SUPPLEMENT

TO

WASTE ISOLATION PILOT PLANT BIENNIAL ENVIRONMENTAL COMPLIANCE REPORT

(DOE/WIPP-14-3526) OF SEPTEMBER 2014

JANUARY 30, 2015

Total Pages: 127

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1.0 INTRODUCTION

On January 7, 2015, the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) agreed to provide a supplement to the Waste Isolation Pilot Plant (WIPP) 2014 Biennial Environmental Compliance Report (BECR). This supplement addresses the February 5, 2014, mine fire involving an EIMCO Haul Truck (equipment number 74-U-006B) (salt haul truck) that occurred at the DOE Waste Isolation Pilot Plant (WIPP) facility and the February 14, 2014, incident in the underground repository at the WIPP facility, which resulted in the release of americium and plutonium from one or more transuranic (TRU) waste containers into the underground mine and the ambient atmosphere within the facility boundary.

In response to the salt haul truck fire on February 5, 2014, the Deputy Assistant Secretary for Safety, Security, and Quality Programs, DOE Office of Environmental Management formally appointed an Accident Investigation Board (AIB) to investigate the accident based on the accident meeting Accident Investigation Criteria 2.d.1 of DOE O 225.1B, Accident Investigations, Appendix A. The AIB began the investigation on February 10, 2014, completed the investigation on March 8, 2014, and submitted the findings to the Deputy Assistant Secretary for Safety, Security, and Quality Programs, Office of Environmental Management on March 11, 2014. On March 14, 2014, the AIB's Accident Investigation Report (Report) was formally transmitted to Nuclear Waste Partnership LLC (NWP).

In response to the February 14, 2014, radiological incident the Deputy Assistant Secretary for Safety, Security, and Quality Programs, DOE Office of Environmental Management, formally appointed a second AIB to investigate the radiological release in accordance with DOE O 225.1B, Accident Investigations. The AIB began the investigation on March 3, 2014, completed Phase 1 of the investigation on March 28, 2014, and submitted the report to the Acting Deputy Assistant Secretary for Safety, Security, and Quality Programs, DOE Office of Environmental Management on April 1, 2014. The Phase 1 report covers the AIB conclusions relative to the release of TRU radionuclides from the underground to the environment. On April 24, 2014, the AIB Report was published and made available to NWP. The AIB is in the process of performing Phase 2 of the investigation of the radiological incident which will be completed after investigation of the Panel 7, Room 7, the room in which the radiological release occurred.

Following the release of the two Reports the DOE and NWP began developing Corrective Action Plans (CAPs) to address the AIB findings. The draft DOE CAP and NWP CAP are currently in the review and approval process with DOE headquarters. When approved, copies of the reports will be available to stakeholders, including the Environmental Protection Agency.

The purpose of the CAPs is to specify CBFO and NWP corrective actions in the programmatic areas of emergency response, maintenance, fire protection, DOE oversight, safety culture, conduct of operations, nuclear safety, and radiation safety.

These CAPs, consolidated for both fire and radiological events, will specify the CBFO and NWP corrective actions responsive to the two AIB Reports. Each CAP will include the actions to be taken, the deliverable, the action owner and due dates for completing the actions.

1.1 Organization of the Report

This report (excluding attachments) is organized consistent with the 2014 WIPP BECR reporting format. However, only those sections and tables or portions of tables that have relevant supplemental information are included and are numbered consistent with the numbering in the 2014 BECR. Each of the compliance tables in this report contains the 2014 BECR compliance status text in the center column in order to provide a reference point during reviews. Finally, because the text in the center column is directly from the 2014 BECR, it will include acronyms and references that can be found in that report. These are not repeated in this report.

2.0 RESOURCE CONSERVATION AND RECOVERY ACT AND SOLID WASTE DISPOSAL ACT

2.2 Status of Compliance with the Regulatory Requirements

Supplemental information for the requirements specified in the Resource Conservation and Recovery Act (RCRA) are covered in detail in the implementing regulations, Section 25 of this report. For the unique federal requirements (e.g. RCRA 3016 and Biennial Hazardous Waste Reports) there is no supplemental information.

3.0 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT

3.2 CERCLA Status of Compliance with the Regulatory Requirements

Table 2 provides general information on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements and the EPA regulations implementing the requirements for the supplemental reporting period.

Table 2: Status of Compliance with the Regulatory Requirements of the Emergency Planning and Community Right-to-Know Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
4. Changes Relevant to Emergency Planning, 40 CFR §355.20(c)	*The owner or operator of a facility will inform the LEPC of any changes occurring at the facility that may be relevant to emergency planning.* The DOE provides information to the LEPC regarding changes at the facility that may be relevant to emergency planning. There were no changes at the facility during this reporting	Three members of the WIPP Emergency Management and Security Department are currently listed as Regional Local Emergency Planning Committee members and attended scheduled meetings since April 1, 2014. The Emergency Management and Security Department has established a new notification process

Table 2: Status of Compliance with the Regulatory Requirements of the Emergency Planning and Community Right-to-Know Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	period that required reporting.	with regional partners to provide stakeholders with timely Operational Emergency notifications from the WIPP facility.
5. Emergency Release Notification, 40 CFR §355.42	*The owner or operator of a facility shall immediately notify the community emergency coordinator for the LEPC of any area that is likely to be affected by the release and the SERC of any state likely to be affected by the release.* There were no releases from the WIPP facility that required notification to the SERC or to the LEPC during this reporting period.	On April 11, 2014, the CBFO and NWP implemented the RCRA Contingency Plan. The LEPC and SERC were notified as directed by the procedure which governs implementing the plan.

5.0 ATOMIC ENERGY ACT AND THE ENVIRONMENTAL PROTECTION AGENCY

5.2 Status of Compliance with the Regulatory Requirements

Table 4 provides general information on regulatory requirements of the Atomic Energy Act (AEA) and the EPA's standards implementing those requirements for the supplemental reporting period**.**

Table 4: Status of Compliance with the Regulatory Requirements of the Atomic Energy Act and the U.S. Environmental Protection Agency

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
2. Standards, 40 CFR §191.03(b) (Subpart A)	*The combined annual dose equivalent to any member of the public in the general environment shall not exceed 25 mrem to the whole body and 75 mrem to any critical organ.* The results of the WIPP Effluent Monitoring Program have shown no releases of radionuclides that may adversely affect the public, thereby demonstrating compliance with the 40 CFR §191.03 standards. The regulatory standard specifies that the combined annual dose equivalent to any member of the public in the general environment resulting from discharges of radioactive material and direct radiation from such management and storage shall not exceed 25 mrem to the whole body and 75 mrem to any critical organ.	Although final, validated, end of year data will not be available for running CAP88-PC models until March, 2015, the WIPP gross screening estimates show that potential exposures to the public will be well below regulatory limits.

Table 4: Status of Compliance with the Regulatory Requirements of the Atomic Energy Act and the U.S. Environmental Protection Agency

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	In this program, the DOE emphasizes doses from releases through the air pathway. Air emissions are the only plausible pathway for radionuclide transport during receipt and emplacement of waste at the WIPP facility, either through the underground exhaust shaft exit or the ventilation system of the WHB. The DOE has demonstrated compliance with the radiation dose limits of Subpart A by conducting effluent monitoring since receipt of the CH-TRU and RH-TRU waste shipments at the WIPP facility. The CAP88 [Clean Air Act Assessment Package-1988]-PC computer modeling program is used to calculate radiation doses to demonstrate DOE compliance with the Subpart A standard. The model output specifies the effective dose equivalent (EDE) to which the public may be subjected by normal operation of the facility during the reporting periods, and is attached as appendix A to this report. CAP88-PC software provides the capability for assessments of both collective populations and maximally exposed individuals (MEIs). For both assessments, the DOE has examined radiation doses to individuals at any offsite point where there is a residence, school, business, or office. At the WIPP facility, consideration of businesses includes activities such as grazing, mining, or oil drilling in the vicinity of the site. Consequently, individual assessments at two locations (350 meters and 7,500 meters) are performed for demonstrating compliance with 40 CFR Part 191, Subpart A and 40 CFR Part 61, Subpart H, respectively. Note: Collective population assessment is chosen for 40 CFR Part 61, Subpart H adjunct regulatory compliance reporting, for DOE compilation uses. The data are read from a population file for determination of doses to the combined population within an 80-km (50-mile) radius. The individual assessment option provides the MEI dose estimate giving the highest EDE to any member of the public to receive in the reporting year, not to exceed 10 mrem/year. (See table 5 of this report.) In CY 2013, it was found during recalibration that sampling instrumentation at Station C had an as-found bias. The estimated airborne particulate doses were recalculated and conservatively adjusted to account for the bias, resulting in a dose increase of less than	

Table 4: Status of Compliance with the Regulatory Requirements of the Atomic Energy Act and the U.S. Environmental Protection Agency

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	10 percent from the original values. For CY 2012, the adjusted EDE from operations at the WIPP facility exclusive use area located 350 meters from the point of release (exhaust shaft and WHB ventilation system) was approximately 7.55E-04 mrem per year to the whole body, and 1.75E-03 mrem per year to the critical organ. In addition, for CY 2012, the adjusted EDE from facility operations to the MEI beyond the WIPP land withdrawal area located 7,500 meters from the point of release was about 1.06E-05 mrem per year to the whole body, and approximately 2.50E-05 mrem per year to the critical organ. For CY 2013, the EDE at the WIPP DOE exclusive use area located 350 meters from the point of release was approximately 5.25E-04 mrem per year to the whole body, and 1.31E-03 mrem per year to the critical organ. In addition, for CY 2013, the EDE from facility operations to the MEI beyond the WIPP land withdrawal area located 7,500 meters from the point of release was about 7.39E-06 mrem per year to the whole body, and approximately 1.81E-05 mrem per year to the critical organ. The results from CY 2012 and 2013 are well below the 25 mrem per year limit to the whole body, and the 75 mrem per year limit to any critical organ as required by 40 CFR §191.03, Subpart A.	

6.0 CLEAN AIR ACT

6.2 Status of Compliance with the Regulatory Requirements

Table 5 provides general information on regulatory requirements of the Clean Air Act (CAA) and the EPA's standards implementing those requirements for the supplemental reporting period.

Table 5: Status of Compliance with the Regulatory Requirements of the Clean Air Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
2. National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities, 40 CFR Part 61, Subpart H	*The provisions of this subpart apply to operations at any facility owned or operated by the DOE that emits any radionuclides other than radon-222 and radon-220 into the air, except that this*	The DOE continues to demonstrate compliance with this emission standard.

Table 5: Status of Compliance with the Regulatory Requirements of the Clean Air Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
(40 CFR §61.90)	*subpart does not apply to disposal at facilities subject to 40 CFR Part 191, Subpart B or 40 CFR Part 192.* The WIPP facility effluent monitoring program was established and placed in operation to comply with the provisions of the May 16, 1995, Memorandum of Understanding (MOU) Between the U.S. Environmental Protection Agency and the U.S. Department of Energy Concerning the CAA Emission Standards for Radionuclides 40 CFR Part 61, Including Subparts H, I, Q, and T (DOE, 1995). The DOE has continued to demonstrate compliance with the emissions standard of 40 CFR Part 61, Subpart H by virtue of the MOU.	
4. Standard, 40 CFR §61.92	*Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an EDE of 10 mrem/year.* The DOE submitted the annual report of air emissions from the WIPP facility for CY 2012 and 2013. These reports have been submitted in compliance with the provisions of 40 CFR 61.94 and the May 16, 1995, MOU between the EPA and the DOE concerning the CAA Emission Standards for Radionuclides, 40 CFR Part 61 including Subparts H, I, Q, and T. The WIPP facility effluent air emissions monitoring results were reported, and the EDE values to members of the public were calculated using the EPA-approved sampling procedures and computer model CAP88-PC, Version 3. The calculated EDE from operations at the WIPP facility for CY 2012 is reported to be 1.06E-05 mrem per year to the MEI. For CY 2012, the annual report on radionuclide air emissions from the WIPP facility was submitted to the EPA on June 18, 2013 (DOE, 2013e). The calculated EDE from operations at the WIPP facility for CY 2013 is reported to be approximately 7.39E-06 mrem per year to the MEI. The CY 2013 annual report on radionuclide air emissions from the WIPP facility was submitted to the EPA in June 2014 (DOE, 2014e). An adjustment was made to the reported doses for CY 2011 and 2012 to account for an unnoticed calibration shift in one sample	The currently projected preliminary dose estimates (based upon gross measurements relative to previous years) for CY 2014 continue to show that the calculated values are well below the 40 CFR 61 Subpart H limit of 10 mrem per year to the MEI member of the public, and the 0.1 mrem per year for periodic confirmatory sampling.

Table 5: Status of Compliance with the Regulatory Requirements of the Clean Air Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	collection instrument recording device. Conservative recalculation of the estimated doses showed a less than 10% increase over the previously reported values. A correction note was added to the CY 2013 annual report documenting the recalculations. On February 14, 2014, a radiological release underground initiated a protective shift in the mine ventilation system to the filtration mode. Subsequent analysis documented radioactive particulate emissions to the ambient air, and prompted a cessation of all underground activities pending assessment of the cause and magnitude of the event. As of March 31, the 40 CFR 191 Subpart A fence line dose estimate was less than 0.5 mrem, and the dose to the maximally exposed off-site individual is estimated to be less than 5.0E-03 mrem for CY 2014. Both annual reports and the currently projected dose estimates for CY 2014 showed that the calculated values are well below the 40 CFR 61 Subpart H limit of 10 mrem per year to the MEI member of the public, and the 0.1 mrem per year for periodic confirmatory sampling.	
5. Emissions Monitoring and Test Procedures, 40 CFR §61.93(a) and (b)	*Compliance with the standards, radionuclide emissions, shall be determined and EDE values to members of the public calculated using EPA-approved sampling procedures, computer models, or other procedures for which the EPA has granted prior approval. Radionuclide emission rates from point sources shall be measured at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an EDE in excess of 1.0 percent of the standard. For other release points, periodic confirmatory measurements shall be made to verify the low emissions.* The WIPP facility has three effluent monitoring stations - Stations A, B, and C. At each station, fixed air samplers (FASs) are used to collect representative samples of airborne particulates. Approved and controlled operating procedures are used at the WIPP facility to ensure that uniform methods are used to collect, package, and transport FAS filters. Station A FAS filter samples are collected at least once each working shift from the unfiltered underground	Station A, whose function is to sample unfiltered underground exhaust, remains shut down as the DOE continues to operate the WIPP facility in ventilation mode. All underground ventilation continues to be directed through the underground ventilation filters, and is monitored at Station B through daily sample filter collection. Station C was not affected by the airborne radiological particulate emissions event. The radioanalytical effluent sample filter measurements for CY 2014 are in process, but preliminary rough estimates, based solely upon gross measurements, indicate that compliance with the current regulatory limits and the 0.1 mrem periodic confirmatory measurement threshold, per 40 CFR 61, has been maintained.

Table 5: Status of Compliance with the Regulatory Requirements of the Clean Air Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	exhaust system. Station B FAS filter samples are collected at least weekly and at the end of each underground effluent filtration event. At Station C, FAS filter samples are collected at least weekly from the filtered WHB exhaust system. During 2011, Station C received an instrumentation upgrade and four FASs were used to collect weekly filter samples in the WHB. On May 6, 2011, sampling resumed at Station C. Subsequent calibration checks in CY 2013 revealed that, since the initial installation, the equipment was operating at a bias that would potentially result in a dose calculation up to 10% higher than previously calculated from WHB air emissions. The doses were recalculated based upon the as-found calibration data, and the errata reported in the CY 2013 annual report. The instrumentation was properly recalibrated in November 2013. Samples are composited on a monthly or quarterly basis, depending on sample location and the number of samples collected. These particulate filters are initially analyzed for gross alpha and gross beta activities. Filters from all three stations are analyzed for plutonium-238 (^{238}Pu), plutonium-239/240 ($^{239/240}$Pu); americium-241 (^{241}Am); strontium-90 (^{90}Sr); cesium-137 (^{137}Cs); uranium-233/234 ($^{233/234}$U); and uranium-238 (^{238}U). The composite sample results are summed to obtain a total quantity for each radionuclide released from each station. These detected radionuclide values are used as input into the CAP88-PC software package to calculate the EDE to members of the public for the purpose of demonstrating compliance with 40 CFR §61.92. In February 2014, the airborne radiological particulate emissions event effectively shut down Station A as an ambient air emission point. All underground ventilation starting February 14, 2014, through this reporting period was directed through the underground ventilation filters, and is monitored at Station B through daily sample filter collection. Station C was not affected by the airborne radiological particulate emissions event.	

9.0 TOXIC SUBSTANCES CONTROL ACT

9.2 Status of Compliance with the Regulatory Requirements

Table 7 provides general information on regulatory requirements of the Toxic Substances Control Act and the EPA's standards implementing those requirements for the supplemental reporting period.

Table 7: Status of Compliance with the Regulatory Requirements of the Toxic Substances Control Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
4. Certificate of Disposal 40 CFR §761.218(b)	*The owner or operator of the disposal facility shall send the Certificate of Disposal to the generator identified on the manifest which accompanied the shipment of PCB waste within 30 days of the date that disposal of each item of PCB waste identified on the manifest was completed unless the generator and the disposer contractually agree to another time frame.* Certificate of Disposal requirements were met during this BECR reporting period.	Waste containing PCB's is currently being stored in the WIPP Waste Handling Building. This waste had been received at the time of the February events but could not be emplaced after the events. PCB storage time extensions have been approved by EPA Region 6

12.0 NATIONAL ENVIRONMENTAL POLICY ACT

12.2 Status of Compliance with the Regulatory Requirements

Table 9 provides general information on regulatory requirements of the National Environmental Policy Act (NEPA) and how those requirements are implemented for the supplemental reporting period.

Table 9: Status of Compliance with the Regulatory Requirements of the National Environmental Policy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
2. Status of Other NEPA Documentation Related to WIPP	In addition to FEIS, SEIS, and SEIS-II, the DOE has published additional NEPA documentation related to WIPP facility operations and associated waste programs. These documents have included EAs and FONSIs, SAs, and revised RODs. To date, no FONSI has resulted in additional mitigation commitments, and no supplement analysis (SA) has resulted in the need to prepare additional NEPA analysis beyond a revision	As a result of the February 14, 2014 event a NEPA regulatory analysis and recommendation on whether additional NEPA documentation for the Interim, Supplemental, and Permanent ventilation system is required. The regulatory analysis and recommendation for the Interim Ventilation System has been transmitted to the CBFO

Table 9: Status of Compliance with the Regulatory Requirements of the National Environmental Policy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	to an existing ROD. The DOE issued an SA in September 2010 for packaging and handling of RH-TRU waste in shielded containers (DOE, 2010a). This document examines the impacts of the packaging and emplacement at WIPP of a portion of the RH-TRU waste inventory using a new container design called the lead shielded container. Based on the SA, the DOE determined that a supplemental or new EIS is not required. The DOE is preparing a 5-year SA for the WIPP Project. This is due to be completed in 2014. In February 2011, DOE issued a draft EIS, DOE/EIS-0375-D (DOE, 2011a), for the Disposal of Greater-Than-Class C Low-Level Radioactive waste that analyzed an alternative for the disposal of material in the WIPP facility vicinity; DOE has not issued the final EIS. In October 2013, DOE issued a final Supplemental EIS, DOE/EIS-0423-S1 (DOE, 2013g), for the Storage and Management of Mercury that analyzed an alternative to store mercury in the WIPP facility vicinity; DOE has not issued a ROD for this EIS. In March 2014, DOE issued a SA, DOE/EIS-0026-SA-09 (DOE, 2014f), for a proposed action to temporarily store defense TRU waste prior to disposal at WIPP. This document examines the impacts of the temporary storage of defense TRU wastes at the Waste Control Specialists facility in Andrews, Texas prior to eventual disposal at WIPP. Based on the SA, the DOE determined that a supplemental or new EIS is not required.	NEPA Compliance Officer.
3. Operational Compliance with NEPA at WIPP	Day-to-day operational compliance with NEPA at the WIPP facility is achieved by the review of proposed work, facility changes, and programmatic changes in accordance with a site compliance procedure. The CBFO NEPA Compliance Officer is responsible for making a determination as to whether additional NEPA documentation is required prior to the decision to implement these proposals. If the action is outside the WIPP NEPA compliance envelope (i.e., the NEPA analysis that has already been prepared for the WIPP project), the CBFO NEPA Compliance Officer may make a	The DOE made the following CX determination during this reporting period; November 17, 2014 – Installation of an Interim Ventilation System to support recovery activities at the WIPP facility.

