

Underground Derived Waste Storage Plan

Prepared in Response to New Mexico Environment Department
Administrative Order Issued May 12, 2014

1.0 INTRODUCTION

The purpose of this document is to provide the plan required by the New Mexico Environment Department (NMED) Administrative Order (Order) issued on May 12, 2014, to the U.S. Department of Energy (DOE) and Nuclear Waste Partnership LLC (NWP), collectively referred to as the Permittees. The Order, at paragraph 17(b), requires the Permittees to submit an *Underground Derived Waste Storage Plan* (Plan) for the Waste Isolation Pilot Plant (WIPP) underground disposal facility. The Order requires that the Plan 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 Resource Conservation and Recovery Act (RCRA) and Permit requirements will be complied with.”

Any revisions and updates to this Plan will be submitted to the NMED for approval before the changes are implemented pursuant to the Order paragraph 17(c).

2.0 BACKGROUND

At 11:14 P.M. on February 14, 2014, a Continuous Air Monitor (CAM) detected airborne radiation in the WIPP underground facility. When the CAM alarmed, underground ventilation exhaust air automatically shifted to flow through high efficiency particulate air (HEPA) filters to remove radioactive particulates. Since that time underground exhaust air has continued to be routed through HEPA filtration.

The radiological release contaminated portions of the underground facility. The Permittees are currently in the process of determining the extent of such contamination. Because of the contamination, activities in the underground must be carefully planned and performed to assure workers are not exposed to harmful doses of radioactivity. Throughout this Plan there are references to numerous documentation steps associated with this planning such as preparing work packages, classifying radiation areas, and preparing and approving safety basis documents. These are important steps in assuring the required WIPP Hazardous Waste Facility Permit (Permit) activities occur within the boundaries of safe radiological operations.

Since portions of the underground facility have been contaminated, decontamination activities must take place to achieve a safe workplace for employees to enter and perform work activities. Some of the waste that will be generated as a result of these decontamination activities will be managed, stored, and disposed as derived waste. Storage of derived waste in the underground is required to facilitate decontamination of underground equipment and contaminated areas. The Permit authorizes the management, storage, and disposal of derived waste. However, storage of derived waste in the underground prior to its disposal is not specifically addressed in the Permit. This Plan is, therefore, required pursuant to the Order to address storage of derived waste in the underground prior to its disposal.

Every effort will be made to minimize the generation of derived waste pursuant to Permit Attachment D, Section D-4d(6). In order to minimize the amount of derived waste and to facilitate storage prior to disposal, the Permittees may manage some of the waste generated from decontamination activities as low-level waste. Low-level waste will be shipped to an off-site low-level hazardous waste disposal facility. Prior to transferring low-level waste to the surface for shipment offsite, it will be stored in the same areas in the underground as derived waste. This Plan only addresses the management of derived waste in the underground. The waste expected to be generated during recovery operations is described in Permit Attachment D, Section D-4d(6). It is anticipated by the Permittees that derived waste will include contaminated salt, equipment, and personnel protective equipment.

3.0 INFORMATION REQUIRED BY THE ORDER

The following sections describe the Plan required under the Order.

3.1 Paragraph 17, Section (b) i

The Order requires the Permittees to provide a detailed description of the planned derived waste storage areas to be created and/or used in the underground.

3.1.1 Derived Waste Storage Areas

A map delineating the planned derived waste storage areas can be found in Attachment 1, *Derived Waste Storage Areas*. The location descriptions refer to underground access drifts (e.g. S-700 is the underground S-700 drift). The Permittees have identified three areas for storage of derived waste based on the current understanding of the conditions in the underground. These areas may have to be changed as new information becomes available. Changes to locations will be submitted to the NMED for approval and the Plan will be updated.

3.1.1.1 Location 1

Location 1 is outside the regulated Hazardous Waste Management Unit (HWMU) and is located at S-700 between E-140 and E-300. This location was selected based on

access to the north end of E-300 (through vehicle doors) and provides a short travel distance from E-300.

3.1.1.2 Location 2

Location 2 is inside the regulated HWMU in the transition area between Panels 9 and 10 and is located at E-140 between S-2520 and S-2750. This location was selected based on access to the south end of E-300 (through vehicle doors) and provides a short travel distance from E-300.

3.1.1.3 Location 3

Location 3 is inside the regulated HWMU and is located in Panel 7, Room 2. This area was selected based on access in the Panel 7 area, and provides a short travel distance from all areas of the Panel where decontamination activities will be taking place.

3.2 Paragraph 17, Section (b) ii

The Order requires the Permittees to provide 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.

