** or conditions pertaining to the disposal system **depart significantly from the most recent compliance application**, the Agency will publish a **Notice of Proposed Rulemaking** in the Federal Register announcing the Administrator's proposed decision on **modification or revocation, and soliciting comment on the proposal.**”

# Basis for a Decision on the PCR






## Reasonable Expectation




- Regulatory
  - Compliance of proposed changes with terms of recertification (194.4(b)(3))
  - Reasonable expectation that cumulative releases of radionuclides from the WIPP and into the environment over 10,000 years will not exceed specified quantities (40 CFR 191.13 and Appendix A)
- Technical
  - Demonstrate modeled releases from Panels 11 and 12 are within regulatory limits
  - Address technical questions
  - Identify status of CRA-2019 issues
- Decision will **only** be for Panels 11 and 12



## Demonstration of WIPP Compliance

- # Assessment
- Diagram illustrating the subsurface layout and fluid flow for the Waste Disposal Region (WDR) and Access Drifts (AD) system, showing the relationship between the Rustler and Overlying Units, the Salado Formation, and the Castile Formation.
- The diagram shows a cross-section of the subsurface with the following components and flow paths:
- Drilling Rig** and **E1** (Exploration Well) are located on the **Land Surface**.
  - Rustler and Overlying Units** (top section): Contains the **Culebra** layer. Fluid flow is indicated by arrows pointing left from the shaft area and right from the Culebra layer.
  - Subsurface Boundary of Accessible Environment** is marked by a dashed line.
  - Upper Seal System** is located below the Culebra layer.
  - Salado Formation** (middle section): Contains the **Waste Disposal Region** (WDR) and **Access Drifts** (AD).
    - MB138** (Monitoring Well) is located in the WDR.
    - MB139** (Monitoring Well) is located in the AD.
    - Fluid flow in the WDR is indicated by arrows pointing right from the shaft area and left from the AD.
    - Fluid flow in the AD is indicated by arrows pointing right from the shaft area and left from the WDR.
  - Lower Seal System** is located below the Salado Formation.
  - Castile Formation** (bottom section): Contains the **Pressurized Brine** source.
  - Shaft** is the vertical access point for the system.
- (Not to Scale)

 Anhydrite layers A and B
  Groundwater flow and radionuclide transport
  Repository and shafts

 Culebra
  DRZ
  Increase in Culebra hydraulic conductivity due to mining

# Preliminary Observations



## Examination of the technical basis for primary changes in PA calculations

- Calculation for Panels 11 and 12
  - Iron surface area and brine volume
  - Probability of hitting pressurized brine for 19 panels vs. 12 panels
  - Culebra transmissivity fields
  - Computer modeling changed to accommodate new panels
- Borehole permeability
  - Value of upper bond for degraded borehole permeabilities
- Waste room porosity calculations
- Geochemistry
  - Actinide thermodynamic database: solubility values for +III actinides
  - Representation of actinide solubility uncertainty
  - Chemical conditions and Pu oxidation state

# Status of Review



- Received the new panels planned changed request on March 14, 2024
- Correspondence sent to DOE
  - Five sets of technical questions sent (sent April 16, April 24, May 10, June 27, and August 12)
- DOE responses to questions
  - Two sets of DOE responses to EPA questions (sent July 1 and August 21)
- Virtual and in-person meetings with DOE
  - Technical exchange on the 12-panel repository calculation, August 22
- Sensitivity calculations
  - EPA in-house calculations
  - DOE calculations requested by EPA
- Public comments received
  - EPA has received and docketed stakeholder letters from June 24 and July 24, 2024
  - Active comment period through September 16, 2024
    - EPA will include a Response to Comments document in its final PCR review determination materials



# Questions?



# Additional Slides

# EPA Technical Questions



- 12-panel repository calculation
- Actinide solubility uncertainty distribution
- Brine pockets (PBRINE)
- Chemical conditions and Pu oxidation state
- Corrosion
- Drilling rates
- Geochemical database
- Inventory
- Microbial colloids
- Room closure behavior
- Request for additional documents and references

# DOE Response to EPA Questions



- Details of new panels configuration
- Microbial colloids
- 12 Panel Analyses
- Closure of rooms with new design
- Inventory
- Geochemical database
- Additional documentation