Table 9: Status of Compliance with the Regulatory Requirements of the National Environmental Policy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	determination that the proposed action is CX. If the action is not covered by WIPP programmatic NEPA documentation and is not CX, the CBFO NEPA Compliance Officer submits a recommendation to the appropriate official as delineated by DOE Order 451.1B regarding the need to prepare an SA, EA, or EIS to address the proposed action and oversees said activities. The DOE made the following CX determinations during this reporting period: August 22, 2012 – Agricultural Research Service, Wind Erosion and Water Conservation Research Unit Wind Erosion Study (DOE, 2012i) September 11, 2012 – Routine Replacement of HEPA Filters (DOE, 2012j) February 5, 2013 – DOE Grant for the City of Carlsbad Improvement of the Double Eagle Well Field (DOE, 2013h) March 25, 2013 – Lease of Office Space to Support Waste Isolation Plant Activities (DOE, 2013i) August 12, 2013 – Routine Replacement of HEPA Filters (DOE, 2013j)	

13.0 ATOMIC ENERGY ACT AND THE U.S.NUCLEAR REGULATORY COMMISSION

13.2 Status of Compliance through DOE Orders

Table 10 provides general information on WIPP project compliance status for each of the DOE orders that implement the AEA relative to protection of public health and safety and the environment and relevant to the management of the WIPP facility following the fire and radiological events of February, 2014 for the supplemental reporting period.

Table 10: Status of Compliance through DOE Orders

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
1. DOE Order 151.1C, Comprehensive Emergency Management System	This order establishes requirements for emergency planning, categorization, classification, preparedness, response, notification, public protection, and readiness assurance activities. The applicable	One of the contributing causes (i.e. events or conditions that collectively with other causes increased the likelihood or severity of an accident but that individually did not cause the accident) to

Table 10: Status of Compliance through DOE Orders

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	requirements of this order are implemented through the WIPP emergency management program, the emergency response program, the training program, the emergency readiness program, the records management program, and the RCRA Contingency Plan (WIPP Permit Attachment D).	the radiological release of February 2014 as identified in the AIB report for the event was: *NWP implementation of DOE O 151.1C, Comprehensive Emergency Management System, was ineffective. Personnel did not adequately recognize, categorize, or classify the emergency and did not implement adequate protective actions in a timely manner.* The corrective actions and related tasks to ensure full compliance with DOE Order 151.1C are outlined in the draft DOE CAP and draft NWP CAP. In the draft DOE CAP the CBFO has directed and is coordinating with NWP to develop an integrated WIPP Emergency Management Program that is fully compliant with DOE Order 151.1C. The CBFO Safety Programs Division Director and staff will oversee and participate in the development of a new, fully compliant and integrated WIPP Emergency Management Program. The new WIPP Emergency Management Program will ensure that NWP and the CBFO can respond effectively and efficiently to operational emergencies; ensure emergencies are recognized, categorized, and as necessary classified promptly to ensure appropriate response measures are taken to protect workers, the public, and the environment. The CBFO Safety Programs Division Director and staff will oversee training, exercises and drills to ensure all elements of the emergency response are exercised and that emergency response personnel demonstrate competence in use of equipment and procedures. The DOE CAP and the NWP CAP will identify the corrective actions that will be taken to ensure full compliance with this Order.
2. DOE Order 225.1B, Accident Investigations	The objective of this order is to prescribe requirements for conducting investigations of certain accidents occurring at DOE operations and sites; prevent the recurrence of such accidents; and contribute to improved environmental protection and safety and health of DOE employees, contractors, and the public. This order is implemented through WP 15-MD3102, *Event Investigation* (NWPa) and WP 15-GM1001, *Root Cause Analysis*	On March 14, 2014 the AIB's Accident Investigation Report for the Underground Salt Haul Truck Fire was formally transmitted to NWP. The AIB completed Phase 1 of the investigation for the radiological incident on March 28, 2014, and submitted the report to the Acting Deputy Assistant Secretary for Safety, Security, and Quality Programs, DOE Office of Environmental

Table 10: Status of Compliance through DOE Orders

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	(NWPb). In February 2014 WIPP experienced two events that resulted in investigations by DOE. On February 5, a salt haul truck caught fire and burned such that the mine was evacuated. The accident investigation report was released in March 2014 (DOE, 2014g). On February 14, 2014, a radiological event occurred in the active disposal room in Panel 7. The accident investigation report for this event was not released during this reporting period. NWP personnel are actively working corrective actions.	Management on April 1, 2014. The report for the Phase 1 investigation covers the AIB conclusions for the release of TRU from the underground to the environment. Based upon the conclusions of this investigation, the AIB concluded that the above ground release identified in Phase 1 of the investigation was preventable. On April 24, 2014 the AIB Report was published and made available to NWP. Following the release of the two Reports discussed above the DOE and NWP began developing the following CAPs; • Draft, U.S. Department of Energy, Carlsbad Field Office, Corrective Action Plan (DOE CAP) addressing the Accident Investigation Reports of: the Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant, February 5, 2014, and the Phase 1, Radiological Release Event at the Waste Isolation Pilot Plant, on February 14, 2014. • Draft, Nuclear Waste Partnership LLC, Corrective Action Plan (NWP CAP) addressing the Underground Salt Haul Truck Fire and Phase 1 Radiological Release Events. The CAPs are in the review and approval stage at the time of this report. Actions in final, approved CAPs will be focused on assuring there is no recurrence of these or similar events and on improving protection of human health and the environment.
6. DOE Order 420.1C, Facility Safety	This order specifies requirements for nuclear safety, criticality safety, fire protection, and natural phenomena hazards mitigation. Site emergency plans, fire hazards analyses, and the *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA) (DOE/WIPP-07-3372) (DOE, 2013k) incorporate a baseline needs assessment of the fire protection emergency response organization. The requirements are implemented through the *WIPP Fire Hazard Analysis for the Waste Isolation Pilot Plant* (WIPP-023) (DOE, 2013l); and the DSA (DOE/WIPP-07-3372). DOE O 420.1B, Admin Change 1, was superseded by DOE O 420.1C.	In response to the Underground Salt Haul Truck Fire the CBFO directed NWP to develop a new WIPP Fire Protection Program that is fully compliant with DOE O 420.1C, Facility Safety, DOE-STD-1066-2012, Fire Protection, 30 CFR Part 57, Safety and Health Standards Underground Metal and Nonmetal Mines, and applicable National Fire Protection Association (NFPA) codes and standards. The CBFO Facility Engineering Division Director and staff will oversee and participate in the development of the new, fully compliant WIPP Fire Protection Program. The new, fully compliant, WIPP Fire Protection Program will ensure that the WIPP Fire Protection Program is fully integrated with ventilation design and operations, and underground operations

Table 10: Status of Compliance through DOE Orders

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
		for recognizing, controlling and mitigating underground fires; credible underground fire scenarios are analyzed and response actions are developed to comply with DOE O 420.1C and MSHA 30 CFR Part 57 requirements; emergency notification systems and alarms are maintained to ensure prompt notification and evacuation during emergencies; and combustion loads are within the parameters of the NWP Fire Hazard Analysis. The DOE CAP and the NWP CAP will result in implementation of corrective actions to ensure full compliance with DOE O 420.1C, Facility Safety.
9. DOE Order 451.1B, Admin Change 3, National Environmental Policy Act Compliance Program	This order is implemented by the MOC through adherence to a site NEPA compliance plan and procedure, and a CBFO management procedure. Further discussion of this requirement is presented throughout this report.	A NEPA regulatory analysis and recommendation on whether additional NEPA documentation is required for the Interim, Supplemental, or Permanent ventilation system will be required. The regulatory analysis and recommendation for the Interim Ventilation System has been transmitted to the CBFO NEPA Compliance Officer. A CX determination has been made for the Interim Ventilation System.
10. DOE Order 458.1, Change 3, Radiation Protection of the Public and the Environment	This order establishes standards and requirements for operations of the DOE and its contractors with respect to protecting members of the public and the environment against undue risk from radiation. Activities and analyses describing compliance with the applicable requirements of this order are cited in the DSA (DOE, 2013k). Directions regarding release of potentially radioactive materials are specified in WP 12-RE3003, *Radiological Release of Potentially Contaminated Materials, Waste, and Items* (NWPd). Monitoring activities to document compliance with the order are described in the WIPP ALARA (as low as reasonably achievable) program, the environmental monitoring program, the records management program, the radiation safety program, and health physics and radiological engineering procedures.	Since the February 14, 2014, radiological event, the WIPP underground facility is being operated in Filtration Mode which effectively removes respirable particulate from the effluent air stream. In addition, the DOE has taken the initiative to implement several improvements. The DOE prepared the U.S. Department of Energy Plan For Addressing The Areas For Improvement Identified By The U.S. Environmental Protection Agency, provided as Attachment A, that addresses the following areas identified by the EPA for improvement: • Update the Ambient Environmental Monitoring Network o Improve the design, location, maintenance, and overall capability of its ambient environmental air monitoring network. o Increased number of ambient environment air sampling locations from 7 to 16. • Strengthen Emergency Response

Table 10: Status of Compliance through DOE Orders

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
		Protocols o Better integrate routine and incident procedures to enhance preparedness of multiple organization field and laboratory staff to respond to releases. • Ensure the Highest Quality Laboratory Results o Implement stricter sample collection, sample tracking and documentation procedures to provide the highest quality, most defensible data possible at all times.

13.3 Nuclear Safety Management Regulations – 10 CFR Part 830 Series

Table 11 provides compliance status information on nuclear safety management regulations for the supplement reporting period.

Table 11: Status of Compliance with the Nuclear Safety Management Regulations of the Atomic Energy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
1. Implementation and Compliance with General Requirements for Assurance of Protection of Workers, the Public and Environment 10 CFR §830.4	*No person may take or cause to be taken any action inconsistent with the requirements of this part. The contractor responsible for a nuclear facility must ensure implementation and compliance with the requirements of this part. The requirements of this part must be implemented in a manner that provides reasonable assurance of adequate protection of workers, the public, and the environment from adverse consequences, taking into account the work to be performed and the associated hazards.* The MOC has implemented and is complying with the requirements of 10 CFR Part 830, Subpart A, "Quality Assurance Requirements," through implementation of the MOC Quality Assurance Program Description (QAPD) (NWPc). Compliance with 10 CFR Part 830,	The AIB determined that root causes of the fire and radiological events included the degradation of key safety management programs and safety culture. The AIB also identified four contributing causes related to the effectiveness of the Nuclear Safety Program. CBFO and NWP CAPS address the JONs related to the root and contributing causes. Specifically, implementation of the corrective actions will ensure that a fully integrated Nuclear Safety Program will be developed that meets applicable regulatory requirements (including DOE Orders), ensures hazards are appropriately analyzed and facilities are designed, constructed, and safety controls are in place that ensure adequate protection of workers, the public and the environment. In addition, implementation of the corrective actions will improve CBFO's oversight for the

Table 11: Status of Compliance with the Nuclear Safety Management Regulations of the Atomic Energy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	Subpart B, "Safety Basis Requirements" is achieved through the DSA DOE/WIPP-07-3372 (DOE, 2013k) and DOE/WIPP 07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements* (TSRs) (DOE, 2013r).	Nuclear Safety Program such that it is adequate to ensure Program improvements are appropriate and remain effectively implemented. Throughout this supplement's reporting period, the CBFO and NWP remained in compliance with these requirements and have instituted operational restrictions that ensure safety to human health and the environment.
7. Safety Basis, 10 CFR §830.202(a)	*The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must establish and maintain the safety basis for the facility.* The MOC has implemented the requirements of 10 CFR §830.202(a) through the DSA (DOE, 2013k) and TSRs (DOE, 2013r).	
8. Unreviewed Safety Question Process, 10 CFR §830.203(a)	*The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must establish, implement, and take actions consistent with an unreviewed safety question (USQ) process that meets the requirements of this section.* DOE G 424.1-1B, Admin Change 1, Implementation Guide for Use in Addressing Unreviewed Safety Question (USQ) Requirements, provides information to assist in the implementation and interpretation of 10 CFR §830.203. The MOC has implemented the requirements of 10 CFR §830.203 through implementation of MOC USQ procedure WP 02-AR3001, Unreviewed Safety Question Determination (NWPf).	
9. Documented Safety Analysis, 10 CFR §830.204(a)	*The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must obtain approval from the DOE for the methodology used to prepare the DSA for the facility unless the contractor uses a methodology set forth in Table 2 of Appendix A to this part.* DOE-STD-3009, Preparation Guide for U.S. DOE Non-Reactor Nuclear Facility Safety Analysis Reports (DOE, 2006), is the approved methodology set forth in 10 CFR §830.204[a] to meet 10 CFR Part 830, Subpart B. The MOC has implemented the requirements of 10 CFR §830.204 by using DOE-STD-3009 to develop the DSA (DOE, 2013k). Supplemental guidance specific to TRU	

Table 11: Status of Compliance with the Nuclear Safety Management Regulations of the Atomic Energy Act

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	waste processing facilities is given in DOE-STD-5506-2007, Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities (DOE, 2007), was also used to develop the DSA.	
10. Technical Safety Requirements, 10 CFR §830.205(a)	*The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must (1) develop TSRs that are derived from the DSA….* DOE G 423.1-1A, Implementation Guide for Use in Developing Technical Safety Requirements, establishes the content of TSRs. The MOC complies with the requirements of 10 CFR §830.205 by using DOE G 423.1-1A to prepare the TSRs. The MOC also uses DOE-STD-1186-2004, Specific Administrative Controls (DOE, 2004b), to prepare the TSRs (DOE, 2013r).	

25.0 NEW MEXICO HAZARDOUS WASTE ACT

On February 5, 2014, a vehicle fire occurred in the WIPP facility underground, resulting in suspension of normal waste operations and shipments from generator sites. On February 14, 2014, an underground Continuous Air Monitor (CAM) detected airborne radiation, causing the ventilation exhaust to automatically shift to high efficiency particulate air (HEPA) filtration mode. The ventilation system remained in filtration mode through the reporting period and continues to operate in this mode. Entries into Panel 7 in the underground confirmed that at least one container was breached. The container was confirmed to be from a nitrate salt bearing waste stream produced at Los Alamos National Laboratory (LANL). Cleanup of the contamination event and investigation as to its cause are ongoing as part of the recovery process. Presently, shipments of waste to the WIPP facility remain suspended and the underground is accessible only for event evaluation, mine maintenance, and decontamination activities. The WIPP is not currently receiving waste and no shipments have been received at WIPP since February 6, 2014.

As a result of DOE not being able to receive waste shipments at the WIPP facility 39 shipments from LANL were sent to the Waste Control Specialists, LLC (WCS) facility for storage. In addition, three more shipments were made from the Advanced Mixed Waste Treatment Project in Idaho to WCS

As of January 30, 2015, NMED has issued three Administrative Orders to address WIPP Permit requirements that could not be met due to inaccessibility to the areas of the underground where inspections and monitoring are necessary. The first

administrative order (AO1), issued on February 27, 2014, provides requirements for monitoring and reporting to the NMED the status of recovery from the two events. It requires weekly reporting on above-ground compliance and permitted surface-related requirements. The second administrative order (AO2), issued on May 12, 2014, was issued to address, in part, Permit-required activities that cannot currently be performed due to restricted access to the portions of the underground where inspections and monitoring are necessary; the reporting period was also changed from weekly to bi-weekly, with a requirement for information supplemental to that required by AO1. Directives from the Secretary of the NMED on August 29, 2014, and December 9, 2014, changed the reporting period from bi-weekly to monthly with the due date for the monthly submittal to be the last day of the subsequent month for activities conducted during the previous month. The weekly, bi-weekly, and monthly reports are available from the WIPP Information Repository (IR) at:

http://www.wipp.energy.gov/library/Information_Repository_A/IR_2014.htm.

Additionally, AO2 required the Permittees to submit an *Underground Compliance Plan* (UCP) and an *Underground Derived Waste Storage Plan* for the WIPP facility within 45 days of the date of the order. The UCP*,* submitted to the NMED on June 25, 2014, for review and comment, was required to include "a detailed compliance schedule for those requirements described in Paragraph 13 of the Order, including identification of all underground Permit requirements; a description of the current compliance status of each underground Hazardous Waste Facility Permit (Permit) requirement; a proposed timeline, including dates, for compliance and achieving underground recovery; any plans related to attaining compliance with the Permit; the reason(s) for any Permit non-compliance; and, any other pertinent information." On September 24, 2014, the NMED informed the Permittees that its review of the draft UCP had been suspended pending the release of the WIPP Recovery Plan. The NMED directed the Permittees to, within 30 days of the finalization of the WIPP Recovery Plan, revise the *UCP* and submit it to the NMED for review and comment. Revision 1 of the UCP was submitted to the NMED on October 30, 2014; the Permittees are awaiting comments from the NMED. The *Underground Derived Waste Storage Plan,* which was also submitted on June 25, 2014, for NMED approval, was required to include: "i. A detailed description of the planned derived waste storage areas to be created and/or used in the underground; ii. The volumetric flow rate for ventilation in each storage area, a description of how the volumetric flow rate is protective of human health and the environment and a description of how it will be achieved; iii. For the derived waste stored in the WIPP underground, a description of how the requirements found in 40 CFR 264 Subpart I will be met and how the storage area(s) will meet Permit Part 2, Section 2.3.3 – Treatment, Storage, and Disposal Facility Waste Acceptance Criteria ('TSDF-WAC'); and iv. For the derived waste stored in the WIPP underground, a description of how all other applicable RCRA and Permit requirements will be complied with." The *Underground Derived Waste Storage Plan* was approved by the NMED on December 2, 2014. As part of the approval, the Permittees were required to address NMED comments in Revision 1 of the plan, which was submitted on January 6, 2015.

The third administrative order (AO3) was issued by the NMED on May 20, 2014, and required the Permittees to submit a *WIPP Nitrate Salt Bearing Waste Container Isolation Plan* for identified nitrate salt bearing waste disposed at the WIPP facility. The order requested an implementation schedule for the plan which was required to be submitted by May 30, 2014. In addition, the plan was to include "a detailed proposal for the expedited closure of underground Hazardous Waste Disposal Unit (HWDU) Panel 6, so that a potential release from any nitrate salt bearing waste containers in Panel 6 does not pose a threat to human health or the environment." It also required "A detailed proposal for the expedited closure of underground HWDU Panel 7, Room 7, so that a potential release from any nitrated salt bearing waste containers in Panel 7, Room 7, does not pose a threat to human health or the environment." Finally, AO3 required information regarding the "volumetric flow rate for ventilation in the WIPP underground, a description of how the volumetric flow rate is protective of human health and the environment, and a description of how volumetric flow rate will be achieved while the WIPP Nitrate Salt Bearing Waste Container Isolation Plan is implemented." Revision 0 of the plan was submitted to the NMED on May 30, 2014. On August 5, 2014, the NMED approved the Permittees' proposal for the initial closure of Panel 6 and the Permittees' proposal to continue to use the mine ventilation system in filtration mode to protect public health and the environment; however, the NMED provided comments and questions requiring clarification and resubmittal of the plan. Revision 1 of the *WIPP Nitrate Salt Bearing Waste Container Isolation Plan* was submitted on September 30, 2014.

Due to the fire and radiological events occurring in the underground, impacts to human health and the environment were minimized in accordance with 40 CFR §264.31. The Permittees developed a WIPP Recovery Plan that provides the safe and environmentally sound approach for bringing the WIPP facility back to an operational state. The Recovery Plan was issued on September 30, 2014.

On December 6, 2014, the NMED issued Administrative Compliance Order HWB-14-21 for violations of the WIPP hazardous waste facility permit (Permit) related to the February 5, 2014, underground fire and the February 14, 2014, radiological release. On December 22, 2014, CBFO and NWP filed an unopposed motion and amended motion for an extension of time until January 9, 2015, to file an Answer and Request for Hearing, pursuant to Complainant's Adjudicatory Procedures, 20.1.5.100(G)(2) NMAC. An order, Order Granting an Extension of Time to File an Answer and Request for Hearing, from the Hearing Officer was issued on December 30, 2014, extending the deadline for the Respondents to file the Answer and Request for Hearing of January 9, 2015. The Respondents filed separate Answers and Requests for hearing on January 9, 2015.

