DOE/CBFO-10-3322

2010 ANNUAL MITIGATION REPORT FOR THE WASTE ISOLATION PILOT PLANT

JULY 10, 2010

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ACRONYMS

AMR	Annual Mitigation Report
ASER	Annual Site Environmental Report
BECR	Biennial Environmental Compliance Report
CAM	continuous air monitor
CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Plan
EMS	Environmental Management System
EPA	Environmental Protection Agency
ER	Emergency Response
FAS	fixed air sampler
FEIS	Final Environmental Impact Statement
FR	FEIS ROD
HEPA	high-efficiency particulate air
IART	Incident/Accident Response Team
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
MAP	Mitigation Action Plan
MERRTT	Modular Emergency Response Radiological Transportation Training
MSHA	Mine Safety and Health Administration
NC	NEPA compliance
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NMED	New Mexico Environment Department
OSHA	Occupational Safety and Health Administration
RC	Regulatory Compliance
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SEIS	Supplemental Environmental Impact Statement
STEP	States and Tribal Education Program
TP	test phase
TR	transportation
TRANSCOM	Transportation Tracking and Communication System
TRU	transuranic
TRUPACT-II	Transuranic Package Transporter Type B Shipping Container, Model II
VOC	volatile organic compound
VPP	Voluntary Protection Program
WIPP	Waste Isolation Pilot Plant
WTS	Washington TRU Solutions

INTRODUCTION

Guidance for the development of a Mitigation Action Plan (MAP) is contained in Department of Energy (DOE) Order 451.1B, *National Environmental Policy Act Compliance Program*, and 10 CFR 1021, *National Environmental Policy Act Implementing Procedures*. These documents specify that a MAP be prepared to mitigate environmental impacts resulting from the implementation of commitments made in the Record of Decision (ROD) for an Environmental Impact Statement (EIS). The Order further requires that an annual report be prepared to demonstrate the progress made in implementing the commitments and effectiveness of any mitigation activity until the activity has been completed. The Waste Isolation Pilot Plant (WIPP) MAP was prepared to address commitments made in the RODs for the *WIPP Final Environmental Impact Statement* (FEIS), and the *WIPP Final Supplemental Environmental Impact Statement*. This 2010 *Annual Mitigation Report* (2009 AMR) addresses those WIPP Project-related mitigation activities undertaken from the time of submittal of the *1994 Annual Mitigation Report* in July 1994 through June 2010.

Each commitment from the RODs has been given an alphanumeric designation. The alphabetic component designates the source and/or subject area of the commitment and the numeric component designates the sequential order of the commitment.

The following acronyms are used to track commitments:

Acronym	Designation
FR	**FEIS ROD**
NC	**NEPA compliance (SEIS-I ROD)**
RC	**Regulatory compliance (SEIS-I ROD)**
TR	**Transportation (SEIS-I ROD)**
TP	**Test phase (SEIS-I ROD)**
ER	**Emergency response (SEIS-I ROD)**

Note: All commitments from the FEIS ROD are designated "FR." Commitments from the SEIS-I are divided among the five topical areas listed above.

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The number and category of each ROD commitment is presented in Table 1. As in previous mitigation reports, the 2010 AMR divides each of the commitments into four categories:

Category 1: active commitments with ongoing implementation activities

Category 2: commitments that have been fulfilled

Category 3: commitments that will not be implemented under the present site configuration due to DOE policy changes (such as those related to the cancellation of the WIPP Test Phase)

Category 4: commitments, or portions of commitments, that are being tracked as environmental compliance or data collection commitments in other DOE reports

Commitments or portions of commitments designated as Category 4 require the DOE to comply with applicable state and federal regulations. The status of compliance with these regulations is tracked in the compliance chapter of the current *WIPP Annual Site Environmental Report* (ASER), and in the *WIPP Biennial Environmental Compliance Report* (BECR).

The tracking number(s) for active mitigation commitments (or commitment portions), the relevant text from the ROD, and the status of the implementation of the commitment are provided in Table 2. The commitment numbers are identical to those presented in the original MAP.