25.2.1 Compliance with Standards Applicable to Generators of Hazardous Waste, 20.4.1.300 NMAC

Table 24 provides compliance status updates for the supplement time frame for hazardous waste generators under 20.4.1.300 NMAC which corresponds to the federal implementing regulations of 40 CFR Part 262. Because New Mexico adopts the federal

implementing regulations by reference, the citations list references from the federal regulations first followed by the New Mexico regulatory citation.

Table 24: Status of Compliance with Standards Applicable to Generators of Hazardous Waste, 20.4.1.300 NMAC

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
14. Compliance with Preparedness and Prevention, Contingency Plan and Emergency Procedures, Training, and Waste Analysis Plan Requirements, 40 CFR §262.34(a)(4) (20.4.1.300 NMAC)	*Compliance with Subparts C (preparedness and prevention) and D (contingency plans and emergency procedures) of 40 CFR Part 265, §265.16 (personnel training), and §268.7(a)(5) (waste analysis plan [WAP] for prohibited waste under the LDRs) are required.* The DOE complies with this requirement through WIPP Permit Part 2, sections 2.6, Security; 2.7, General Inspection Requirements; 2.8, Personnel Training; 2.10, Preparedness and Prevention; 2.11, Hazards Prevention; and 2.12, Contingency Plan; and WIPP Permit Attachment D, RCRA Contingency Plan. Compliance is also assured through various emergency response procedures, formal personnel training, and operation, maintenance, and testing of emergency equipment. Details of compliance activities are provided below. Preparedness and Prevention, 40 CFR Part 265, Subpart C: The WIPP facility is designed, maintained and operated to minimize the possibility of fire, explosions, or any unplanned release of hazardous waste to the environment. Inspections of waste handling areas and equipment are conducted periodically in accordance with applicable regulations and Permittee procedures. Corrective actions are accomplished through spill management procedures and action requests. The following communication and alarm systems are in place at the WIPP facility: one-way communication by the public address (PA) system and its intercom phones and paging channels; local and facility-wide alarm systems, pagers and Plectron; and two-way communication using an intraplant telephone system, mine phones, and portable two-way radios. Inspection procedures are in place for the communication and alarm systems and the fire protection equipment. These procedures include provisions for testing and maintenance to ensure that equipment will be operable in an emergency. Spill control and decontamination equipment is inspected weekly, and the results are	The Permittees are in the process of implementing improvements to the maintenance, emergency preparedness and training programs through which compliance with these requirements is maintained. These improvements are defined in the draft CBFO and NWP CAPs. Examples of improvements included in the CAPs are performing independent evaluations of programs or components of programs, revising program and procedure documents (e.g. fire, spill and release, work control), and revising and providing updated training courses. In addition, multiple drills have been (and will continue to be) conducted to evaluate effectiveness of revised procedures and training. Examples of other activities in progress or completed include evaluation of Central Monitoring Room CMR control panel for upgrades and evaluation and selection of replacements for old CAMs with new iCAMs.

Table 24: Status of Compliance with Standards Applicable to Generators of Hazardous Waste, 20.4.1.300 NMAC

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	recorded on inspection sheets as defined in WIPP Permit Attachment E, Inspection Schedule, Process and Forms. Adequate aisle space is maintained in the WIPP facility hazardous waste storage area to allow for emergency response activities. The DOE supports local ambulance and emergency medical services through MOUs with off-site emergency response agencies for fire fighting, medical assistance, and law enforcement. For example, the mutual aid agreement between the City of Hobbs and the DOE provides for mutual ambulance, medical, fire, rescue, and hazardous material response services. All outside agencies with which DOE has an MOU have received current copies of the WIPP RCRA Contingency Plan. Contingency Plan and Emergency Procedures, 40 CFR Part 265, Subpart D: The RCRA Contingency Plan defines responsibilities, provides guidance for the coordination of activities, and describes procedures and actions to minimize the threat to human health and the environment from fires, explosions, or any release of hazardous waste or hazardous waste constituents. The plan describes actions that must be taken in response to fires, explosions, or any unplanned release of hazardous waste or hazardous waste constituents to air, soil, or water. The plan lists agreements with local authorities, the names, addresses, and phone numbers of persons qualified to act as RCRA Emergency Coordinators, and the emergency equipment at the facility; and includes an evacuation plan. As stated in the plan, the RCRA Emergency Coordinator has the authority to commit the resources necessary to respond to an emergency. Copies of the plan, and all amendments, are provided to the Secretary of the NMED and outside agencies with which DOE has agreements for assistance in an emergency. The DOE maintains the distribution list for the plan and is responsible for providing up-to-date copies. A comprehensive review of the plan is conducted at least annually, and the plan is modified as necessary to ensure information is up to date. WIPP Permit modifications are submitted, if necessary, whenever applicable regulations are revised; if the plan fails in an emergency; if the facility changes in a way	

Table 24: Status of Compliance with Standards Applicable to Generators of Hazardous Waste, 20.4.1.300 NMAC

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency; or if the list of RCRA Emergency Coordinators or the list of emergency equipment changes. A RCRA Emergency Coordinator, on-site 24 hours a day, 7 days a week, coordinates all emergency response measures. The primary RCRA Emergency Coordinator is the on-duty Facility Shift Manager. Emergency Coordinators are thoroughly familiar with the RCRA Contingency Plan. The RCRA Contingency Plan has provisions that meet emergency procedure requirements such as communication of an emergency to employees, notification of the appropriate agency if assistance is needed, identification of hazardous materials, assessment of hazards, and notification of any incident that requires implementation of the RCRA Contingency Plan. Personnel Training, 40 CFR §265.16: Formal training at the WIPP facility is conducted in accordance with the DOE training program. Waste Analysis Plan for Managing and Treating Prohibited Wastes or Contaminated Soil in Tanks or Containers, 40 CFR §268.7(a)(5): TRU mixed waste received at the WIPP facility is exempt from the LDRs. Hazardous waste generated at the WIPP project is sent off-site for disposal in compliance with 40 CFR Part 268. If hazardous waste shipped off-site is subject to a treatment standard or technology, an LDR notice is on file with the receiving TSDF specifying the treatment requirements prior to land disposal.	
16. Restrictions and Requirements, 40 CFR §262.34(c)(1) (20.4.1.300 NMAC)	*There are a number of restrictions and requirements for SAAs. These include the limit of 55 gallons of hazardous or 1 quart of acutely hazardous waste (listed in 40 CFR §261.33[e]) and the requirement that the SAA be located at or near the point of generation of the waste and under the control of the operator.* None of the SAAs have a capacity that exceeds 55 gallons. The DOE SAA management procedure addresses how inspections are conducted to verify that the	SAA's remained in compliance with these requirements throughout the time frame covered by this supplemental report.

Table 24: Status of Compliance with Standards Applicable to Generators of Hazardous Waste, 20.4.1.300 NMAC

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	55-gallon limit per SAA is not exceeded. In addition, the procedure defines requirements for placing waste in an SAA, and defines the responsibilities of the waste generator. No acutely hazardous waste was generated at WIPP during this reporting period; therefore, SAAs for acutely hazardous waste are not necessary and have not been established. The SAAs are located at or near the points of generation of the hazardous waste, and are under the control of the operator generating the waste.	

25.2.3 Compliance with the Regulatory Requirements for Treatment, Storage, and Disposal Facilities, 40 CFR Part 264 (20.4.1.500 NMAC)

Table 26 provides compliance status updates for Treatment, Storage, and Disposal Facilities (TSDF) under 20.4.1.500 NMAC for the supplement time frame. Because New Mexico adopts the federal implementing regulations by reference, the citations list references from the federal regulations first followed by the New Mexico regulatory citation.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
4. General Waste Analysis, 40 CFR §264.13 (20.4.1.500 NMAC)	*A detailed chemical and physical analysis of a representative sample of the wastes is required before a TSDF may treat, store, or dispose of waste. The owner/operator of the TSDF must inspect and, if necessary, analyze the waste received to ensure that it matches the identity of the waste described in the accompanying manifest. The owner/operator must follow a written WAP to ensure compliance with these requirements.* General waste analysis is addressed in WIPP Permit Part 2, General Facility Conditions, and WIPP Permit Attachments C, Waste Analysis Plan; C1, Waste Characterization Sampling Methods; C3, Quality Assurance Objectives and Data Validation Techniques for Waste Characterization Methods; C4,	The NMED's Compliance Order (CO) No. HWB-14-21, Section II Items 116 and 117, describes the agency's alleged violations of this requirement. On December 30, 2014 NMED docketed an Order Granting an Extension of Time To File An Answer and Request a Hearing for the CBFO and NWP. On January 9, 2014 the Respondents filed a Request for Hearing and Answer.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	TRU Mixed Waste Characterization Using Acceptable Knowledge; C5, Quality Assurance Project Plan Requirements; C6, Audit and Surveillance Program; and C7, TRU Waste Confirmation. Characterization methods consist of acceptable knowledge, visual examination, radiography, headspace gas sampling and analysis, and additional sampling and analysis for homogeneous solids, soil, and gravel waste forms. The Permittees examine a representative subpopulation of the waste prior to shipment to confirm that the waste contains no ignitable, corrosive or reactive waste and that the EPA hazardous waste numbers are allowed by the permit.	
6. General Inspection Requirements, 40 CFR §264.15 (20.4.1.500 NMAC)	*The owner/operator must inspect the facility for malfunctions, deterioration, operator errors, and discharges that cause actual or potential releases of hazardous constituents to the environment or a threat to human health. A written schedule must be developed and followed for inspecting all monitoring, safety, and emergency equipment; security devices; and operating/structural equipment needed to prevent, detect, or respond to environmental or human health hazards. The inspections must be recorded in an inspection log or summary and kept for at least three years.* The Permittees implement inspection procedures for monitoring, safety, and emergency equipment; security devices; and operating and structural equipment. Written schedules (WIPP Permit Attachment E, Inspection Schedule, Process, and Forms) establish the frequency of routine inspections. Cognizant individuals develop and maintain procedures that outline the types of inspections of equipment and systems that will be performed. Each organization responsible for inspections maintains its own inspection information. Completed inspection sheets include a signature, date and time of inspection; observations made; and the date and nature of any repairs or other remedial actions. Inspection documentation is maintained in the operating record for a minimum of three years.	The fire and radiological events in February 2014 disrupted completion of some routine inspections as outlined in Permit Attachment E, Tables E-1 and E-1A. With the permittees notification to NMED of the events and recognition that the WIPP facility would not be able to resume normal activities for a protracted period of time, NMED issued an Administrative Order (AO1) on February 27, 2014 and followed with Administrative Order of May 12 (AO2) which provided how to address inspections during the time they cannot be completed due to inaccessibility of portions of the underground. These orders required the permittees to submit routine reports that included the status of permit related surface and underground inspections. Further directives from NMED adjusted the submission frequency. The reports have been submitted as follows: • Weekly, beginning March 14, 2014 • Bi-Weekly, beginning June 13, 2014 • Monthly, beginning October 15, 2014 Attachment 1 of these reports is the detailed summary of the current inspection status Reports submitted to the NMED under the AOs can be accessed from the WIPP Information Repository under 2014 Information Repository

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
		Documents and 2015 Information Repository Documents at; http://www.wipp.energy.gov/library/Information_Repository.htm
7. Personnel Training, 40 CFR §264.16 (20.4.1.500 NMAC)	*Personnel training must be provided to facility personnel within six months of their employment or new assignment; personnel must not work in unsupervised positions until the training has been completed. The training program must be designed to ensure that facility personnel can respond effectively to an emergency. The training program must teach personnel those hazardous waste management procedures that are relevant to the positions in which they are employed. The program must be directed by a person trained in hazardous waste management procedures. The job title for each position at the facility that is related to hazardous waste management, the name of the employee filling the position, a written description of the training required, and records that document that the training and/or job experience has been completed are also required. These records must be kept until closure for current personnel and for at least three years for former employees.* Training requirements are specified in WIPP Permit Attachments F, Personnel Training; F-1a, Job Title/Job Description; and F-1b, Training Content, Frequency, and Techniques. Attachment F1, RCRA Hazardous Waste Management Job Titles and Descriptions, lists all applicable job titles with detailed descriptions, and Attachment F2, Training Course and Qualification Card Outlines, describes all training courses required by the WIPP Permit. Formal training is conducted in accordance with the WIPP Training Program WP 14-TR.01 (NWPi) and its associated procedures. The training includes General Employee Training for all WIPP project employees, other classroom training, and on-the-job training. WIPP-related training is conducted	The AIB Reports for the fire and radiological events identified some aspects of training as contributing causes to the fire and radiological events. Training areas identified in the reports that are related to this requirement were emergency management, fire response, and radiological worker. Corrective actions outlined in draft CBFO and NWP CAPs and the Recovery Schedule will fully address the training related contributing causes and ensure full compliance with this requirement. The draft CAP is for NWP to develop a comprehensive Training and Qualifications Program for developing, maintaining, and delivering effective training that ensures employees are adequately prepared and qualified to perform their work. Following implementation of the specific tasks to carry out the corrective action, a line management assessment will be conducted to verify that each task has been implemented successfully. The draft CBFO CAP identifies actions that will be taken to ensure emergency management personnel are adequately trained and procedures clearly define expectations for responding to fires in the underground, review the training areas identified above to ensure personnel are adequately trained (emergency management, radiological workers), and determine the effectiveness of the NWP corrective actions.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	by qualified instructors. The Permittees maintain a listing of all hazardous waste management job titles, names and titles of employees assigned to hazardous waste management jobs, and job descriptions that identify RCRA duties. Records on active and inactive personnel are kept at the WIPP facility for the specified time periods.	
8. General Requirements for Ignitable, Reactive, or Incompatible Wastes, 40 CFR §264.17 (20.4.1.500 NMAC)	*Precautions must be taken to prevent accidental ignition or reaction of ignitable or reactive waste. Any mixture or commingling of incompatible wastes must be conducted so that it does not generate extreme heat or pressure, fire or explosion, violent reaction; does not produce uncontrolled toxic airborne materials; does not produce uncontrolled flammable fumes or gases; does not damage the structural integrity of the device or facility; or does not threaten human health or the environment.* The WIPP facility is precluded from accepting ignitable, corrosive, or reactive waste as specified in WIPP Permit Part 2, General Facility Conditions, and Attachment C, Waste Analysis Plan. Addendum B2 of the WIPP Permit Application, "Chemical Compatibility Analyses of Waste Forms and Container Materials," reported the results of an analysis of the compatibility of the TRU waste streams with each other and with waste containers, backfill, and other facility materials. No incompatibilities were identified during the reporting period.	On July 20, 2014, the Permittees notified the NMED that they were provisionally applying the D001 hazardous waste number to 368 containers from LANL waste stream LA-MIN02-V.001 based on continuing investigations into the cause of the radiological release. On September 5, 2014, the Permittees provided the NMED with corrections to the discrepant hazardous waste manifests associated with the 368 containers. The NMED's Compliance Order (CO) No. HWB-14-21, Items 116 and- 117 describe the alleged violations of this requirement. . On December 39, 2014 NMED docketed an Order Granting an Extension of Time To File An Answer and Request a Hearing for the CBFO and NWP. On January 9, 2015, the Respondents each filed a Request for Hearing and Answer.
10. Design and Operation of Facility, 40 CFR §264.31 (20.4.1.500 NMAC)	*Facilities must be designed, constructed, maintained, and operated to minimize the possibility of fire, explosions, or any unplanned release of hazardous constituents to air, soil, or surface water that could threaten human health or the environment.* Waste-handling facilities are designed, constructed, maintained, and operated to minimize the possibility of a fire, explosions or any unplanned release of hazardous waste or hazardous waste constituents. General facility conditions for maintenance and	The AIB reports for the February 2014, events identified that lack of effectiveness of the maintenance program was a contributing factor to both events. In response to the contributing causes associated with maintenance, the draft CAPS address the contributing causes via improving CBFO oversight of the NWP Maintenance Program and NWP developing a comprehensive Maintenance Program to meet requirements for maintenance and reliable performance of structures,

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	operation of the WIPP facility are stated in WIPP Permit Part 2, General Facility Conditions. Preventive procedures, structures, and equipment are specified in WIPP Permit Part 2, section 2.10, Preparedness and Prevention. An inspection schedule for equipment instrumental in preventing, detecting, or responding to environmental or human health hazards is given in WIPP Permit Attachment E, Inspection Schedule, Process and Forms. WIPP Permit Attachment D, RCRA Contingency Plan, defines the responsibilities and coordination of activities to minimize hazards to human health and the environment from fires, explosions, or any release of hazardous waste, or hazardous waste constituents to air, soil, or surface water. This plan also consists of descriptions of processes and emergency responses specific to hazardous substances, CH- and RH-TRU mixed waste, and other hazardous waste handled at the WIPP facility.	systems, and components that are part of the safety basis. During development of the new NWP Program, existing inspection and preventive maintenance activities defined in the Permit continue to be completed in accordance with the appropriate authorizations (Permit and/or AOs).
11. Required Equipment, 40 CFR §264.32 (20.4.1.500 NMAC)	*All facilities must be equipped with an internal communications or alarm system for immediate emergency instruction; devices to summon external emergency assistance; fire extinguishers and fire-control, spill-control, and decontamination equipment; and water or foam equipment, sprinklers, or water-spray systems.* The intraplant communication systems, designed to provide immediate emergency instructions to facility personnel, include communication by the PA system and its intercom phones and paging channels, an intraplant telephone system, mine phones, pagers and Plectrons, portable two-way radios, and local and facility-wide alarm systems. The procedures for notifying facility personnel of an emergency are described in the RCRA Contingency Plan, WIPP Permit Attachment D. Various alarm systems are used at the WIPP facility. The PA system has two alarm tones in use, a yelp and a gong. Its signals are produced in the master PA system console by a tone generator and are transmitted sitewide over the paging channel of the system, overriding its normal use. Whenever TRU mixed wastes are handled,	The draft NWP-CAP addresses the JON for the salt haul truck fire that states “NWP needs to evaluate and correct deficiencies regarding controls for communicating emergencies to the underground, including configuration and adequacy of equipment (alarms, strobes, and public address).” Specific corrective actions to address this JON are ongoing. Actions include, but are not limited to, evaluation of the Central Monitoring Room (CMR) control panel for replacement, conduct a human performance engineering evaluation on the CMR, perform and document an evaluation of the visibility and audibility of the underground communications equipment, address deficiencies identified in evaluations, revise relevant procedures and train personnel.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	two persons, at a minimum, are involved in the operation. The WHB contains readily accessible telephones and PA stations throughout. The mine phones are the main means of communication underground, although the PA system is also available. Underground communication and alarm systems are arranged to meet the requirements of 30 CFR §57.4360, which regulates the operation of underground mines and is imposed by the Mine Safety and Health Administration. Telephones or other two-way communication equipment, with instructions for use, are provided for communications from underground to the surface. Alarm systems capable of promptly warning every person underground are provided and maintained in operating condition. Typically, these provisions include a flashing light positioned to be easily seen. If persons are assigned to work areas beyond the warning capabilities of the system, provisions will be made to properly alert them and to provide for their safe evacuation. The external communication systems, designed to provide two-way communication with outside agencies or for summoning emergency assistance from off-site, include the commercial telephone system and two-way radios. WIPP Permit Part 2, General Facility Conditions, specifies preventive procedures, structures, and equipment. The RCRA Contingency Plan, WIPP Permit Attachment D, describes the capabilities and locations of the fire-suppression equipment and systems. The WIPP facility water system supplies water for domestic use and fire protection. Water is furnished by the City of Carlsbad. Fire sprinkler systems are installed in the Pumphouse, the Guard and Security Building, the Support Building, the WHB, the Exhaust Filter Building, the TRUPACT Maintenance Facility, the Engineering Building, the Safety and Emergency Services Building, the Training Building, and several other warehouse and maintenance buildings. The WIPP facility maintains a fire brigade and has on-site fire fighting equipment. Fire hydrants and hose connections for fire fighting are located throughout the facility. There is no fire fighting water supply system underground. Instead, the underground is equipped with fire extinguishers of various types and in various	

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	locations (including vehicles), and a fire truck with a dry chemical extinguisher and a foam extinguisher. The underground fuel station is equipped with an automatic dry chemical extinguishing system. On February 5, 2014, a salt haul truck caught fire in the underground and burned such that the underground was evacuated. The subsequent accident investigation report (DOE, 2014g) identified issues with the underground evacuation alarm and strobe, the onboard fire suppression system on the haul truck, the use of fire extinguishers, operation of the equipment, and the associated training and drills. Actions are in progress to correct the identified deficiencies.	
12. Testing and Maintenance of Equipment, 40 CFR §264.33 (20.4.1.500 NMAC)	*All facility communications or alarm systems and fire-control, spill-control, and decontamination equipment must be tested and maintained as needed to ensure its proper operation during an emergency.* Equipment instrumental in preventing, detecting, or responding to environmental or human health hazards, such as alarm systems, fire protection equipment, and decontamination equipment, are tested and maintained to assure proper operation in a time of emergency. Alarms, spill control, and decontamination equipment are inspected periodically in accordance with the WIPP Permit Attachment E, Inspection Schedule, Process and Forms. On February 5, 2014, a salt haul truck caught fire in the underground and burned such that the underground was evacuated. The subsequent accident investigation report (DOE, 2014g) identified issues with maintenance of the specific haul truck and other underground equipment, Identified issues included, but are not limited to, discrepancies between manufacturer maintenance recommendations and actual maintenance performed, various underground components that were either out of service or being configured in a manner that hampered communications and critical equipment operations during an emergency. Corrective actions have been identified and are in progress to address the identified deficiencies.	The AIB reports for the February 2014 events identified ineffectiveness of the maintenance program as a contributing factor to both events. Both CBFO and NWP CAPs address the AIB findings by improving CBFO oversight of the NWP Maintenance Program and NWP developing a comprehensive Maintenance Program to meet requirements for maintenance and reliable performance of structures, systems, and components that are part of the safety basis.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
14. Required Aisle Space, 40 CFR §264.35 (20.4.1.500 NMAC)	*Aisle space must be maintained to allow the unobstructed movement of personnel and of fire-protection, spill-control, and decontamination equipment to any area of facility operation unless aisle space is not needed for these purposes.* WIPP Permit Part 2, General Facility Conditions, and WIPP Permit Part 2, section 2.10, Preparedness and Prevention, WIPP Permit Part 3, Container Storage, and Permittee procedures, call for maintaining appropriate aisle space for all stored waste in the WHB. No aisle space is required to be maintained between containers emplaced in the HWDUs as permitted by WIPP Permit Attachment A2, Geologic Repository.	Throughout the time frame covered by this Supplement, Permittee procedures that ensure required aisle space is maintained in the Waste Handling Building continued to be performed.
15. Arrangements with Local Authorities, 40 CFR §264.37 (20.4.1.500 NMAC)	*Arrangements with local authorities must be made for the provision of emergency services if needed. Requirements include familiarizing the local authorities with the layout of the facility, properties of hazardous waste to be handled, possible evacuation routes, and other information needed for emergency responses.* The Permittees have established MOUs with appropriate off-site emergency response agencies for the provision of emergency services. Outside agencies with which MOUs have been established have received copies of the RCRA Contingency Plan and all amendments as required by the WIPP Permit Part 2, General Facility Conditions, and 40 CFR §§264.53 and 264.54.	The CBFO currently has established Memoranda of Understanding (MOUs) with offsite emergency response agencies. The NWP Emergency Management Section is currently in discussion with the CBFO to identify a strategy for reviewing all emergency management MOUs for possible revision. The WIPP Emergency Management Section is also developing a site familiarization and hazards briefing to provide to offsite response agencies.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
16. Purpose and Implementation of the Contingency Plan, 40 CFR §264.51 (20.4.1.500 NMAC)	*Each owner/operator must have a contingency plan for their TSDF. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or unplanned releases of hazardous waste or hazardous constituents to the environment. The provisions of the plan must be carried out whenever a fire, explosion, or release of hazardous waste or hazardous constituents could threaten human health or the environment.* The RCRA Contingency Plan, WIPP Permit Attachment D, defines responsibilities; provides guidance for coordination of activities; and minimizes hazards to human health and the environment from fires, explosions, or any unplanned release of hazardous waste or hazardous waste constituents.	Provisions of the WIPP RCRA Contingency Plan were carried out during the radiological event. On April 11, 2014 the Permittees implemented the RCRA Contingency Plan for use during recovery and cleanup of the underground and its equipment. The WIPP has conducted recovery activities under the RCRA Contingency Plan through this supplement's time frame and will continue to do so until the cleanup is complete.
19. Amendment of Contingency Plan, 40 CFR §264.54 (20.4.1.500 NMAC)	*The contingency plan must be reviewed and immediately revised, if necessary, whenever applicable regulations are revised; the plan fails in an emergency; the facility changes in a way that increases the potential for fire, explosions, or release of hazardous waste; or the list of Emergency Coordinators or emergency equipment changes.* The RCRA Contingency Plan is reviewed at least annually, and the WIPP Permit is modified if necessary whenever applicable regulations are revised; the plan fails in an emergency; the facility changes in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents or changes the response necessary in an emergency; the list of Emergency Coordinators changes; or the list of emergency equipment changes. The Contingency Plan was last modified in October 2013, updating figures to indicate Panel 7 as approved for use. Copies of the modified RCRA Contingency Plan were distributed to the appropriate on-site departments and off-site agencies and the Secretary of the NMED.	Based on reviewing the plan in light of the February events, Class 1 modifications were made on November 7, 2014. Revisions included • Clarification that notification of the ERT and MRT of an event may be performed using phones, pagers or cellular phones and in the case of the MRT, the Public Address system may also be used. • Updates to Table D-8 and D-9, Federal and State Hazardous Material Reporting Tables with current contact information. • Clarifications to ensure that the duties of the RCRA Emergency Coordinator and the Incident Commander are defined consistent with their training. • Updates to references.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
21. Emergency Procedures, 40 CFR §264.56 (20.4.1.500 NMAC)	*In the event of an imminent or actual emergency, the Emergency Coordinator or designee must notify facility personnel via internal alarms or communications systems and must notify state or local agencies if their help is needed. A release, fire, or explosion mandates that the Emergency Coordinator obtain appropriate information, assess possible hazards, make any notifications required, prevent the spread or reoccurrence of the incident, monitor if necessary, recover waste, prevent handling of incompatible waste in the area, ensure that emergency equipment is cleaned up and fit for use after the event, and record details regarding the incident in the facility's operating record. The owner or operator must note specific information about any incident that requires the contingency plan to be implemented. This information must be recorded in the facility's operating record. A written report must be submitted to the Regional EPA office and the NMED within 15 days of the incident. The NMED and the SERC must be contacted in the event of any spill incident that may endanger human health or the environment.* WIPP facility RCRA Emergency Coordinators are thoroughly familiar with the RCRA Contingency Plan. The plan has provisions that meet the emergency procedure requirements, such as communicating emergency information to employees, notifying appropriate agencies to obtain assistance, identifying hazardous materials, assessing hazards, and making the necessary notifications. The appropriate agencies include the LEPC, the Carlsbad Police Department, the Carlsbad Fire Department, and the Eddy County Sheriff's Department. The Facility Shift Manager is responsible for coordinating the cleanup of spills. Disposal of the waste resulting from cleanup is the	The AIB investigations identified several contributing causes to the fire and radiological events that require improvements to WIPP Programs in order to fully address these requirements. The CBFO and NWP CAPs developed in response to the AIB findings include the actions necessary to address the contributing causes and their underlying JONs. Specifically, the draft CAPs, taken together, will fully address the contributing causes related to notification of facility personnel of an imminent or actual event and ensure appropriate information is obtained, hazards are properly assessed, and notifications are made, as necessary, for an event.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	responsibility of the Permittees. Equipment used in an emergency will be thoroughly decontaminated before being placed back in service. If decontamination is not possible, equipment will be disposed of according to Permittee procedures and replaced. Equipment listed in the plan is kept clean and fit for its intended use. As described in the plan, a daily log is maintained in the WIPP facility CMR. Incidents, regardless of whether or not they activate the plan, are recorded in the CMR log. The RCRA Contingency Plan addresses the requirement that the NMED and SERC be notified in the event of a spill that would endanger human health or the environment. The RCRA Contingency Plan has not been implemented and no notifications were necessary during the reporting period.	
22. Use of Manifest System, 40 CFR §264.71 (20.4.1.500 NMAC)	*If a facility receives hazardous waste or hazardous constituents accompanied by a manifest, the owner or operator or designee must sign and date each copy of the manifest to certify receipt of the waste, note any significant discrepancies in the manifest, return at least one copy of the manifest to the transporter, send a copy of the manifest to the generator within 30 days, and retain a copy of the manifest for at least three years.* Permittee waste management and transportation procedures implement regulations on the use and retention of hazardous waste manifests. Generator sites are required to provide a manifest for all shipments of TRU mixed waste. Significant manifest discrepancies are noted as required and a copy of the manifest is returned to the generator within 30 days. No significant manifest discrepancies were recorded during this reporting period.	The Permittees were notified by LANL that Manifest Discrepancies occurred as indicated in the following links. http://www.wipp.energy.gov/library/Information_Repository_A/Responses_to_Administrative_Order/14-1561_Redacted.pdf http://www.wipp.energy.gov/library/Information_Repository_A/Responses_to_Administrative_Order/14-2608_%20Request_for_Information_by_NMED_Enclosure_Rev_1&Attachments.pdf On September 5, 2014, the Permittees provided the NMED with corrections to the discrepant hazardous waste manifests associated with the 368 containers. The Permittees have corrected these discrepancies on a provisional basis. Relevant information has been sent to the NMED and the affected generator/storage facilities.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
23. Manifest Discrepancies, 40 CFR §264.72 (20.4.1.500 NMAC)	*Manifest discrepancies are differences between the quantity or type of hazardous waste designated in the manifest and that actually received. Upon discovering a significant discrepancy, the owner or operator must try to reconcile the discrepancy with the generator or transporter. If not resolved within 15 days, the owner or operator must notify the Secretary.* Permittee waste-handling and transportation procedures provide instruction and guidance for handling manifest discrepancies. The generator will be notified of discrepancies, and the discrepancies will be recorded in the "remarks" section of the appropriate form. If the discrepancies cannot be resolved within 15 days, they will be reported in writing to the Secretary of the NMED. No shipments had significant discrepancies during this reporting period.	The Permittees were notified by LANL that manifest discrepancies occurred as indicated in the links noted in item 22. The Permittees have corrected these discrepancies on a provisional basis. Relevant information has been sent to the NMED and the affected generator/ storage facilities.
24. Operating Record, 40 CFR §264.73 (20.4.1.500 NMAC)	*The owner/operator must keep a written operating record at the facility. Information relating to the type and amount of hazardous waste, its location and quantity at each location, cross-references to specific manifest documents and records and the results of waste analyses, summary reports and details of all incidents requiring implementation of the contingency plan, records and results of inspections, monitoring and analytical data and any corrective actions taken, and closure cost estimates must be included. In addition, information on the annual certification of a waste minimization program must be kept in the operating record.* WIPP Permit Part 2, General Facility Conditions, establishes, and the Permittees comply with, the above requirements for maintaining the written operating record. Closure cost estimates are not required for the WIPP facility. The NMED modified 20.4.1.500 NMAC effective March 1, 2009, to require most records to be maintained until closure. The retention period for operating records specified by the WIPP Permit was	The initial report of the RCRA Contingency Plan implementation was provided to NMED on April 28, 2014. Two additional supplements to the report of implementation were provided to the NMED on July 7, 2014, and August 18, 2014. These reports are part of the RCRA operating record and are available at the facility. Copies of these summaries can be accessed from the WIPP Information Repository under the heading RCRA Contingency Plan Implementation Reports at the bottom of the webpage. The information repository is accessible from: http://www.wipp.energy.gov/library/Information_Repository_A/IR_2014.htm

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	revised with the permit renewal application. Annual certifications of the waste minimization program are kept in the operating record.	
28. Additional Reports, 40 CFR §264.77 (20.4.1.500 NMAC)	*Additional reports required of the owner or operator of a TSDF by the Secretary are reports relating to releases, fire, or explosions; groundwater contamination and monitoring data; facility closure; and air emissions under Subparts AA, BB, and CC of this part.* On February 5, 2014, the Permittees reported a fire in the WIPP underground. The underground was temporarily closed for normal operations and waste shipments from generator sites were suspended. On February 14, 2014, a radiological event occurred in the WIPP underground. The facility remained in stand down as of the end of this reporting period. On February 27, 2014, an Administrative Order (NMED, 2014) was issued by NMED that required the commencement of weekly reporting no later than 15 days after the issuance of the Order. Reporting criteria are specified in the Administrative Order. Subsequent to the first report issued on March 14, 2014, weekly reports have been submitted that identify new information from preceding reporting periods. No additional reports were required for Subparts AA, BB, or CC air emissions as these standards are not applicable to TRU mixed wastes managed and disposed of at the WIPP facility.	As noted in the introductory paragraphs to Section 25, the NMED has issued three AO's in response to the fire and radiological events of 2014. The AO's required the following additional reports. • Periodic reports on the status of recovery from the two events. Initially the reports were required weekly, then frequency was changed by NMED to bi-weekly and then, monthly. • The Underground Compliance Plan was prepared and initially provided to the NMED on June 25, 2014 and subsequently updated on October 30, 2014. The NMED has not provided comments on the October 30 submittal. • The Underground Derived Waste Storage Plan was also submitted on June 25, 2014 and was approved by the NMED on December 2, 2014. Revision 1 of the plan, addressing NMED comments was submitted on January 6, 2015. • The WIPP Nitrate Salt Bearing Waste Container Isolation Plan was submitted to NMED on May 30, 2014, with approval of portions of the plan on August 5, 2014. Revision 1, addressing the NMED's comments on the initial submission, was submitted to NMED on September 30, 2015. Reports are accessible from the WIPP Information Repository at http://www.wipp.energy.gov/library/Information_Repository.htm
49. Title 40 CFR Subpart I, "Use and Management of	*Subpart I of 40 CFR addresses the requirements for the use and management of containers at TSDFs. This section addresses*	Waste containers received, but not emplaced as of the February events have continued to be stored in the WHB as authorized by NMED

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
Containers" (40 CFR §§264.171, 264.172, 264.173, 264.174, 264.175, 264.176, 264.177, 264.178 and 264.179) (20.4.1.500 NMAC)	*container condition, compatibility of wastes with containers, management of containers to prevent releases, keeping the containers closed, weekly inspections, containment, requirements for ignitible or reactive wastes, special requirements for incompatible wastes, closure, and the air emission standards.* WIPP Permit Part 3, Container Storage, and Attachment A1, Container Storage, describe how the Permittees comply with the requirements for the use and management of containers. Wastes are received in NRC Type B packages, which are stored in the Parking Area Unit and opened in the applicable WHB Unit. Waste containers meeting DOT 7A specifications are removed from the NRC Type B packages. The WIPP WAC and waste handling procedures are in place to ensure that waste is shipped to WIPP in DOT 7A waste containers that are in good condition. A compatibility study was conducted and submitted in appendix C1 of the WIPP RCRA Part B Application (DOE, 1997c) to document that the containers used (steel construction, some containing polyethylene liners) meet the requirements of 40 CFR §264.172. Containers are not opened at the WIPP facility and procedures are in place to ensure that every effort is taken to minimize the potential for damaging a container. Inspections are conducted at least weekly as described in WIPP Permit Attachment E, Inspection Schedule, Process and Forms. Calculations demonstrating adequate secondary containment are included in WIPP Permit Attachment A1, Container Storage. The WAP and WAC prohibit ignitable, reactive and incompatible wastes from being shipped to the WIPP facility. All container storage areas will be closed as described in WIPP Permit Attachments G, Closure Plan, and G3, Radiological Surveys to Indicate Potential Hazardous Waste Releases. The air emission standards for containers are not applicable to TRU mixed wastes disposed of at the WIPP facility. There were no exceptions to compliance with these requirements during the reporting period. Due to the February 2014 events rendering the underground temporarily inoperable, the February 27, 2014, Administrative Order	extensions of storage time. Weekly inspections of these containers have been conducted throughout this reporting period in accordance with WIPP facility procedures.

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	(NMED 2014) extended the surface container storage times.	
50. Title 40 CFR Subpart X, "Miscellaneous Units," (40 §§CFR 264.601, 264.602 and 264.603)	*A miscellaneous unit must be located, designed, and operated, maintained and closed in a manner that will ensure protection of human health and the environment. Monitoring, testing, analytical data, inspections, response and reporting procedures and frequencies must protect human health and the environment. A miscellaneous unit must be maintained in manner that complies with the environmental performance standards during the post-closure care period.* WIPP Permit Part 4, Geologic Repository Disposal, and Attachment A2, Geologic Repository, describe the location, design, operation, and maintenance of the geologic repository and associated environmental monitoring. Monitoring and testing includes geomechanical, ventilation rate, and VOC monitoring. Reports are submitted to the NMED to demonstrate compliance with these requirements. Each underground HWDU will be closed in accordance with the Closure Plan (WIPP Permit Attachment G); Technical Specifications (WIPP Permit Attachment G1 appendix G); and the final repository closure plan incorporated into the WIPP Permit as Attachment G2, Waste Isolation Pilot Plant Shaft Sealing System Compliance Submittal Design Report. The Post-Closure Plan (WIPP Permit Attachment H) describes the activities required to maintain WIPP after the completion of facility closure. The WIPP site maintained compliance with these requirements during the reporting period.	Geotechnical monitoring of manually read geomechanical instrumentation was suspended after the February events until habitability of the underground was established. Monitoring of the remotely accessible instrumentation, such as the borehole extensometers installed in the disposal panels, continued during this period. Monitoring of instrumentation that required underground access resumed on May 29, 2014 in areas of the underground that were accessible. These readings will be expanded as other areas of the underground are accessed. Mine ventilation rate monitoring activities (required by Permit Part 4, section 4.6.4 and associated requirements of Attachment O) are currently being performed. On February 14, 2014 the mine ventilation system was shifted to Filtration Mode and has remained in this mode with an average monthly underground ventilation rate of 60,000 standard cubic feet per minute (SCFM). Because of this reduced flow rate, the Permittees will not be able to maintain the minimum running annual average ventilation flow rate of 260,000 SCFM required by Permit Part 4, Section 4.5.3.2. Since February 5, 2014 (fire event), access to the active disposal rooms has been restricted and no waste handling has taken place. Thus no active disposal room measurements have been taken after February 5. Volatile Organic Compound and, hydrogen and methane monitoring, as required by Permit Part 4 and Attachments N and N1, has not been conducted since early February 2014. The Permittees initiated post-event VOC sampling activities at surface locations at the WIPP facility on February 12, 2014. Surface VOC sampling is being used to evaluate the feasibility of using these data to identify VOC exposure to the non-waste surface workers at the WIPP

Table 26: Status of Compliance with the Regulatory Requirements for TSDFs, 40 CFR Part 264 (20.4.1.500 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
		facility Training Building. One location chosen for monitoring is near the Training Building and the other location was chosen to obtain a representative background sample.

25.2.4 Compliance with the Hazardous/Mixed Waste Permit Program, 40 CFR Part 270 (20.4.1.900 NMAC and 20.4.1.901 NMAC)

Table 27 provides compliance status updates for the supplement time frame for these regulations.

Table 27: Status of Compliance with the Hazardous/Mixed Waste Permit Program, 40 CFR Part 270 (20.4.1.900 NMAC and 20.4.1.901 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
4. Requirements for Recording and Reporting of Monitoring Results, 40 CFR §270.31 (20.4.1.900 NMAC)	*Requirements for recording and reporting monitoring results will be specified in the Permit.* The requirements for recording and reporting monitoring results are incorporated into the WIPP Permit Part 1, section 1.7.10, Monitoring and Records; and WIPP Permit Part 1, section 1.7.11, Reporting Requirements. The Permittees comply with these requirements by submitting numerous WIPP Permit-required reports such as semiannual groundwater monitoring reports, an annual mine ventilation rate report, and a semiannual VOC monitoring report.	There have been no changes to annual reporting requirements as a result of the events. The WIPP project continues to comply by submitting required reports.
5. Permit Modification at the Request of the Permittee, 40 CFR §270.42 (20.4.1.900 NMAC, and 20.5.1.901 NMAC)	*After a Permit has been finalized, the permittee may request that it be modified. Three classes of modifications are identified in Appendix I to 40 CFR §270.42. Class 1, the least significant of the permit modifications, covers minor modifications such as the correction of typographical errors; changes to conform with agency guidelines or regulations; or procedural changes that increase the frequency of monitoring, reporting, sampling, or maintenance activities. Class 1 modifications may require approval of the Director prior to implementation (i.e., Class 1**	There have been no changes to the WIPP processes for compliance with Permit modification requirements as a result of the events.