Table 1 - Categories of Commitments made in the FEIS and SEIS-I RODs

COMMITMENT	CATEGORY	COMMIT-MENT	CATEGORY	COMMITMENT	CATEGORY
FR-1	2	FR-6h	2	RC-2b	2
FR-2	2	FR-6I	2	RC-2c	2
FR-3	2	FR-7	1	RC-2d	2
FR-4	3	FR-7a	1 & 4	RC-2e	2
FR-5	3	FR-7b	1 & 4	RC-2f	2
FR-6	1	FR-7c	4	RC-2g	4
FR-6a	1 & 4	FR-7d	2	RC-2h	4
FR-6b	2	FR-7e	4	RC-2I	4
FR-6c	2	FR-7f	1 & 4	RC-2j	1
FR-6c(1)	2	FR-8	1	RC-3	4
FR-6c(2)	2	NC-1	4	TR-1	2
FR-6c(3)	2	NC-1	4	TP-1	3
FR-6c(4)	2	NC-2	3	TP-2	3
FR-6d	1 & 4	RC-1	4	TP-3	3
FR-6e	2	RC-2	1	TP-4	3
FR-6f	3	RC-2a	1	ER-1	1
FR-6g	3	-----	-----	-----	-----

NOTE: The shaded boxes pertain to commitments, or commitment portions, discussed in the 2010 AMR. The category of each commitment, or commitment portion, is designated by its number(s) as indicated below:

Category 1: active commitments with ongoing implementation activities

Category 2: commitments that have been fulfilled

Category 3: commitments that will not be implemented under the present site configuration due to DOE policy changes (such as those related to the cancellation of the WIPP Test Phase)

Category 4: commitments or portions of commitments, that are being tracked as environmental compliance or data collection commitments in other DOE reports

Table 2 - Status of Mitigation Implementation for Commitments made in WIPP RODs

No.	Commitment	Status of Mitigation Implementation
FR-6	**Commitment**: *DOE will mitigate adverse impacts of the WIPP project on the quality of the human environment by implementing the proposed mitigation activities as described in Section 9.6 of the FEIS*. **Reference:** FEIS ROD, p. 9-164	Methodologies for meeting the implementing mitigation activities described in Section 9.6 of the FEIS are described in commitments FR-6a through FR-6i. Of these, 6b, 6c, and 6e through 6i have been completed and are therefore not discussed in this table.
FR-6a	**Commitment**: *Environmental monitoring will allow the DOE to be continuously aware of environmental conditions and will alert them to any unexpected impacts, so appropriate action can be taken*. **Reference:** FEIS, Vol. I, p. 9-114	Environmental data reported by the WIPP project are collected in accordance with the requirements of the *WIPP Environmental Monitoring Plan* (EMP). The EMP defines the extent and scope of the WIPP environmental monitoring programs. It describes the environmental parameters that are sampled by the WIPP staff in addition to the criteria and methodologies by which samples are collected. The WIPP Annual Site Environmental Report (ASER) contains the annual monitoring data collected as part of the environmental monitoring program. The information reported annually in the WIPP ASER includes VOC (volatile organic compound) and radioactivity. Media examined include: ambient air, soil, meteorological, biota, and surface water, sediment, and ground water.
FR-6d	**Commitment**: *Radiation monitors will be used to activate a system whereby the disposal-exhaust air will be diverted to high efficiency particulate air (HEPA) filters if an accident releases radioactivity underground*. **Reference:** FEIS, Vol. I, p. 9-117	The WIPP facility began receiving transuranic (TRU) waste on March 26, 1999. Continuous air monitors (CAMs) located at the exit of the active waste disposal panel provide the capability to activate a system to divert disposal exhaust air to high efficiency particulate air filters if an airborne radioactivity release occurred in the underground. The decision to locate the shift to filtration function to the CAMs at the exits of the active waste disposal rooms is explained in the WIPP Radiological Control Position Paper. No. 96-05, *Numbers and Placement of Effluent Continuous Air Monitors for WIPP Disposal-Phase Operations.* The EMP will continue to define the scope and extent of the WIPP facility emission/effluent and environmental monitoring programs during the operational life of the facility.