Table 27: Status of Compliance with the Hazardous/Mixed Waste Permit Program, 40 CFR Part 270 (20.4.1.900 NMAC and 20.4.1.901 NMAC)

Regulatory Requirement	WIPP Project Compliance Statement from DOE/WIPP-14-3526	Supplemental Information April 1, 2014 thru January 30, 2015
	permit modifications), or require notification of the Director within seven days after the change has been made. All persons on the facility mailing list must be notified within 90 calendar days after the change is put into effect or after the request, whichever applies. *Class 2 modifications are more extensive and significant and apply to changes needed to allow timely response to common variations in the types and quantities of wastes managed, technological advancements, and changes in the regulations (e.g., changes in emergency procedures or removal of equipment from the emergency equipment list). They require that the permittee submit a modification request to the Director, announce a 60-day comment period, notify all persons on the facility mailing list, publish the notice in a major local newspaper of general circulation, and hold a public meeting. Class 3 modifications are the most significant, have potential impacts, and substantially alter the facility or its operation (e.g., extending the closure period or a final compliance date; creating a new landfill or other type of unit or increasing the capacity of a preexisting one). The notification and other requirements are similar to those for Class 2 modifications.* The Permittees have notified the NMED of six Class 1 permit modification notifications, one Class 1* Permit Modification Request (PMR), three Class 2 PMRs and one Class 3 PMR during this reporting period, as outlined in table 28.	

Attachment A

U.S. DEPARTMENT OF ENERGY PLAN

FOR ADDRESSING THE AREAS FOR

IMPROVEMENT IDENTIFIED BY THE

U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 1, 2014

Total Pages: 84

U.S. DEPARTMENT OF ENERGY PLAN FOR ADDRESSING THE AREAS FOR IMPROVEMENT IDENTIFIED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 1, 2014

SUMMARY OF EPA'S RESPONSE AND FINDINGS RELATED TO THE FEBRUARY 2014 RADIOACTIVE RELEASE AT THE WASTE ISOLATION PILOT PLANT

Executive Summary

Overview

On February 14, 2014, a radiological release occurred in the underground of the U.S. Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) facility. In April 2014, the U.S. Environmental Protection Agency (EPA) inspected the air sampling programs and current waste management and storage operations on the surface at the WIPP facility. The EPA confirmed in two reports, issued on October 1, 2014, that the radiological release from the WIPP facility to the environment as a result of the February 14, 2014 incident, was small, and that potential doses to the public did not approach the standards set under 40 CFR Part 191, Subpart A (CFR, 2014a), or the limits set in 40 CFR Part 61, Subpart H (CFR, 2014b).

The first EPA report, *Subpart A Inspection Report in Response to the February 14, 2014 WIPP Incident*, (EPA, 2014a) documented the EPA April 2014 inspection activities at the WIPP facility and in Carlsbad. The second EPA report, *Summary of EPA's Response and Findings Related to the February 2014 Radioactive Release at the Waste Isolation Pilot Plant*, (EPA, 2014b) summarized the EPA activities conducted during its initial response to the February 14, 2014, radiological incident. As a result of the EPA April 2014 inspection activities, the EPA identified three areas for improvement for the DOE which they specifically requested be addressed by the DOE in a plan.

Contents of the DOE Plan to Address Areas for Improvement Identified by the EPA

Since the February 14, 2014, radiological incident, the DOE has taken the initiative to implement several improvements that were also identified by the EPA. The DOE has prepared a comprehensive plan that addresses the following areas as identified by the EPA:

- Update the Ambient Environmental Monitoring Network
  - Improve the design, positioning, maintenance, and overall capability of its ambient environmental air monitoring network.
- Strengthen Emergency Response Protocols
  - Better integrate routine and incident procedures to enhance preparedness of multiple organization field and laboratory staff to respond to releases.
- Ensure the Highest Quality Laboratory Results
  - Implement stricter sample collection, sample tracking and documentation procedures to provide the highest quality, most defensible data possible at all times.

A high-level summary of the DOE plan for addressing areas of improvement is provided in the following "Crosswalk of the DOE Plan for Addressing Areas for Improvement as Identified by the EPA." A description of the DOE plan for addressing areas of improvement is provided in this document.

Crosswalk of the DOE Plan for Addressing Areas for Improvement as Identified by the EPA

Description		Date Implemented	Date Planned	Section of DOE Plan
Area Identified by EPA for Improvement: Update the Ambient Environmental Monitoring Network Improve the design, positioning, maintenance, and overall capability of its ambient environmental air monitoring network.				
Enhancements to Low-Volume Air Particulate (LVAP) Sampling Network	Add seven LVAP sampling locations to the monitoring network (including Angel Ranch).	March/November 2014	Completed	2.0
	Increase the number of LVAP samplers in the network to 24.	March/November 2014	Completed	2.0
	Separate operational monitoring program LVAP samplers from event evaluation samplers.	April 2014	See Table 1	2.0
Low-Volume Air Particulate Sampler Evaluations and Alterations	Inspect sampler locations using criteria from *DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, January 1991 (DOE, 1991),* and *DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, July 1981 (DOE 1981).* Note: *Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), (EPA, 1987), 40 CFR 58, Appendix E (CFR, 2014c)* was also used in evaluating the location of the LVAP samplers.	April 2014	Completed	3.0
	Make adjustments to Loving and Eunice sample locations based on evaluations.	April 2014	See Table 1	3.0
	Document LVAP siting inspections in two reports: *WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment, Rev 0, May 15, 2014 (NWP, 2014b)* and *WIPP Environmental Monitoring Program – Ambient Air Sampling Location Site Evaluation Follow-Up, Rev. 0, July 25, 2014 (NWP, 2014c).*	May 2014 and July 2014, respectively	Completed	3.0
	Enclose samplers in protective housing.	June 2014	Completed	3.0
	Relocate air sampler intake to a consistent height from the ground surface.	NA	January 31, 2015	3.0

Description		Date Implemented	Date Planned	Section of DOE Plan
Area Identified by EPA for Improvement: Update the Ambient Environmental Monitoring Network Improve the design, positioning, maintenance, and overall capability of its ambient environmental air monitoring network.				
Additional Low-Volume Air Particulate Sample Sites	Activate Angel Ranch Sampler.	November 2014	Completed	4.0
	Evaluate two additional LVAP sampler locations to the north and east of the WIPP facility.	NA	December 31, 2014	4.0
	Develop a facility air sampling technical basis document for onsite environmental air monitoring.	Currently in internal review	Scheduled to be finalized November 30, 2014	4.0
Maintenance and Calibration Program	Develop a procedure for performing and documenting maintenance of the LVAP samplers, to include logbooks.	NA	February 28, 2015	5.0
Alternative Low-Volume Air Particulate Samplers	Evaluate utilization of digital LVAP samplers.	NA	March 1, 2015	6.0
	Evaluate remote sensing/monitoring capability.	NA	March 1, 2015	6.0
Area Identified by EPA for Improvement: Strengthen Emergency Response Protocols Better integrate routine and incident procedures to enhance preparedness of multiple organization field and laboratory staff to respond to releases.				
Emergency Response and Sample Analysis	Revise *WP 12-RE3002*, *Radiological Engineering Off-site Sample Recovery (NWP, 2014a)*	October 2014	Completed	7.0
Area Identified by EPA for Improvement: Ensure the Highest Quality Laboratory Results Implement stricter sample collection, sample tracking and documentation procedures to provide the highest quality, most defensible data possible at all times.				
Additional Low-Volume Air Particulate Sample Sites	Develop a facility air sampling technical basis document for onsite environmental air monitoring.	Currently in internal review	Scheduled to be finalized November 30, 2014	4.0
Emergency Response and Sample Analysis	Revise *WP 12-RE3002*, *Radiological Engineering Off-site Sample Recovery (NWP, 2014a)*	NA	December 31, 2014	7.0

1.0 Introduction

On February 14, 2014, a radiological release (release event) occurred at the Waste Isolation Pilot Plant (WIPP) facility. Consequently, the environmental monitoring and sampling program was supplemented and expanded to provide additional information regarding the extent of the release. One of the aspects of the environmental monitoring and sampling program is the Low-Volume Air Particulate Sampling Program (LVAP) which includes a network of samplers used to collect ambient air particulates. This plan describes the LVAP monitoring network prior to the release event and the changes that were made to the system in order to respond to concerns and recommendations in the U.S. Environmental Protection Agency (EPA) Subpart A Inspection Report in Response to the February 14, 2014, WIPP Incident (EPA, 2014b), issued October 1, 2014.

Prior to the release event the LVAP network consisted of seven air sampling locations shown in Figure 1. One permanent LVAP sampler was employed at each location for environmental monitoring. Prior to the release event, sample filters were collected on a weekly basis from each location. On a quarterly basis the filters were composited by location and analyzed for 10 radionuclides: ^{241}Am, ^{60}Co, ^{137}Cs, ^{40}K, ^{238}Pu, $^{239/240}$Pu, ^{90}Sr, ^{234}U, ^{235}U, ^{238}U.

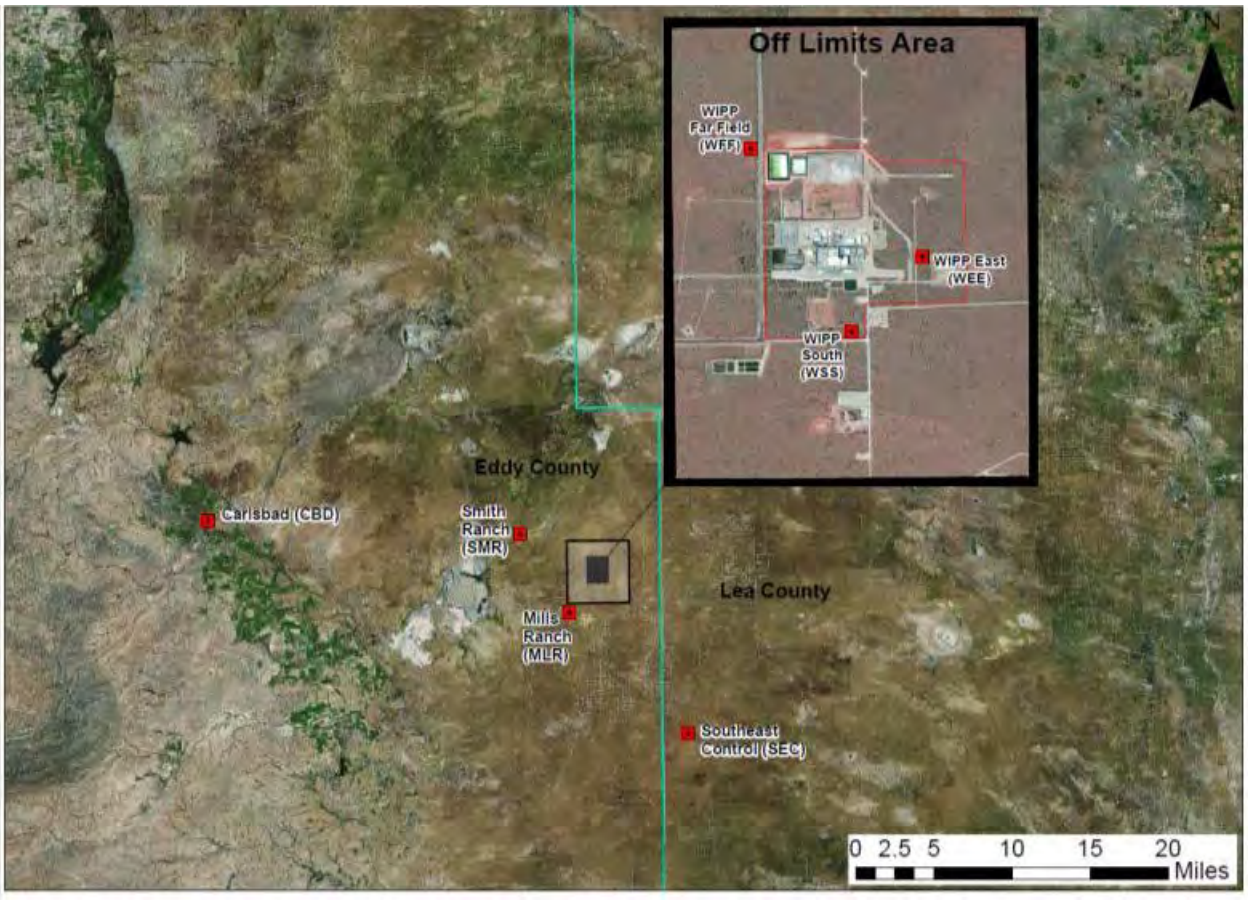


Figure 1, Original DOE Air Sampling Sites

After the release event the seven original air monitoring stations were used to focus on the consequences of the release event. Therefore, filters were only analyzed for ^{241}Am, ^{238}Pu, and

$^{239/240}$Pu, which are the radionuclides of concern resulting from the release event. Focusing on these three radionuclides at the exclusion of the other seven created a gap in the environmental monitoring data set. A solution to minimize this data gap was implemented and is one of the network enhancements discussed in Section 2.0.

The WIPP facility procedure *WP 12-RE3002, Radiological Engineering Off-site Sample Recovery* (NWP, 2014a) was revised to incorporate lessons learned from the release event related to sample collection, tracking, and documentation. A WIPP facility air sampling technical basis document is also being prepared to address the design, positioning, maintenance and overall capability of the onsite ambient environmental air monitoring network.

2.0 Enhancements to Low-Volume Air Particulate Sampling Network

Following the release event there were ten additional sampling locations added to the LVAP sampling network, bringing the total LVAP sampling locations to 17 (Table 1) and the number of samplers to 24. The following were considered in establishing these locations: coverage of populated areas, samplers located in the directions other than the predominant wind direction, onsite monitoring for personnel, and samplers at intermediate locations to the distant population centers. Some of these locations were added after the EPA inspection in April 2014 (Figure 2), but prior to the EPA October 1, 2014 report.

Table 1, WIPP Facility Low-Volume Air Particulate Samplers

Sampling Location	Location Code	Activation Date	Filter Exchange Frequency	Analysis Schedule	Comments
WIPP Far Field (AL)	WFF (AL)	1986	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
WIPP Far Field (EE)	WFF (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
WIPP South (AL)	WSS (AL)	1985	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
WIPP South (EE)	WSS (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
WIPP East (AL)	WEE (AL)	1985	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
WIPP East (EE)	WEE (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
Southeast Control (AL)	SEC (AL)	1990	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
Southeast Control (EE)	SEC (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
Mills Ranch (AL)	MLR (AL)	1985	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
Mills Ranch (EE)	MLR (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
Smith Ranch (AL)	SMR (AL)	1985	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program

Sampling Location	Location Code	Activation Date	Filter Exchange Frequency	Analysis Schedule	Comments
Smith Ranch (EE)	SMR (EE)	3/4/2014	Weekly	As needed	Replicate sampler for radiological release event evaluations
Carlsbad (AL)	CBD (AL)	7/1/2005	Weekly	Quarterly	WIPP's Operational Environmental Monitoring Program
Carlsbad (EE)	CBD (EE)		Weekly	As needed	Replicate sampler for radiological release event evaluations
Meteorology Station	MET (EE)	3/4/2014	Weekly	As needed	Located off-site northeast of the exhaust shaft. Operated to support radiological event evaluations. Environmental monitoring sampler.
Salt Shaft	SLT (EE)	3/4/2014	Weekly	As needed	Located on-site northwest of the exhaust shaft, north of the salt shaft. Sampler co-located with NMED air sampler. Operated to support radiological event evaluations. Work place sampler.
South Training Building	STB (EE)	3/4/2014	Weekly	As needed	Located immediately northwest of the exhaust shaft. Sampler is co-located with Carlsbad Environmental Monitoring and Research Center air sampler. Operated to support radiological event evaluations. Work place sampler.
Guard and Security Building	GSB (EE)	3/25/2014	Weekly	As needed	Located west of the exhaust shaft. Operated to support radiological event evaluations. Work place sampler.
Potash Mine Road	PMR (EE)	7/31/2014	Weekly	As needed	Located off-site northwest of the exhaust shaft. Operated to support radiological event monitoring.
Angel Ranch	ANG (EE)	11/4/2014	Weekly	As needed	Located northwest of the exhaust shaft. Operated to support radiological event monitoring.
Hobbs	HBS (EE)	4/10/2014	Weekly	As needed	Located northeast of the exhaust shaft. Operated to support radiological event monitoring. Located near populated area.
Artesia	ART (EE)	4/10/2014	Weekly	As needed	Located northwest of the exhaust shaft. Operated to support radiological event monitoring. Located near populated area.
Loving	LVG (EE)	4/10/2014 5/20/2014	Weekly	As needed	Located southwest of the exhaust shaft. Operated to support radiological event monitoring. Located near populated area.
Eunice	EUN (EE)	4/10/2014 5/16/2014	Weekly	As needed	Located east of the exhaust shaft. Operated to support radiological event monitoring. Located near populated area.

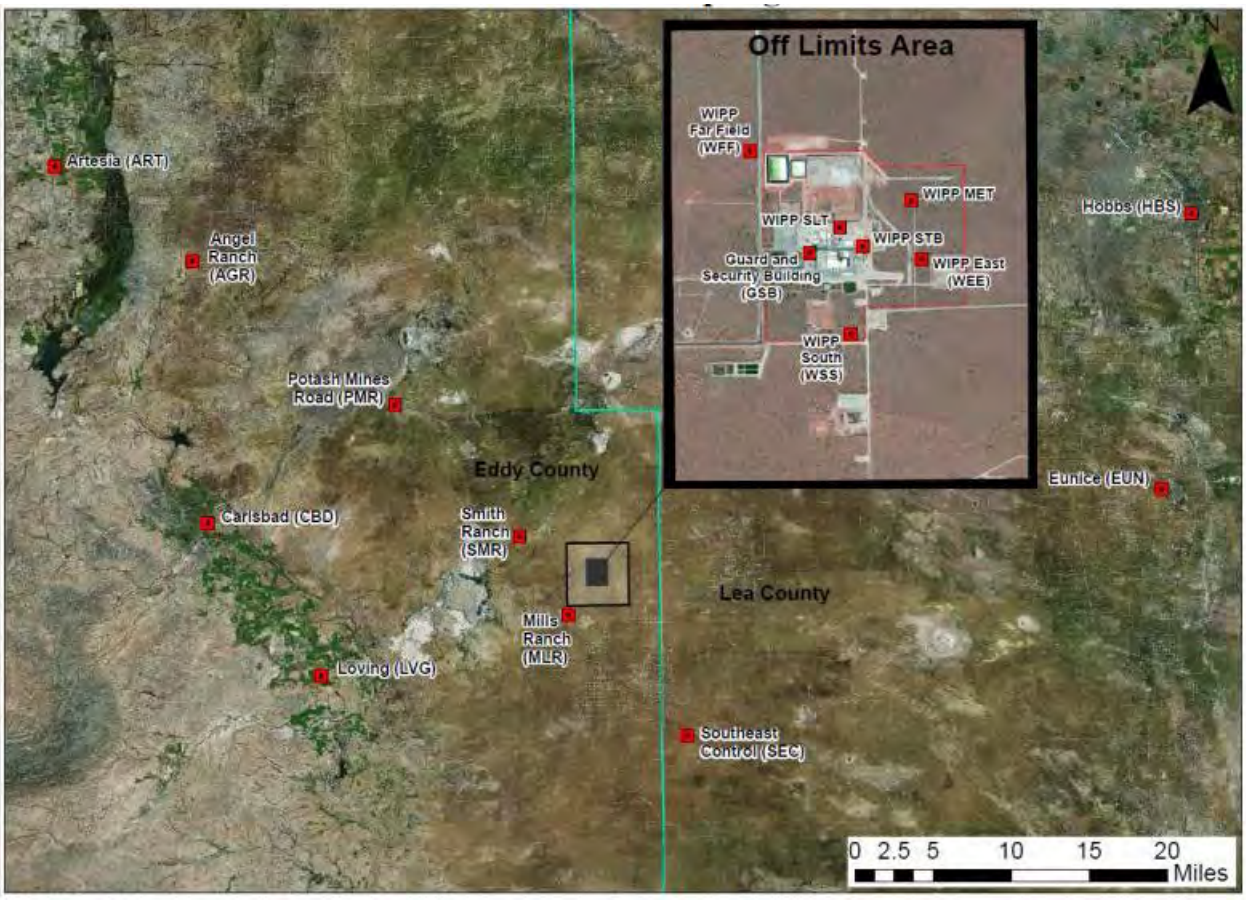


Figure 2, Active DOE Air Sampling Sites

Originally, the seven LVAP samplers were used for the environmental monitoring program and analysis of ten radionuclides. These are designated as air low volume (AL) samplers. When the release event occurred, the samplers were used as event evaluation (EE) samplers and the analysis targeted the three radionuclides of interest. Because samplers can only be used for either an AL or EE sample, each AL location now has a co-located EE sampler to prevent a gap in the program data set.

Initially when the LVAP samplers were used as EE samplers the filters were collected and analyzed weekly until analytical results were consistently below minimum detectable concentration (MDC). For the months of June, July, and August, 2014, the analytical frequency for the filters from the EE samplers was changed to a monthly composite. The EE sampler analysis for the February release event will be concluded after one quarterly composite is analyzed. Subsequent filters from the EE samplers will be archived for one year before disposal and are available for analysis as needed or if another release event should occur.

3.0 Low-Volume Air Particulate Sampler Evaluations and Alterations

After the EPA inspection in April 2014, an evaluation was performed of the LVAP network in two phases. The first phase was performed to evaluate the five specific samplers the EPA viewed during the April 2014 inspection. The second phase was performed for the remaining samplers. The siting criteria defined in *DOE/EH-0173T, Environmental Regulatory Guide for Radiological*

Effluent Monitoring and Environmental Surveillance, January 1991 (DOE, 1991), and *DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, July 1981* (DOE, 1981) were used for this evaluation. Results of the evaluation were documented in the following reports: *WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment, Rev 0, May 15, 2014* (NWP, 2014b) and *WIPP Environmental Monitoring Program – Ambient Air Sampling Location Site Evaluation Follow-Up, Rev. 0, July 25, 2014* (NWP, 2014c). *These evaluations are included as Attachments 1 and 2.*

Criteria for the location (relative to interference factors) of the samplers were derived from 40 CFR 58 Appendix E (CFR, 2014c) (for PM^{10} sampling) and from DOE, 1981 for air particulate sampling of ambient air.

The specific criteria for each sampler included the following:

- Spatial coordinate documentation (latitude/longitude),
- Height of sample head above ground,
- Distances from individual trees, tree dripline, and tree rows,
- Distance to un-vegetated areas and road/dust-producing areas,
- Distances to/height of obstacles, and the height-to-top ratio from the sampler head,
- Distance to co-located samplers,
- Photos from cardinal directions to include vegetation and obstacles, and
- Degrees of unrestricted (no obstacle) air flow around the sample head.

The EPA verbally identified improvements for LVAP sampling locations at Carlsbad (CBD), Artesia (ART), Loving (LVG), Hobbs (HBS), and Eunice (EUN) during the April 2014 inspection. After the inspection and evaluations, changes were made for the Loving and Eunice locations. A summary of each site is provided below.

- Carlsbad

  No change to this location. This sampling location is considered adequate by having 90% of the monitoring path unrestricted as well as having 180^0 of unrestricted airflow (for locations next to buildings, 40 CFR Part 58 Appendix E (CFR, 2014c)).

- Artesia

  Alternate locations were considered, but none afforded a better choice. A protective sampler enclosure was installed at this location to provide better security from vandalism and protection from weather. Additionally, after several filter exchanges, the mass loading onto the filters did not appear to affect the desired flow rate of the LVAP sampler for this location. Fields are typically plowed (disturbed) in this area once per year.

- Loving

  The sampling location was moved away from the building in order to alleviate the concern regarding the fire station exhaust fan. Alternate locations were considered, but none afforded a better choice. A protective sampler enclosure was installed at this

location to provide better security from vandalism and protection from weather. Additionally, after several filter exchanges, the mass loading onto the filters did not appear to affect the desired flow rate of the LVAP sampler for this location. Fields are typically plowed (disturbed) in this area once per year.

- Hobbs

  A protective sampler enclosure was installed at this location to provide better security from vandalism and protection from weather.

- Eunice

  The sampling location was moved to the Police Department, because the location meets more of the screening criteria. A protective sampler enclosure was installed at this location to provide better security from vandalism and protection from weather.

After evaluation of the LVAP sampling locations, each sampler was fitted with a protective sampler enclosure (birdhouse). Plans are in place at this time to extend air intake masts to a consistent and uniform sample head height range of 5 feet to 7 feet. This is consistent with *DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, January 1991* (DOE, 1991), and *DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, July 1981* (DOE, 1981), and EPA guidance, which recommend a sample head height range of 5 feet to 23 feet.

4.0 Additional Low-Volume Air Particulate Sample Sites

The intent of the DOE is to have air sampler coverage in cardinal directions in distant populated areas and also intermediate distances between the WIPP facility and the populated areas. This sampling strategy is to account for variability in wind direction during a release event. Intermediate locations would be able to detect migration of a plume if it is short lived and does not reach the samplers in more populous locations. Cardinal directions are accounted for in the immediate area of the WIPP facility. Locations north and east of the WIPP facility are areas currently under evaluation for additional LVAP samplers.

Nuclear Waste Partnership LLC (NWP) has developed a facility air sampling technical basis document (currently in review) to address the design, positioning, maintenance and overall capability of its onsite ambient environmental air monitoring network. This technical basis document may lead to improvements in the network and will ensure that samplers are positioned appropriately so that the data will accurately reflect potential inhalation exposure. Additionally the technical basis document specifies the appropriate quality assurance and control of sample handling, tracking, and analytical type determination.

5.0 Maintenance and Calibration Program

The systems currently in operation at this time have two components under the WIPP facility metrology calibration program. These components are a portable mass flow meter and an electronic stop watch, each of which are calibrated annually or sooner if a malfunction is suspected. The WIPP Metrology department annually notifies Environmental Monitoring and Hydrology (EM&H) of the calibration due date and coordinates the third party calibration of the instruments. The flow meter is used to verify and adjust, if necessary, the flow rate of the LVAP

sampler per procedural requirements. The calibrated stop watch is used to verify that the LVAP sampler timers are accurate and functioning properly.

The EPA has suggested sending the LVAP samplers to a vendor for third party calibration or performing in-house calibration. The selection of an alternative calibration process will depend on the type of LVAP sampler that DOE uses in the future (see Section 6.0).

The LVAP samplers are maintained by the EM&H technicians; however, a procedure specifically defining the maintenance process is being developed. Currently the intake and exhaust motor filters are replaced per manufacturer's instructions every four months and documented on the field data sheets. Other maintenance is performed as needed, such as timer replacements, motor vane replacement, or replacement of entire units.

The EPA has recommended utilization of logbooks to document maintenance records. Although maintenance records are kept for the LVAP samplers, because they are embedded in field data sheets, it is difficult to locate and identify trends in maintenance problems.

A maintenance procedure will be developed and include logbooks to document what is performed. Each sampler location will have a dedicated logbook (not to exclude electronic recordkeeping) or logbooks for collocated samplers, to document repairs.

During the EPA inspection a failed timer on a LVAP sampler was observed. This happens from time to time. Procedures call for inspection and verification of the timers to try and preclude this from happening. The new maintenance procedure (under development) addresses weekly inspection of timers as well as motors and pumps.

6.0 Alternative Low-Volume Air Particulate Samplers

The current LVAP samplers in the network are HI-Q Model CMP-0523CV operated at a flow rate of two cubic feet per minute. The local display sampler-running timers are both electromechanical digital indicators (odometer style) and electronic readout, and flow rates are measured using a portable calibrated in-line mass flow instrument, with liquid crystal diode (LCD) readout, before and after filter changes. The EPA has suggested replacing LVAP samplers with digital systems and internal data loggers. Systems of this type have the capability of recording and locally displaying air flow rates, total volume sampled, and sampler runtimes, and downtimes due to pump or power failures. An integrated digital system would be able to provide more data with respect to the operability of the LVAP sampler between filter retrieval times. Current LVAP systems do not have this capability. Evaluations will provide alternate actions and justification if it is decided not to implement this recommendation.

Currently, a preliminary evaluation of three systems is being performed to determine the best system available for the network needs. Current systems being evaluated are as follows:

- HI-Q CMP-DIGITAL 4.0
- HI-Q CF-5624
- F&J DF-EDL-1

The LVAP network will also be evaluated for the feasibility of remote readout capability to determine operability and efficiency from a central desktop computer. Because the systems are located across such a vast distance with a radius of 50 miles, and due to manpower and

resource constraints, it is difficult to visit each location more often than once per week as the EPA has suggested. The remote readout capability will be evaluated and compared to more frequent (2–3 times per week) visits. Currently LVAP filters are retrieved weekly at which time operability checks are also performed. If remote readout is a viable option, system operability (on/off) will be checked at a minimum of every other work day.

7.0 Emergency Response and Sample Analysis

Nuclear Waste Partnership LLC revised procedure *WP 12-RE3002, Radiological Engineering Off-site Sample Recovery* (NWP, 2014a) and adding it to their drill program to strengthen emergency response protocols by integrating routine and incident procedures to enhance preparedness of field and laboratory staff to respond to releases.

Procedural steps have been enhanced to ensure the maintenance of strict chain of custody protocol and to clarify that the location of sample analysis will be determined by the crisis manager based on preliminary field survey results. Management of the Station "A" and "B" samples will not change; they will continue to be stored inside the instrument room of the TRUPACT Maintenance Facility and will be analyzed as determined by NWP management with regulatory agency concurrence. The crisis manager will control samples, determine where they will be analyzed, and track the sample until results are obtained.

This revision will also enhance the quality of laboratory results by implementing stricter sample collection, tracking and documentation to provide the highest quality, most defensible data possible. The procedural section on sample collection (Section 2.7) has been rewritten to incorporate lessons learned from the release event and will result in improved contamination control during sample collection as well as enhanced detail related to documentation. Specifically, the procedure utilizes technicians who routinely perform filter exchanges on a weekly basis to assure consistency in sample handling, chain of custody, and procedural compliance.

8.0 Summary

A great deal of work has been accomplished since the February radiological event and the EPA inspection in April 2014. The EPA inspection report contained a number of suggested improvements, some of which were already completed or evaluated when the inspection report was issued in October 2014. A list of the accomplishments and planned actions is provided below.

List of Accomplishments

- Added seven LVAP sampling locations to the monitoring network.
- Increased the number of LVAP samplers in the network to 24.
- Separated environmental monitoring LVAP samplers from event evaluation samplers.
- Inspected sampler locations using criteria from *DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, January 1991* (DOE, 1991), and *DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, July 1981* (DOE, 1981).
- Made adjustments to two sample locations based on evaluations.

- Documented LVAP siting inspections in two reports: *WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment, Rev 0, May 15, 2014* (NWP, 2014b) and *WIPP Environmental Monitoring Program – Ambient Air Sampling Location Site Evaluation Follow-Up, Rev. 0, July 25, 2014* (NWP, 2014c).
- Constructed/installed protective housings for samplers.
- Developed a Facility Air Sampling Technical Basis Document (currently in review) for onsite environmental air monitoring.

List of Planned Actions

- Relocate air sampler intake to a consistent height from the ground surface.
- Evaluate two additional LVAP sampler locations to the north and east of the WIPP facility.
- Develop a procedure for performing and documenting maintenance of the LVAP samplers, to include logbooks.
- Evaluate digital LVAP samplers.
- Evaluate remote reading capability.
- Revise *WP 12-RE3002*, *Radiological Engineering Off-site Sample Recovery* (NWP, 2014a) and incorporate into Emergency Management drills.

9.0 Plan

Listed below are the planned actions and anticipated schedule for improving the LVAP monitoring program based on the recommendations identified in the Summary of EPA's Response and Findings Related to the February 2014 Radioactive Release at the Waste Isolation Pilot Plant.

Planned Actions	Anticipated Schedule
Relocate intake heights	December 1, 2014 – January 31, 2015
Evaluate Siting of North and East Samplers	November 1, 2014 – December 31, 2014
Develop maintenance procedure for LVAP Samplers	November 1, 2014 – February 28, 2015
Evaluate using digital LVAP Samplers, to include funding requirements	November 1, 2014 – March 1, 2015
Evaluate remote reading for LVAP samplers, to include funding requirements	November 1, 2014 – March 1, 2015
Revise *WP 12-RE3002, Radiological Engineering Off-site Sample Recovery (NWP, 2014a)*	November 1, 2014 – December 31, 2014
Develop a Facility Air Sampling Technical Basis Document for onsite environmental air monitoring	November 30, 2014

10.0 **References**

(CFR, 2014a) Code of Federal Regulations, 40 CFR 191, Subpart B*, Environmental Standards for Management and Storage*

(CFR, 2014b) Code of Federal Regulations, 40 CFR Part 61, Subpart H*, National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities*

(CFR, 2014c) Code of Federal Regulations, 40 CFR Part 58 Appendix E, *Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*

(DOE, 1991) *U.S. Department of Energy, DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance,* January 1991

(DOE, 1981) *U.S. DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations,* July 1981

(EPA, 1987) *Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-4504-87-007,* April 1987

(EPA, 2014a) *U.S. Environmental Protection Agency, Subpart A Inspection Report in Response to the February 14, 2014 WIPP Incident*, October 2014

(EPA, 2014b) *U.S. Environmental Protection Agency, Summary of EPA's Response and Findings related to the February 2014 Radioactive Release at the Waste Isolation Pilot Plant,* October 2014

(NWP, 2014a) *NWP procedure WP 12-RE3002*, *Radiological Engineering Off-site Sample Recovery,* October 2014

(NWP, 2014b) *WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment, Rev 0,* May 15, 2014

(NWP, 2014c) *WIPP Environmental Monitoring Program – Ambient Air Sampling Location Site Evaluation Follow-Up, Rev. 0*, July 25, 2014

ATTACHMENT 1

WIPP Environmental Monitoring Program-
Ambient Air Sampling Location Assessment

Rev. 0
15 May 2014

Pages 16

WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment

Rev. 0

15 May 2014

1.0 Introduction

On February 14, 2014, a radiological release occurred at the Waste Isolation Pilot Plant (WIPP) facility. Consequently, the environmental sampling program was supplemented to provide information regarding the extent of the release. Environmental media sampled included air particulate, soils, surface water and sediment, and vegetation. Siting of the supplemental low-volume air particulate (LVAP) ambient air samplers was based upon information and data collected during as part of the original environmental baseline program for the WIPP facility. This document assesses the specific arrangements at the locations of the supplemental samplers to determine if adjustments are needed due to relation to interference with nearby buildings and activities.

2.0 Environmental Air Particulate Filter Sampling

Air particulate sampling is performed weekly in accordance with WIPP procedure WP 02-EM1012, *Airborne Particulate Sampling*. These samples are collected at seven locations described in Section 2.1. This weekly sampling is also in accordance with the *WIPP Environmental Monitoring Plan* (DOE/WIPP-99-2194).

2.1 Air Particulate Sampling Historically Performed Through February 2014

In the years preceding and the days immediately following the radiological release of 14 February 2014, air filter samples were obtained from the seven LVAP sampling stations: WIPP Far Field, WIPP East, WIPP South, Mills Ranch, Smith Ranch, Carlsbad, and Southeast Control (Figure 1).

2.2 Current Air Particulate Sampling

After collecting the initial air particulate samples at the locations identified in section 2.1, eight additional LVAP sampling stations were added:

<u>Activated March 4</u>

- Salt Hoist [SLT**]** (co-located with a Carlsbad Environmental Monitoring Research Center (CEMRC) station and a New Mexico Environment Department (NMED) station
  LVAS 1).

- Southeast of Training Building [STB]

- Meteorology Tower Building [MET] (co-located with NMED station LVAS 3).

Activated March 25

- Guard and Security Building [GSB]

Activated April 10

- Hobbs [HBS]
- Eunice [EUN]
- Loving [LVG]
- Artesia [ART]

All fifteen stations are currently operating, but the eight samplers activated since the radiological release event were deployed on an expedited schedule, and are being assessed against criteria provided by the U.S. Department of Energy (DOE) and the U. S. Environmental Protection Agency's (EPA) National Analytical Radiation Environmental Laboratory (NAREL) in order to optimize the location. EPA NAREL staff comments were made as part of April 2014 WIPP site visit during which EPA air samplers were co-located with existing DOE air samplers. In addition, the historically-operating samplers will be assessed against the same criteria.

2.3 Planned Additional Air Particulate Sampling

Additional LVAP sampling stations and their locations have been evaluated, but equipment has not yet been deployed. Those six locations include Angel Ranch [AGR], H2 Well Pad [H2P], WIPP North [WNN], LWA East [LWE], Mosaic Shaft 5 [MS5],and Potash Mines Road] [PMR].

2.4 Air Particulate Sampling Placement Criteria

Recommendations for placement of air samplers about a nuclear facility are provided in DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, January 1991, and DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, July 1981, legacy DOE guidance documents. Those principles were applied in the original siting selections referenced in the April 1985 Radiological Baseline Program for the Waste Isolation Pilot Plant: Program Plan (WTSD-TME-057). The original baseline locations (distance/sector from WIPP) are being re-used, but the locale in some cases has changed due to obstructions, interim adjacent land use changes, or line power availability.

Specific criteria for the locale (relative to interference factors) have been developed using specific criteria derived from 40 CFR 58 Appendix E (for PM^{10} sampling) and from DOE/EP-0023 for air particulate sampling of ambient air. Specific criteria for each identified sampler include:

Spatial coordinates (lat/long)
Height of sample head above ground

Distances from individual trees, tree dripline, and tree rows
Distances to un-vegetated areas and roads/dust-producing areas
Distances to/height of obstacles, and the height-to-top ratio from the sampler head
Distances to co-located samplers
Photos from cardinal directions to include vegetation and obstacles
Degrees of unrestricted (no obstacle) air flow around the sample head.

3.0 Initial Field Assessment

On 23 April 2014 a team of WIPP scientists visited a number of off-site air samplers to collect information and assess the installations against a set of criteria, including the above-listed factors. A field protocol was followed to ensure uniform data collection (see Attachment 1), and a checklist was provided for each location assessed.