FR-7	**Commitment**: *In addition to the active mitigation measures to be taken, the monitoring activities described in Section 2, Appendix J, of the FEIS will be implemented*. **Reference:** FEIS ROD, p. 9164	Implementation of the monitoring activities described in Section 2, Appendix J, of the FEIS is discussed in commitments FR-7a through FR-7f. Commitments 7c and 7e are no longer being tracked in this report; however, information pertaining to their implementation is provided in the WIPP BECR and ASER. Commitment 7d has been completed and is not discussed in this table.
FR-7a	**Commitment**: *Continuous monitoring of seismic activity will be conducted near the surface.* **Reference:** FEIS, Vol. II, p. J-28	Currently, two different seismic monitoring programs are underway for the WIPP Project, one to evaluate regional seismic activity and the other to monitor WIPP facility-specific seismic activity. The regional program examines long-term regional seismic activities such as magnitude, depth, and patterns. Quarterly summary reports are provided to DOE. These reports, most recently the *Report on the Seismicity of the WIPP Site for the Period January 1, 2010 through March 31, 2010*, utilize data from the WIPP off-site network (an eight-instrument array within 300 kilometers of the facility) and other networks in New Mexico. Seismic monitoring data are presented annually in the ASER. The on-site seismic monitoring program utilizes accelerometers to detect ground motion or ground acceleration at the site. Earthquakes with ground motion of 0.008 g (gravitational constant) or greater, are recorded. In the event of an earthquake of 0.015 g, on-site accelerometers would activate alarms at the Central Monitoring Room, and then physical structures and the mine would be inspected. In the event of a design-basis earthquake (0.10 g), accelerometers at the tornado dampers on the Waste Handling Building filtration system are closed. Data from the accelerometers are used to examine the engineering effects of seismic activity.
FR-7b	**Commitment**: *It is expected that ground-water sampling for the long-term monitoring will be performed on an annual basis. However, after mining for the WIPP has started, sampling will be performed quarterly until conditions stabilize*. **Reference**: FEIS, Vol. II, p. J-29	This FEIS commitment pertained to water level measurements that were designed to evaluate the impacts of mining shafts and rooms on the area's formation waters. Thus, the groundwater sampling program implemented to meet these commitments involves the collection of water-level data only. The U.S. Geological Survey monitored water levels at the WIPP site and surrounding areas from 1977 to 1985. Sandia National Laboratories managed these studies from 1985 through 1988. Washington TRU Solutions (WTS) took over the management of the groundwater level monitoring program in 1988. Under the current program, groundwater level measurements are taken monthly in at least one accessible completed interval at each available well pad. At well pads with two or more wells completed in the same interval, quarterly measurements are taken in the redundant wells. The DOE publishes water-level data annually in the ASER. The groundwater sampling program is described in the WIPP EMP, the WIPP Groundwater Protection Management Program Plan, and Module V and Attachment L of the WIPP Hazardous Waste Facility Permit. Water-level measurements

FR-7b (cont.)		are collected and submitted monthly to the New Mexico Environment Department (NMED).
FR-7f	**Commitment**: *Monitoring will be conducted at all gaseous-exhaust locations and will consist of devices to sample airborne particulate radioactivity. Both alpha and beta-gamma continuous air monitors will be located at all release points.* *All systems will be designed to withstand the effects of a design-basis earthquake and will be supplied with emergency power.* **Reference:** FEIS, Vol. II, p. J-32	The WIPP facility began receiving TRU wastes on March 26, 1999. RADOS CAMs located at the exits of the active waste disposal panels have the capability to activate diversion of disposal exhaust air to high efficiency particulate air filters if an airborne radioactivity release were to occur in the underground. Both alpha and beta-gamma continuous air monitors are located at all release points. The Fixed Air Samplers (FASs) at Stations A, B, and C (and backup FAS at Station D) are used to satisfy the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements for periodic confirmatory sampling contained in 40 CFR Part 61, Subpart H and to document compliance with the *Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, 40 CFR Part 191, Subpart A. The effluent sampling system is made up of a series of FASs. The FASs at Stations A, B, and C have back-up power in the form of uninterruptible power supply that can power the monitor for up to 30 minutes. The effluent samplers have also been tested to withstand the effects of a design-basis earthquake. The results of these tests are described in the *Seismic Test of Waste Isolation Pilot Plant Station A Effluent Monitoring System Equipment*. Any modification to the effluent monitoring systems installed at the WIPP facility would retain back-up power and seismic qualification.
FR-8	**Commitment:** *DOE also intends to implement the Post-operational Monitoring Program described in Section J-3 of the FEIS.* **Reference:** FEIS, Volume II, Section J.3	The DOE has developed a post-operational monitoring plan based on the requirements of 40 CFR Part 191.14 and Part 194.42. The initial EPA certification (U.S. Environmental Protection Agency 1998a), and the CRA-2004, Appendix MON 2004, Attachment A establish a plan for preclosure and postclosure monitoring. Entitled Preclosure and Post Closure (Long-Term) Monitoring Plan, the plan was included as Appendix MON of the Compliance Certification Application submitted to the Environmental Protection Agency (EPA) in October 1996. This plan was updated in the March 24, 2004 WIPP Compliance Recertification Application (DOE/WIPP 04-3231), and the March 24, 2009, WIPP Compliance Recertification Application (DOE/WIPP-09-3424). The Postclosure Monitoring Plan will not be finalized until facility closure (sealing of the shafts), and it will not be implemented until after facility closure. Further, post-closure monitoring shall be complementary to monitoring required pursuant to applicable federal hazardous waste regulations at 40 CFR parts 264, 265, 268, and 270 and shall be conducted with techniques that do not jeopardize the containment of waste in the disposal system. The final Postclosure Monitoring Plan will include a review of the CRA-2009 and any proposed changes to the commitments made in the Final CRA will be approved by the appropriate regulatory authorities.