4.0 Assessment Results

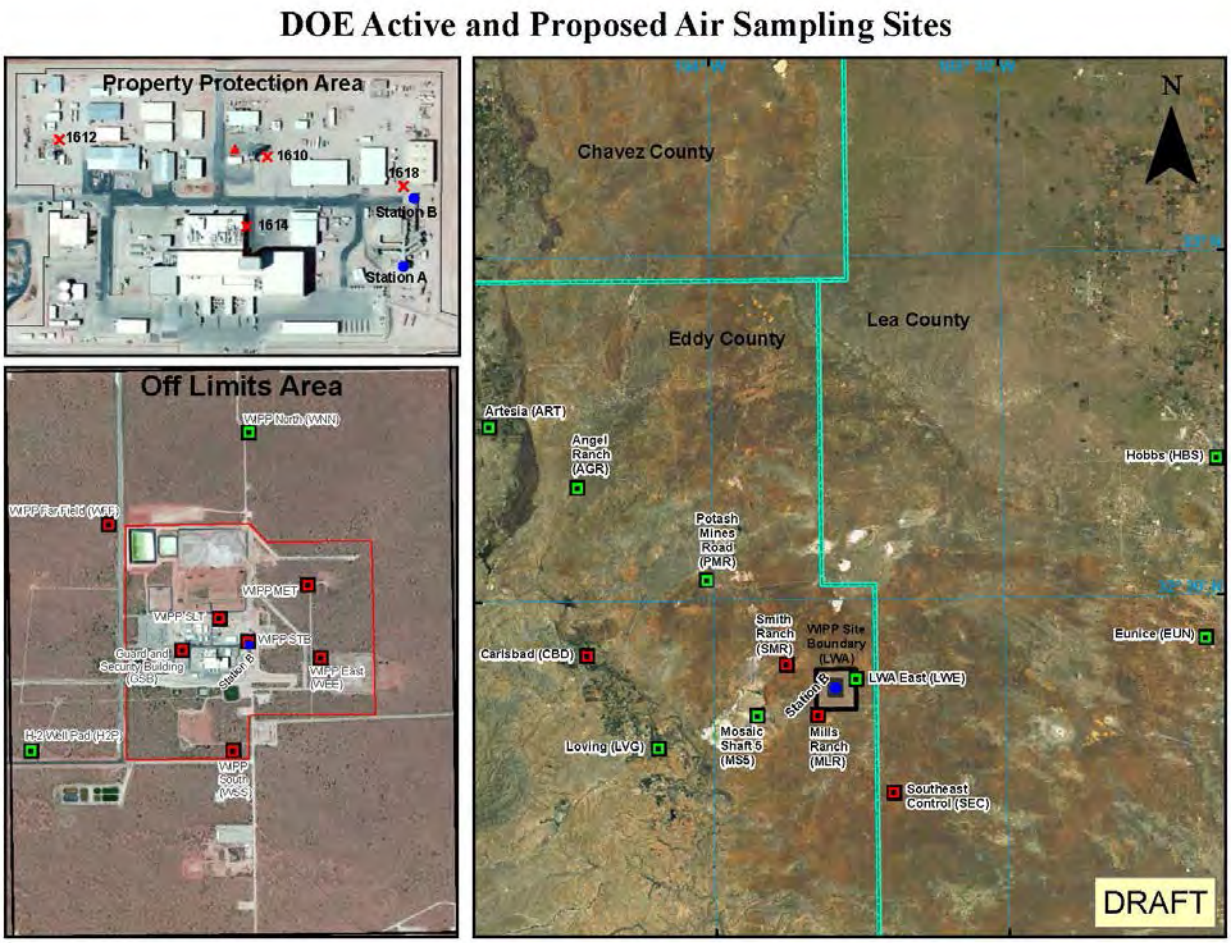
The results of the sampler location assessment showed that the one historical location [CBD] and two proposed locations visited met all the criteria.

Four of the locations (representing urban communities) were in less-than-optimal positions relative to nearby buildings, dust-producing land use, or inadequate sample head height. The samplers were, for the most part, placed in the best location available as dictated by space, security, and power availability. Placement was determined by the deployment team within an accelerated schedule. For longer-term operation, improved locations are being evaluated. The specific criteria assessed are shown on the completed field checklists (see Attachment 2). For those factors not meeting the criteria, an “Adjust” entry is made to signify that either the equipment parameter or location needs to be adjusted, or the situation documented as technically acceptable, to optimize the sampler performance.

5.0 Continuing Sampler Siting Activities

In the coming weeks, assessments of the remaining operating air sampler locations will continue. The seven original LVAP locations will continue to be operated to comply with the requirements of DOE Orders as part of the WIPP’s Operational Monitoring Program as defined in the WIPP Environmental Monitoring Plan (DOE/WIPP-99-2194). For purposes of radiological event evaluation, additional samplers are planned at each of these locations. One set of samplers will be part of the WIPP’s Operational Monitoring Program and used to obtain data used for the Annual Site Environmental Report (ASER) required by DOE Order 231.1B, and the other set of samplers will be designated for radiological event evaluation only.

Optimization of the locations that do not presently meet the desired criteria will proceed concurrently, and the entire network will be assessed after final configuration to document the status.



*Currently active sampling locations are shown in red while proposed locations are shown in green.

Figure 1 WIPP Active and Proposed Low-Volume Air Particulate Stations

Environmental Monitoring Field Information Collection Protocol

Ambient Air Particulate Sampler Siting Information

SYNOPSIS:

The air particulate samplers deployed in the environs around WIPP are used for corroborating demonstration that the WIPP operations have not impacted the environment or the public adversely, in accordance with the requirements of DOE Order 458.1. Several guidance documents from DOE (DOE/EH-0173T, DOE/EP-0023) specify air sampler siting requirements, as do EPA guidance and compliance documents (EPA-450 4-87-007, 40 CFR 58, Appendix E). In order to determine the status of the sampler installations regarding these requirements or guidance, a field information “WIPP Ambient Air Sampler On-Location Checklist” is used to document conditions at each sampler installation for review and reference. The checklist contains information needed to ascertain whether the installation siting adequately meets the relevant criteria.

Refer to WP 02-EM1012, Airborne Particulate Sampling, for precautions regarding potential risks when accessing air sampler locations. No air sampler work is conducted under this protocol.

This protocol does not contain required steps, but is to be used as guidance only to obtain necessary information to properly assess the status of air particulate samplers in the WIPP environs.

PROCESS:

1. Review the checklist and determine the equipment and tools needed to measure and document the required information. This may include, but is not limited to, local maps, a GPS, measuring tape(s), a compass (with clinometer), digital camera, and calculator. An environmental-level radiation detector may also be used to establish new location information. A storyboard may be used for photo identification. Assemble the equipment and tools, and the required checklists before proceeding to the sampler location.

2. Enter the date & time of the start of the checklist information collection. Document the sampler unit being assessed.

3. Determine and record the plane coordinates of the sampler head in WGS84 decimal degrees latitude/longitude.

4. Measure and record the height of the sampler head (probe) to the ground. Lay a flat board down to average the ground surface elevation if it is uneven.

5. Measure the distance to the sampler head from the nearest obstruction that rises above the sampler head. Measure or estimate the height of the obstacle (above the sampler), and record these data.

6. Using a compass, estimate the degrees of unrestricted view from the sampler head, and record in total degrees (out of 360N for full circle).

7. Measure, or estimate, and record distances from the sampler head to the nearest roadway or dusty area, un-vegetated un-paved surface (includes tilled land), and co-located sampler intake, if applicable.

8. If equipment is available, take and record a radiation reading at the sampler location at 1.0 meter above the ground. Document the instrument information.

9. Take photos of the sampler installation from the front (including any nearby vegetation), and from each of the four cardinal directions (NEWS). Use a storyboard to aid in photo ID later, as convenient.

10. Identify the field team using the blank spaces at the bottom of the form.

11. Input the data collected into the computerized form for that sampler station location.

12. Identify any obstructions, spacing, or proximity issues that need to be “adjusted.”

13. Using the coordinates collected, find that location using internet mapping, and capture the location (with an ID “pin” on the map) on a satellite image, both at maximum zoom, and at a medium setting allowing nearby road or street identification. Hyperlink these files from an associated directory to the sampler checklist in the provided spaces. Note: Portable document format images are preferable.

14. Upload, and hyperlink the cardinal point images from the associated directory to the sampler checklist in the respective spaces. Note: Portable document format images are preferable, once the quality has been ascertained to be “excellent.”

15. Scan the field sheet with associated hand-entries to produce an image, and save in an associated directory for that sampler along with the electronic update.

16. Link the field sheet as needed to the Environmental Monitoring database/index for future retrieval and reference.

Ambient Air Sampler On-Location Checklists

[linked photos not included]

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection:	4/23/14 9:50	Sampler Unit ID:	NA

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
AGR	ANGEL RANCH Lo-Vol	TBD	32.665257	-104.233104	NA	On NM State land (to be verified)

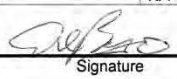
EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	NA	m	NA	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	NA	m	NA	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	900	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		600	ft	355	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		6	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, dirt well pad at 355 degrees

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA		Date of Photos:		
Height from ground to sample head (ft)	NA	ft	measure		No sampler	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure		4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure		4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc		4/23/2014	Looking South	(hyperlink)
					4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	NA	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection:	4/23/14 11:30	Sampler Unit ID:	TBD

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
HBS	**HOBBS Lo-Vol**	4/10/2014	32.698433	-103.133618	5.0	On municipal property, at streetside corner of fire station.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.52	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.52	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	1	ratio	Adjust	
5	Deg. unrestricted airflow, min	270	degrees	200	degrees	Adjust	
6	Distance from road/dust, min	10	m	27	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		100	ft	200	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, small visible un-vegetated, un-paved area across the street. Building overhang edge 47" directly above sampler head.

Distance-to-Height Ratio Worksheet				**Location Photos**		
Distance to obstacle from sample head (ft)	3.8	Dist/Ht Ratio:	0.55	Date of Photos:		
Height from ground to sample head (ft)	5.0	ft	measure	4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	0	degrees	measure	4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	12.0	ft	measure	4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	7.0	ft	calc	4/23/2014	Looking South	(hyperlink)
				4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	5.0	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 14:30 | Sampler Unit ID: Ser#9178

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
LVG	**LOVING Lo-Vol**	4/10/2014	32.277478	-104.095348	4.6	On municipal property behind Fire Station #2.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.40	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.40	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	0	ratio	Adjust	
5	Deg. unrestricted airflow, min	270	degrees	250	degrees	Adjust	
6	Distance from road/dust, min	10	m	200	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		0	ft	140 +/- 50	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, un-vegetated, un-paved areas in 270 degree arc around site. Proposed move to Lat 32.77685, Long -104.095324

Distance-to-Height Ratio Worksheet				**Location Photos**		
Distance to obstacle from sample head (ft)	3.5	Dist/Ht Ratio:	0.26	Date of Photos:		
Height from ground to sample head (ft)	4.6	ft	measure	4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	270	degrees	measure	4/23/2014	Looking North (label incorrect)	(hyperlink)
Height from ground to top of obstacle (ft)	18.3	ft	measure	4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	13.7	ft	calc	4/23/2014	Looking South	(hyperlink)
				4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	4.6	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 8:40 | Sampler Unit ID: Ser#9915

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
ART	**ARTESIA Lo-Vol**	4/10/2014	32.754539	-104.383714	4.4	On public property, at agricultural station.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.35	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.35	m	Pass	
3	Distance from tree dripline, min	10	m	40	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	4	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	140	degrees	Adjust	
6	Distance from road/dust, min	10	m	0	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		90	ft	260	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		8	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: Single trees at 40' SSW, 90' NNW, visible un-vegetated, un-paved areas all west sectors, low buildings about 220 degrees arc to east.

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	28.0	Dist/Ht Ratio:	3.54		Date of Photos:		
Height from ground to sample head (ft)	4.4	ft	measure		4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	75	degrees	measure		4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	12.3	ft	measure		4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	7.9	ft	calc		4/23/2014	Looking South	(hyperlink)
					4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	4.4	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection:	4/23/14 10:30	Sampler Unit ID:	NA

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
PMR	**POTASH MINES ROAD Lo-Vol**	TBD	32.529723	-104.011918	NA	On BLM property at NE corner of intersection US 180/ Hackberry Lake access road NM 360.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	NA	m	NA	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	NA	m	NA	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	150	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		100	ft	280	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		6	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No nearby trees, small, visible un-vegetated, un-paved area to the east

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA		Date of Photos:		
Height from ground to sample head (ft)	NA	ft	measure		4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure		4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure		4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc		4/23/2014	Looking South	(hyperlink)
					4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	NA	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection:	4/23/14 12:50	Sampler Unit ID:	Ser#9917

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
EUN	**EUNICE Lo-Vol**	4/10/2014	32.4375	-103.157355	5.0	On municipal property, fire station parking lot.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.52	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.52	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	1	ratio	Adjust	
5	Deg. unrestricted airflow, min	270	degrees	310	degrees	Pass	
6	Distance from road/dust, min	10	m	70	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		0	ft	310	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, sited in un-vegetated, un-paved gravelled parking lot

Distance-to-Height Ratio Worksheet				Location Photos		
Distance to obstacle from sample head (ft)	3.0	Dist/Ht Ratio:	0.75	Date of Photos:		
Height from ground to sample head (ft)	5.0	ft	measure	4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	80	degrees	measure	4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	9.0	ft	measure	4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	4.0	ft	calc	4/23/2014	Looking South	(hyperlink)
				4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	5.0	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 7:45 | Sampler Unit ID: West | page 1 of 2

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
CBD	**CARLSBAD Lo-Vol**	7/1/2005	32.420932	-104.218172	6.4	On BLM developed property, inside secure parking lot.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.96	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.96	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	3	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	300	degrees	Pass	
6	Distance from road/dust, min	10	m	600	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	7	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	7	ft	Pass	WIPP CBD East
9	Distance to un-vegetated area	"not in unpaved area..."		400	ft	90	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, no visible un-vegetated, un-paved areas

Distance-to-Height Ratio Worksheet					**Location Photos**		
Distance to obstacle from sample head (ft)	5.0	Dist/Ht Ratio:	2.86	Date of Photos:			
Height from ground to sample head (ft)	6.4	ft	measure	4/23/2014	Front of Sampler	(hyperlink)	
Azimuth from sampler to obstacle (degrees)	240	degrees	measure	4/23/2014	Looking North	(hyperlink)	
Height from ground to top of obstacle (ft)	8.2	ft	measure	4/23/2014	Looking East	(hyperlink)	
Obstacle height above sample head (ft)	1.8	ft	calc	4/23/2014	Looking South	(hyperlink)	
				4/23/2014	Looking West	(hyperlink)	
Sample head height (ft)	6.4	ft	measure		Aerial with pin (in)	(hyperlink)	
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)	
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))		
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 7:45 | Sampler Unit ID: East | page 2 of 2

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
CBD	CARLSBAD Lo-Vol	7/1/2005	32.420932	-104.218172	5.0	On BLM developed property, inside secure parking lot.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.53	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.53	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	4	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	300	degrees	Pass	
6	Distance from road/dust, min	10	m	600	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	7	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	7	ft	Pass	WIPP CBD West
9	Distance to un-vegetated area	"not in unpaved area..."		NA	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, no visible un-vegetated, un-paved areas

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	12.0	Dist/Ht Ratio:	3.81		Date of Photos:		
Height from ground to sample head (ft)	5.0	ft	measure		4/23/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	240	degrees	measure		4/23/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	8.2	ft	measure		4/23/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	3.1	ft	calc		4/23/2014	Looking South	(hyperlink)
					4/23/2014	Looking West	(hyperlink)
Sample head height (ft)	5.0	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo		4/24/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

ATTACHMENT 2

WIPP Environmental Monitoring Program-
Ambient Air Sampling Location Site Evaluation Follow-Up

Rev.0

July 25, 2014

Pages 52

WIPP Environmental Monitoring Program-

Ambient Air Sampling Location Site Evaluation Follow-Up

Rev.0

July 25, 2014

1.0 Introduction

On May 15, 2014, a report entitled *WIPP Environmental Monitoring Program-Ambient Air Sampling Location Assessment* was issued to document the specific installation arrangements of the supplemental samplers and to assess if modifications were needed to improve the installation arrangements. Included in the May 15, 2014 report were discussions of recommendations from the Environmental Protection Agency (EPA) and plans for further evaluations at additional sampling locations. This report will serve to communicate and document actions taken since the issuance of the May 15, 2014 report regarding location modifications, results of the additional location evaluations, and status all active and proposed air monitoring locations.

2.0 Recommendations From EPA

During a field tour of air monitoring locations on April 23, 2014, a team from EPA recommended improvements to some of the sampling locations. These recommendations included:

- Completion of evaluations for additional monitoring locations
- Evaluate alternate locations for Loving, Artesia, and Eunice
    - Loving
        - Proximity to agricultural fields
        - Location was directly below fire station exhaust fan
    - Artesia
        - Proximity to agricultural fields
    - Carlsbad
        - Proximity to building
    - Hobbs
        - Proximity to building
    - Eunice
        - Proximity to unvegetated area
- Uniform sample head heights at each location

3.0 Additional Site Assessments

Additional site assessments were performed for Guard and Security Building (GSB), Met Tower (MET), Mills Ranch (MLR), Salt Hoist (SLT), Southeast Control (SEC), Smith Ranch (SMR), Southeast of Training Building (STB), WIPP East (WEE), WIPP Far Field (WFF), and WIPP South (WSS). Most of the assessments were acceptable with only a few exceptions. Location SMR has a co-located sampler just inside of the minimum distance requirement. This location will remain as sited. There are a few sample locations that do not meet the minimum sample height requirement. Material is on order and these will be modified when that material arrives.

The Carlsbad, Hobbs, Eunice, GSB, and STB locations are unique in that they are immediately adjacent to buildings. These sampling locations near buildings are considered adequate by having 90% of the monitoring path unrestricted as well as having 180° of unrestricted airflow (for locations next to buildings, 40 CFR Part 58 Appendix E). Although the unrestricted airflow is not ideal, it is allowable. These locations provide a higher level of security as well as the power needed to operate sampling equipment. Although the Artesia location does not meet the unrestricted airflow objective, the sampling location distance from the obstruction in the monitoring path ratio meets requirements.

4.0 Modifications Made to Sampling Locations

- **Loving**
  The sampling location was moved away from the building in order to alleviate the concern regarding the fire station exhaust fan. Alternate locations were considered, but none afforded a better proximity to agricultural fields as this community has many such areas. A protective sampler enclosure was installed at this location to provide better security and protection from weather.

- **Artesia**
  Alternate locations were considered, but none afforded a better proximity from agricultural fields as this community has many such areas. A protective sampler enclosure was installed at this location to provide better security and protection from weather.

- **Carlsbad**
  No change to this location (due to the above listed criteria for locations adjacent to buildings).

- **Hobbs**
  A protective sampler enclosure was installed at this location to provide better security and protection from weather.

- **Eunice**
  The sampling location was moved to the Police Department, as it met more of the screening criteria. A protective sampler enclosure was installed at this location to provide better security and protection from weather.

The following attachment documents actions taken subsequent to EPA visit.

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 8:40 | Sampler Unit ID: Ser#9915

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
ART	ARTESIA Lo-Vol	4/10/2014	32.754539	-104.383714	4.4	On public property, at agricultural station. Sample location meets distance to obstacle ratio requirements.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.35	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.35	m	Pass	
3	Distance from tree dripline, min	10	m	40	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	4	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	140	degrees	Adjust	
6	Distance from road/dust, min	10	m	0	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		90	ft	260	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		8	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: Single trees at 40' SSW, 90' NNW, visible un-vegetated, un-paved areas all west sectors, low buildings about 220 degrees arc to east.

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	28.0	Dist/Ht Ratio:	3.54	Date of Photos:	
Height from ground to sample head (ft)	4.4	ft	measure	6/10/2014	Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	75	degrees	measure	6/10/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	12.3	ft	measure	6/10/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	7.9	ft	calc	6/10/2014	Looking South (hyperlink)
				6/10/2014	Looking West (hyperlink)
Sample head height (ft)	4.4	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo	On File	4/24/2014			

Sampling Location: ART **Date of Photos: 6/10/2014**

Sampling Location: ART **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection:	5/16/14 0:00	Sampler Unit ID:		New Location near Police Station

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
EUN-EE	EUNICE Lo-Vol	5/16/2014	32.441768	-103.171514	5.0	On municipal property, behind police station. 180 degree unrestricted adjacent to building.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.52	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.52	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	5	ratio	Pass	
5	Deg. unrestricted airflow, min	180	degrees	240	degrees	Pass	
6	Distance from road/dust, min	10	m	300	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		450	ft	45	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µrem/hr	Instrument/Ser/cal due	NA

Notes: No trees, sited in un-vegetated, un-paved gravelled parking lot

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	18.0	Dist/Ht Ratio:	4.50		Date of Photos:		
Height from ground to sample head (ft)	5.0	ft	measure			Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	90	degrees	measure		5/16/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	9.0	ft	measure		5/16/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	4.0	ft	calc		5/16/2014	Looking South	(hyperlink)
					5/16/2014	Looking West	(hyperlink)
Sample head height (ft)	5.0	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	18.0	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	70	degrees	measure				
Obstruction ht. above sampler (ft)	49.5	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	81.8	ft	calc				

Wesley Boatwright		5/16/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: Eunice **Date of Photos: 6/10/2014**

Sampling Location: Eunice **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/14 0930 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
GSB-EE	WIPP GUARD & SECURITY BLDG Lo-Vol	3/25/2014	32.3721	-103.795102	4.6	On WIPP property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.40	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.40	m	Pass	
3	Distance from tree dripline, min	10	m	25.0	ft	Adjust	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	2.4	ratio	Pass	
5	Deg. unrestricted airflow, min	180	degrees	200	degrees	Pass	Sampling site adjacent to building
6	Distance from road/dust, min	10	m	600.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		700	ft	200	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	25.0	Dist/Ht Ratio:	2.40	Date of Photos:	
Height from ground to sample head (ft)	4.6	ft	measure	6/10/2014	Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	20.0	degrees	measure	6/10/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	15.0	ft	measure	6/10/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	10.4	ft	calc	6/10/2014	Looking South (hyperlink)
				6/10/2014	Looking West (hyperlink)
Sample head height (ft)	4.6	ft	measure	NA	Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	20.0	ft	measure	NA	Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	50	degrees	measure		
Obstruction ht. above sampler (ft)	23.8	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	22.1	ft	calc		

Wesley Boatwright — 6/10/2014

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

Sampling Location: GSB **Date of Photos: 6/10/2014**

Sampling Location: GSB **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 4/23/14 11:30 | Sampler Unit ID: TBD

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
HBS	HOBBS Lo-Vol	4/10/2014	32.698433	-103.133618	5.0	On municipal property, at streetside corner of fire station.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.52	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.52	m	Pass	
3	Distance from tree dripline, min	10	m	NA	ft	NA	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	1	ratio	Adjust	
5	Deg. unrestricted airflow, min	180	degrees	200	degrees	Pass	Sampler adjacent to building
6	Distance from road/dust, min	10	m	27	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		100	ft	200	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, small visible un-vegetated, un-paved area across the street. Building overhang edge 47" directly above sampler head.