FR-8 (cont.)		The EPA certified on May 18, 1998, that the WIPP disposal system meets the provisions of 40 CFR Part 191 Subparts B and C and the WIPP Compliance Criteria at 40 CFR Part 194. On March 29, 2006, EPA recertified that the WIPP disposal system continues to comply with these waste disposal regulations. The EPA is currently in the process of recertifying WIPP for the second time.

RC-2	**Commitment**: *The DOE is committed...to evaluating further the potential mitigation measures described in Section 6 of the Supplement*. **Reference:** SEIS-I ROD, p. 25692	Commitments RC-2a and 2j are addressed below. Mitigation commitments RC-2b through 2f have been completed and therefore are not discussed in this document. RC-2g, 2h, and 2i are no longer being tracked in this report; however, information pertaining to their implementation can be found in the BECR and the ASER.
RC-2a	**Commitment**: *Measures would be incorporated into all of the activities to minimize the health and safety risks to the workers and the general public*. **Reference:** SEIS-I, Vol. 1, p. 6-2	In addition to complying with the Occupational Safety and Health Administration (OSHA) standards contained in 29 CFR Part 1910, and the Mine Safety and Health Administration (MSHA) standards contained in 30 CFR Part 57, the WIPP facility staff employs a variety of measures to minimize the health, and safety risks to workers, the general public, and the environment. The following are some of the programs in place to reduce environmental and safety risks at the WIPP facility. The WIPP Environmental Management System (EMS) and Integrated Safety Management System (ISMS) are implemented to integrate safe and environmentally sound practices into WIPP activities and operations. The WIPP EMS continues to be certified to the ISO 14001:2004 EMS standard. Part of maintaining the certification results in routine audits (both internal and third party) of the EMS. These indicate the EMS remains suitable and effective to maintain compliance with environmental requirements, protect people and the environment, and continually improve environmental performance. The WIPP Landlord Program provides a safety inspection process that appoints individuals to be accountable for safety concerns in their area or building. The Condition Assessment Survey/Capital Asset Management Process ensures that every structure on the WIPP site is thoroughly inspected, with inspections to include safety concerns. Inspections are performed by teams including employees, engineers, landlords, managers, and safety professionals. The WIPP Lessons Learned Program provides a disciplined and integrated process to identify, communicate, and ensure understanding by employees of applicable lessons-learned information gleaned from government, industry, and the WIPP Project. Lessons Learned materials determined to be applicable to the WIPP Project are disseminated to WTS and

RC-2a (cont.)		Washington Regulatory and Environmental Services department managers, and other appropriate personnel for their review and use. An annual report is sent to CBFO. The success in developing and maintaining a safe work environment at the WIPP facility is demonstrated in the following achievements: In 2009, the WIPP facility received its twenty-third consecutive Mine Operator of the Year award for safety performance from the New Mexico Mining Association. On October 3, 1994, the Secretary of Energy inducted the WIPP facility as the first Star Site in the DOE's Voluntary Protection Program (DOE-VPP). The DOE-VPP was initiated in January 1994 to recognize exemplary contractor safety and health programs. The WIPP VPP Program received DOE STAR recertification at each review through March 2010. In 2008, WTS received a DOE VPP award – the Star of Excellence. This significant achievement was based on WTS demonstrating strong involvement in VPP outreach and mentoring, performing aggressive self-assessments, and achieving an injury/illness incident rate at least 75 percent below the Bureau of Labor Statistics rate for similar industries. Additionally, the VPP Participants Association awarded WTS its Super Star in May 2009 for maintaining all injury rates more than 95 percent below the national average.