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	3.8	Dist/Ht Ratio:	0.55		Date of Photos:		
Height from ground to sample head (ft)	5.0	ft	measure		6/10/2014	Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	0	degrees	measure		6/10/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	12.0	ft	measure		6/10/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	7.0	ft	calc		6/10/2014	Looking South	(hyperlink)
					6/10/2014	Looking West	(hyperlink)
Sample head height (ft)	5.0	ft	measure			Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure			Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure				
Obstruction ht. above sampler (ft)	NA	ft	calc		(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc				

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
E.D. Picazo	On File	4/24/2014			

Sampling Location: Hobbs **Date of Photos: 6/10/2014**

Sampling Location: Hobbs **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/14 12:30 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
LVG	LOVING Lo-Vol	5/20/2014	32.277648	-104.095265	4.5	On municipal property behind Fire Station #2.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.37	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.37	m	Pass	
3	Distance from tree dripline, min	10	m	100	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	2	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	290	degrees	Pass	
6	Distance from road/dust, min	10	m	30	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	None
9	Distance to un-vegetated area	"not in unpaved area..."		30	ft	290	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		5	µrem/hr	Instrument/Ser/cal due	Thermo Microrem Ser#1546, cal due 02/24/15

Notes: No trees, un-vegetated, un-paved areas in 270 degree arc around site. General radiation levels retained from measurements associated with original location (within 50').

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	30.0	Dist/Ht Ratio:	2.18		
Height from ground to sample head (ft)	4.5	ft	measure		
Azimuth from sampler to obstacle (degrees)	310	degrees	measure		
Height from ground to top of obstacle (ft)	18.3	ft	measure		
Obstacle height above sample head (ft)	13.8	ft	calc		
Sample head height (ft)	4.5	ft	measure		
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc		
Obstruction ht. above ground (ft)	NA	ft	calc		

Location Photos

Date of Photos:		
	Front of Sampler	
7/1/2014	Looking North	(hyperlink)
7/1/2014	Looking East	(hyperlink)
7/1/2014	Looking South	(hyperlink)
7/1/2014	Looking West	(hyperlink)
	Aerial with pin (in)	(hyperlink)
	Aerial with pin (out)	(hyperlink)
(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	

Wesley Boatwright — 6/10/2014

On-Location Scientist: Printed name | Signature | Date | On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date | On-Location Scientist: Printed name | Signature | Date

Sampling Location: LVG **Date of Photos: 7/1/2014**

Sampling Location: LVG **Date of Photos: 7/1/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/2014 Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
MET-EE	MET TOWER Lo-Vol	3/4/2014	32.374883	-103.788617	4.6	On WIPP property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.40	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.40	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	30.0	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	EPA LoVol,
9	Distance to un-vegetated area	"not in unpaved area..."		500	ft	160	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	4.6	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	4.6	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

Wesley Boatwright 5/22/2014

On-Location Scientist: Printed name | Signature | Date | On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date | On-Location Scientist: Printed name | Signature | Date

Sampling Location: MET **Date of Photos: 6/10/2014**

Sampling Location: MET **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-1000 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
MLR-AL	MILLS RANCH Lo-Vol	1985	32.332033	-103.82395	7.8	On private property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.36	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.36	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	350.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	MLR-EE
9	Distance to un-vegetated area	"not in unpaved area..."		NA	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	7.8	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	7.8	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		5/22/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-1000 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
MLR-EE	MILLS RANCH Lo-Vol	3/4/2014	32.332033	-103.82395	7.8	On private property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.36	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.36	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	350.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	MLR-AL
9	Distance to un-vegetated area	"not in unpaved area..."		NA	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:		
Height from ground to sample head (ft)	7.8	ft	measure		Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South	(hyperlink)
				5/22/2014	Looking West	(hyperlink)
Sample head height (ft)	7.8	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		5/22/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: MLR **Date of Photos: 6/10/2014**

Sampling Location: MLR **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/2014-1047 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
SEC-AL	SOUTHEAST CONTROL Lo-Vol	1990	32.218383	-103.6951	6.0	On BLM property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.83	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.83	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	200.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	SEC-EE
9	Distance to un-vegetated area	"not in unpaved area..."		NA	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:		
Height from ground to sample head (ft)	6.0	ft	measure		Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	6/10/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	6/10/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	6/10/2014	Looking South	(hyperlink)
				6/10/2014	Looking West	(hyperlink)
Sample head height (ft)	6.0	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		6/10/2014			

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/2014-1047 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
SEC-EE	SOUTHEAST CONTROL Lo-Vol	3/4/2014	32.218383	-103.6951	6.0	On BLM property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

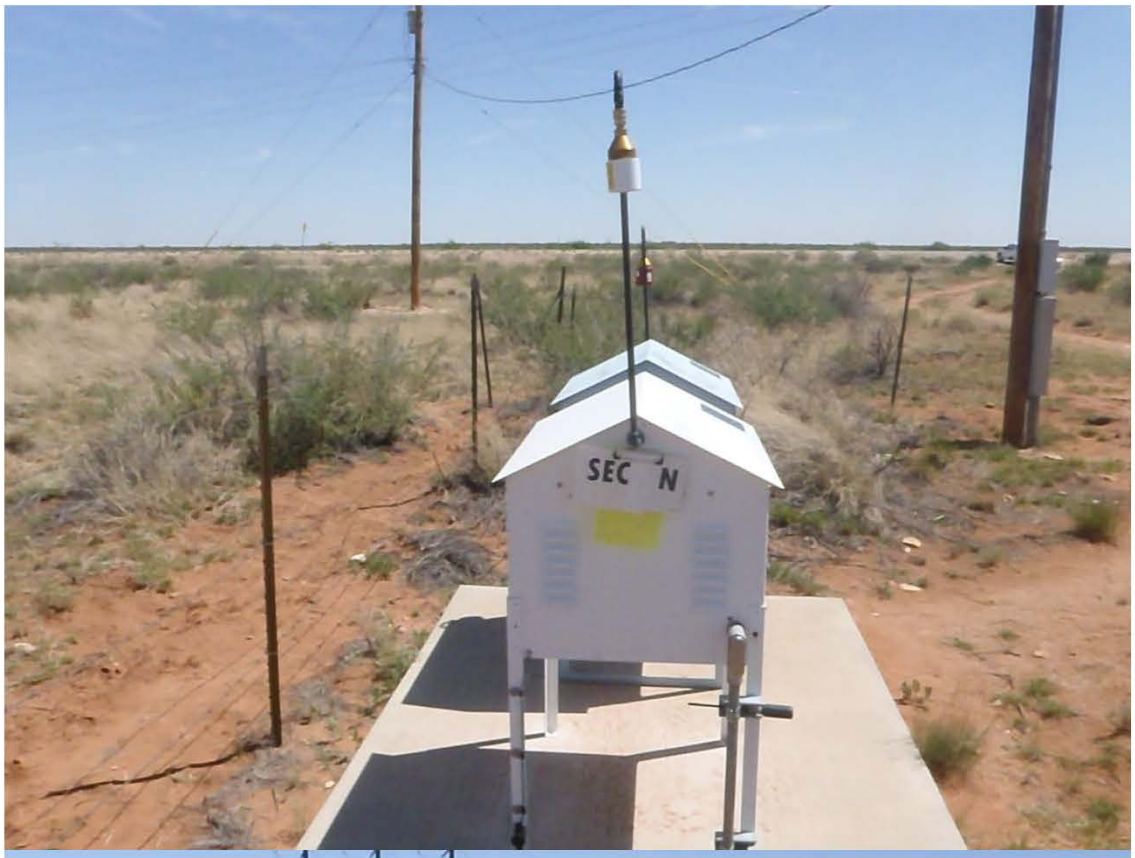
No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.83	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.83	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	200.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	SEC-AL
9	Distance to un-vegetated area	"not in unpaved area..."		NA	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:		
Height from ground to sample head (ft)	6.0	ft	measure		Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	6/10/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	6/10/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	6/10/2014	Looking South	(hyperlink)
				6/10/2014	Looking West	(hyperlink)
Sample head height (ft)	6.0	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure			
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	NA	ft	calc			

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		6/10/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: SEC **Date of Photos: 6/10/2014**



Sampling Location: SEC **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/14-0830 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
SLT-EE	**WIPP SALT HOIST Lo-Vol**	3/4/2014	32.37347	-103.793162	6.3	On WIPP property. Onsite-unvegetated.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.91	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.91	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	5.6	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	270	degrees	Pass	
6	Distance from road/dust, min	10	m	0.0	ft	Adjust	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	CEMRC
9	Distance to un-vegetated area	"not in unpaved area..."		0	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	7.0	Dist/Ht Ratio:	5.60	Date of Photos:		
Height from ground to sample head (ft)	6.3	ft	measure		Front of Sampler	(hyperlink)
Azimuth from sampler to obstacle (degrees)	280.0	degrees	measure	6/10/2014	Looking North	(hyperlink)
Height from ground to top of obstacle (ft)	7.5	ft	measure	6/10/2014	Looking East	(hyperlink)
Obstacle height above sample head (ft)	1.3	ft	calc	6/10/2014	Looking South	(hyperlink)
				6/10/2014	Looking West	(hyperlink)
Sample head height (ft)	6.3	ft	measure		Aerial with pin (in)	(hyperlink)
Distance to obstruction base (ft) at sample head ht.	100.0	ft	measure		Aerial with pin (out)	(hyperlink)
Angle (clinometer) sample head to top of obstruction	20	degrees	measure			
Obstruction ht. above sampler (ft)	36.4	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))	
Obstruction ht. above ground (ft)	14.7	ft	calc			

Wesley Boatwright		6/10/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: SLT **Date of Photos: 6/10/2014**

Sampling Location: SLT **Date of Photos: 6/10/2014**

Sampling Location: SLT **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/2014-1141 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
SMR-AL	SMITH RANCH Lo-Vol	1985	32.40585	-103.876483	7.0	Onprivate property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.13	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.13	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	7.5	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	300	degrees	Pass	
6	Distance from road/dust, min	10	m	600.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	3.0	ft	Adjust	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	3.0	ft	Pass	SMR-EE
9	Distance to un-vegetated area	"not in unpaved area..."		200	ft	60	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	60.0	Dist/Ht Ratio:	7.50	Date of Photos:	
Height from ground to sample head (ft)	7.0	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	290.0	degrees	measure	6/10/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	15.0	ft	measure	6/10/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	8.0	ft	calc	6/10/2014	Looking South (hyperlink)
				6/10/2014	Looking West (hyperlink)
Sample head height (ft)	7.0	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	210.0	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	5	degrees	measure		
Obstruction ht. above sampler (ft)	18.4	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	1.7	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		6/10/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/2014-1141 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
SMR-EE	SMITH RANCH Lo-Vol	3/4/2014	32.40585	-103.876483	7.0	Onprivate property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.13	m	Pass	Note 1: See DOE/EP-0023, Table 4-1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.13	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	7.5	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	300	degrees	Pass	
6	Distance from road/dust, min	10	m	600.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	3.0	ft	Adjust	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	3.0	ft	Pass	SMR-AL
9	Distance to un-vegetated area	"not in unpaved area..."		200	ft	60	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	60.0	Dist/Ht Ratio:	7.50	Date of Photos:	
Height from ground to sample head (ft)	7.0	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	290.0	degrees	measure	6/10/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	15.0	ft	measure	6/10/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	8.0	ft	calc	6/10/2014	Looking South (hyperlink)
				6/10/2014	Looking West (hyperlink)
Sample head height (ft)	7.0	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	210.0	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	5	degrees	measure		
Obstruction ht. above sampler (ft)	18.4	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	1.7	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		6/10/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: SMR **Date of Photos: 6/10/2014**

Sampling Location: SMR **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/10/2014-0800 Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
STB-EE	**WIPP TRAINING BUILDING Lo-Vol**	3/4/2014	32.37244	-103.791728	4.5	On WIPP property. Onsite, unvegetated area.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	1.37	m	Adjust	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	1.37	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	1.0	ratio	Adjust	
5	Deg. unrestricted airflow, min	270	degrees	280	degrees	Pass	
6	Distance from road/dust, min	10	m	200.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	NA	ft	NA	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	NA	ft	NA	CEMRC/EPA LoVol
9	Distance to un-vegetated area	"not in unpaved area..."		60	ft	NA	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet					Location Photos		
Distance to obstacle from sample head (ft)	26.0	Dist/Ht Ratio:	1.02	Date of Photos:			
Height from ground to sample head (ft)	4.5	ft	measure		Front of Sampler	(hyperlink)	
Azimuth from sampler to obstacle (degrees)	80.0	degrees	measure	6/10/2014	Looking North	(hyperlink)	
Height from ground to top of obstacle (ft)	30.0	ft	measure	6/10/2014	Looking East	(hyperlink)	
Obstacle height above sample head (ft)	25.5	ft	calc	6/10/2014	Looking South	(hyperlink)	
				6/10/2014	Looking West	(hyperlink)	
Sample head height (ft)	4.5	ft	measure		Aerial with pin (in)	(hyperlink)	
Distance to obstruction base (ft) at sample head ht.	26.0	ft	measure		Aerial with pin (out)	(hyperlink)	
Angle (clinometer) sample head to top of obstruction	75	degrees	measure				
Obstruction ht. above sampler (ft)	97.0	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))		
Obstruction ht. above ground (ft)	-607.9	ft	calc				

Wesley Boatwright		6/10/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: STB **Date of Photos: 7/2/2014**

Sampling Location: STB **Date of Photos: 7/2/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-0800 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WEE-AL	WIPP EAST Lo-Vol	1985	32.3717	-103.787983	7.3	On WIPP property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.21	m	Pass	Note 1: See DOE/EP-0023, Table 4-1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.21	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	100.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WEE-EE
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	110	
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	7.3	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	7.3	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

Wesley Boatwright 5/22/2014

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-0800 Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WEE-EE	**WIPP EAST Lo-Vol**	3/4/2014	32.3717	-103.787983	6.9	On WIPP property. Duplicate location measures 7.5 ft.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.10	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.10	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	100.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WEE-AL
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	110	
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	6.9	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	6.9	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

Wesley Boatwright 5/22/2014

On-Location Scientist: Printed name Signature Date

On-Location Scientist: Printed name Signature Date

On-Location Scientist: Printed name Signature Date

On-Location Scientist: Printed name Signature Date

Sampling Location: WEE **Date of Photos: 6/10/2014**

Sampling Location: WEE **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/27/2014 11:00 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WFF-AL	WIPP FARFIELD Lo-Vol	1986	32.377633	-103.798817	7.8	On WIPP property. Co-location with CEMRC Near Field Ambient air Sampler

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.36	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.36	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	250.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WFF-EE, CEMRC
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	90	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		N/A	µR/hr	Instrument/Ser/cal due	N/A

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA		
Height from ground to sample head (ft)	7.8	ft	measure	6/27/2014	Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	6/27/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	6/27/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	6/27/2014	Looking South (hyperlink)
				6/27/2014	Looking West (hyperlink)
Sample head height (ft)	7.8	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

Wesley Boatwright 6/27/2014

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

On-Location Scientist: Printed name | Signature | Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 6/27/2014 11:00 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WFF-EE	WIPP FARFIELD Lo-Vol	3/4/2014	32.377633	-103.798817	7.2	On WIPP property. Co-location with CEMRC Near Field Ambient air Sampler

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.19	m	Pass	Note 1: See DOE/EP-0023, Table 4 1 (1 5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.19	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	Pass	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	250.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WFF-AL, CEMRC
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	90	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		N/A	µR/hr	Instrument/Ser/cal due	N/A

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	7.2	ft	measure	6/27/2014	Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	6/27/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	6/27/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	6/27/2014	Looking South (hyperlink)
				6/27/2014	Looking West (hyperlink)
Sample head height (ft)	7.2	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		6/27/2014			

Sampling Location: WFF **Date of Photos: 6/10/2014**

Sampling Location: WFF **Date of Photos: 6/10/2014**

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-0830 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WSS-AL	WIPP SOUTH Lo-Vol	1985	32.3677	-103.79255	7.4	On WIPP property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.26	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.26	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	100.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WSS-EE
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	120	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	7.4	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	7.4	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		5/22/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

WIPP Ambient Air Sampler On-Location Checklist

Date/Time of Data Collection: 5/22/14-0830 | Sampler Unit ID:

WIPP Samp Loc	MonitorOwner ID	DateBegin	Latitude	Longitude	AboveGround (ft)	LocationNotes
WSS-EE	WIPP SOUTH Lo-Vol	3/4/2014	32.3677	-103.79255	7.4	On WIPP property.

EPA Siting Criteria [40 CFR 58 App E, for PM^{10} samplers], Table E-4

0.3048000 m/ft conversion

No	Factor	Criterion	units	Actual	units	Pass/Adjust	Notes
1	Height of probe to ground, min	1.5	m Note 1	2.26	m	Pass	Note 1: See DOE/EP-0023, Table 4.1 (1.5 m = human breathing height)
2	Height of probe to ground, max	7	m	2.26	m	Pass	
3	Distance from tree dripline, min	10	m	100.0	ft	Pass	If > 100 ft, use 100 ft
4	Distance ratio to obstacle, min	2	ratio	NA	ratio	NA	
5	Deg. unrestricted airflow, min	270	degrees	360	degrees	Pass	
6	Distance from road/dust, min	10	m	100.0	ft	Pass	Road with <10k veh/dy
7	Distance to co-located unit, min	1	m	4.0	ft	Pass	Co-Located Sampler ID: ↓
8	Distance to co-located unit, max	4	m	4.0	ft	Pass	WSS-AL
9	Distance to un-vegetated area	"not in unpaved area..."		300	ft	120	Azimuth (degrees)
10	General radiation level at sampler	(taken at 1.0 m above ground)		NA	µR/hr	Instrument/Ser/cal due	NA

Distance-to-Height Ratio Worksheet

Distance to obstacle from sample head (ft)	NA	Dist/Ht Ratio:	NA	Date of Photos:	
Height from ground to sample head (ft)	7.4	ft	measure		Front of Sampler (hyperlink)
Azimuth from sampler to obstacle (degrees)	NA	degrees	measure	5/22/2014	Looking North (hyperlink)
Height from ground to top of obstacle (ft)	NA	ft	measure	5/22/2014	Looking East (hyperlink)
Obstacle height above sample head (ft)	NA	ft	calc	5/22/2014	Looking South (hyperlink)
				5/22/2014	Looking West (hyperlink)
Sample head height (ft)	7.4	ft	measure		Aerial with pin (in) (hyperlink)
Distance to obstruction base (ft) at sample head ht.	NA	ft	measure		Aerial with pin (out) (hyperlink)
Angle (clinometer) sample head to top of obstruction	NA	degrees	measure		
Obstruction ht. above sampler (ft)	NA	ft	calc	(For right-angle Δ only)	calc=(D30)*TAN((D31*PI()/180))
Obstruction ht. above ground (ft)	NA	ft	calc		

On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date
Wesley Boatwright		5/22/2014			
On-Location Scientist: Printed name	Signature	Date	On-Location Scientist: Printed name	Signature	Date

Sampling Location: WSS **Date of Photos: 6/10/2014**

Sampling Location: WSS **Date of Photos: 6/10/2014**