RC-2j	**Commitment:** *While State, Tribal, and local authorities are responsible for initial response and command and control at accidents, the DOE, as owner and shipper, will be present at the scene to assess the damage, to determine whether any release of radioactive material has occurred, and to help the State and local authorities promptly inform the public about the situation. In the unlikely event that a release of radioactive material has occurred, the DOE will collect the TRU waste and any debris; decontaminate soil, vehicles, and persons as needed; reload the TRU waste into new shipping containers; and return the site of the accident to normal use.* **Reference:** SEIS-I, Vol. 1, p. 6-7	The WIPP Project employs a number of methods to assure safe shipments of waste to the WIPP facility, including: • Maintaining constant communication with the drivers to relate adverse weather or road conditions and diverting shipments to safe parking areas when warranted. • Tracking the progress of shipments via the Transportation Tracking and Communication System (TRANSCOM) in accordance with three operating procedures. • Requiring by contract with the shipper that inspections of the shipments be performed at the beginning of each trip and every 150 miles. To address transportation emergencies, the DOE has established an Incident/Accident Response Team (IRAT) to provide off-site transportation-related emergency response capabilities. The team's mission is to protect the public and the environment, recover CBFO assets, and quickly resolve transportation incidents/accidents in the field. This team operates in accordance with CBFO 94-1007 Recovery Guide for TRU Waste Packages, and a local procedure, WP 12-10 "WIPP Incident/Accident Response Team Plan," for the

RC-2j (cont.)		establishment and conduct of the team's operations. In January 1995, the DOE issued a guidance document to address responding to WIPP project transportation-related TRU waste incidents. This guidance document, entitled *Emergency Planning, Response, and Recovery Roles and Responsibilities for TRU-Waste Transportation Incidents*, defines DOE roles and responsibilities for emergency response to a TRU waste transportation incident. In November 2009 the DOE issued Revision 5 of the *Recovery Guide for TRU Waste Packages* (DOE/CBFO-94-1007), which addresses transportation incidents that could occur involving a truck shipment. This guide delineates the equipment and steps necessary to recover a package(s) and transporter as a result of an incident. It is intended to apply to all recovery situations, but will remain subject to local modifications as conditions indicate. WIPP transportation emergency exercises are conducted to validate plans, procedures, and training of local responders to respond to WIPP Project transportation-related incidents. These exercises are tailored to the specifications outlined in the guidance documents referenced above. To date, 41 transportation emergency exercises (WIPPTREX) and four TRANSAX transportation accident exercises have been completed. In April 2005, the IRAT's capabilities were tested in a full-scale transportation exercise in Fort Worth, Texas. In this exercise, one TRUPACT II was off the trailer and the other two in the shipment were damaged. This was the last full scale exercise of this type, to date. On December 27, 2005, following an accident involving a TRUPACT-II in Idaho, two members of the IRAT were in constant communications with the incident commander at the scene; orchestrating and directing the recovery. Successful recovery was achieved within less than eight hours.

ER-1	**Commitment**: *The DOE will work with all States through which waste will be transported to establish comprehensive training programs for emergency response personnel*. **Reference**: SEIS-I ROD, p. 25692	The States and Tribal Education Program (STEP) is a comprehensive emergency responder training system, which focuses on the training of personnel in the western and southern states. As of May 2009, approximately 30,000 persons have received this training. In 2003, the program adopted the DOE Modular Emergency Response Radiological Transportation Training (MERRTT) program sponsored by DOE Headquarters for the training of first responders. Incident Command System (ICS) and hospital training remain stand-alone WIPP STEP courses. The STEP is designed to supplement the hazardous materials training previously received by emergency response personnel. OSHA and the National Institute of Occupational Safety and Health have certified that the MERRTT and STEP courses comply with the applicable hazardous material training requirements of 29 CFR 1910.120(q). MERRTT and STEP training include Incident Command procedures and emergency actions for response personnel responding to an incident involving TRU waste transported to or from the WIPP facility. The WIPP Project has worked closely with the states and tribes along the transportation corridors to plan and conduct emergency response exercises associated with simulated accident scenarios. Thus far, full-scale exercises have been successfully conducted with the states of Colorado, Georgia, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, and Wyoming. These exercises validate the capability and proficiency of participating state, local, tribal, and DOE emergency systems and personnel. National DOE emergency response exercises have been conducted in Colorado (1990), Idaho (1992), New Mexico (1993), and Oregon/Idaho (border exercise) (1994). This transportation accident exercise program examines the coordination and efficiency of state, local, and DOE emergency responders using simulated TRU waste.

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