3.2.1 Derived Waste Storage Areas Ventilation

The post-radiological release operation of the WIPP facility incorporates continuous HEPA filtration as the primary method of protecting human health and the environment. Ventilation air passes through and by waste disposal areas and is circulated through filtration units, thus assuring that no air from the disposal area is discharged from the mine unfiltered. The filtration system has been operating since February 14, 2014. This mitigates the public exposure hazards associated with a potential release of radioactive contaminants from waste containers and provides protection to human health and the environment. Note that this ventilation plan only addresses derived waste storage during recovery operations and is not intended to replace the ventilation requirements in the Permit for waste disposal and normal operations.

Air is circulated into the underground repository through three shafts (Air Intake, Waste, and Salt) and exits through a common shaft (Exhaust). The overall ventilation design and operation assures that the air that flows through the waste disposal areas are separated from the air that flows through the mining and experimental area. This is accomplished with an appropriate alignment of underground bulkheads and flow regulators which provide adequate ventilation flows to select work areas (including derived waste storage areas when workers are present) and to direct the air flow to the exhaust shaft. Pressure differentials are maintained between flow paths to ensure that air flow is always from areas of lower to higher contamination potential.

Underground ventilation is established in accordance with the U.S. Department of Labor, Mine Safety and Health Administration (MSHA) requirements to protect underground workers and is related to the type and number of internal combustion

engines being used for work activities and providing breathable air. Sufficient ventilation air is defined by the MSHA regulations (30 CFR 57 Subpart G) promulgated for mines such as the WIPP facility. Because the mine is being ventilated in filtration mode, approximately 60,000 standard cubic feet per minute (scfm) of ventilation air is available to support activities in the underground. A portion of this ventilation is dedicated to Panel 7. Ventilation air passes through and by waste disposal areas, including Panel 7, and is circulated through filtration units, thus assuring that air follows the ventilation pathway and not into other portions of the mine or to the surface unfiltered. The limited amount of ventilation air dictates the types and number of activities that can be performed at any given time in the underground. Until the Permittees install additional filtration devices, the amount of air will remain limited to its current capacity. The volumetric flow rate for ventilation in each storage area will be managed to meet the MSHA requirements. In addition, for compounds not addressed by MSHA, such as volatile organic compounds (VOCs) which are known to be present in the underground, industrial hygiene monitoring will be used to assure the storage areas are safe for workers to enter. Standards established by DOE Order and the American Conference of Governmental Industrial Hygienists (ACGIH) will be enforced to protect workers entering storage areas. Additional ventilation will be diverted to the areas to remove VOCs, if necessary, to allow entry, or workers will be required to wear appropriate personnel protective equipment (PPE). Emissions of VOCs from derived waste containers are expected to be minimal since the containers will be used to hold salt and non-waste debris that have become radiologically contaminated. There has been no indication of VOC chemical contamination associated with the release.

3.3 Paragraph 17, Section (b) iii

The Order requires the Permittees to provide a description of how the requirements found in 40 CFR 264, Subpart I will be met and how the storage areas will meet Permit Part 2, Section 2.3.3., *Treatment, Storage, and Disposal Facility Waste Acceptance Criteria ("TSDF-WAC")*.

3.3.1 40 CFR 264, Subpart I Requirements

Implementation of container management requirements in this Plan for the derived waste storage areas will be controlled by written standard operating procedures (SOPs) and will be conducted by individuals trained in the management of derived waste.

3.3.1.1 Condition of Containers (40 CFR 264.171)

Only containers specified in Permit Part 4, Section 4.3.1, *Acceptable Disposal Containers*, will be used to collect, store, and dispose of derived waste. These containers will include standard 55-gallon drums, 85-gallon drums, 100-gallon drums, Standard Waste Boxes, Standard Large Boxes, and Ten Drum Overpacks (TDOPs). The containers will be standard DOT Type 7A, or equivalent, containers. These waste containers will be new (not previously used) and, therefore, in good condition. Pursuant to Permit Attachment A1-1b(1), one or more filtered vents (as described in Permit Attachment A, Section A1-1d(1)) will be installed on the container to prevent the escape

of any radioactive particulates and to eliminate any pressurization within the container due to gas build-up.

If a derived waste container is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittees will transfer the waste to a container that is in good condition, overpack the container, or repair/patch the container, as described in Permit Attachment A, Section A1-1c(1).

3.3.1.2 Compatibility of Waste with Containers (40 CFR 164.172)

The Permittees will use containers made of or lined with materials which will not react with, and are otherwise compatible with, the derived waste to be stored, so that the ability of the container to contain the waste is not compromised, as required by 20.4.1.500 NMAC (incorporating 40 CFR 264.172).

Items delivered to waste containers will be inspected in accordance with applicable SOPs to ensure the absence of prohibited items. Prohibited items include chemicals that are not compatible with TRU mixed waste, the containers, the salt, or the backfill.

3.3.1.3 Management of Containers (40 CFR 264.173)

The Permittees SOPs will require that derived waste containers be closed during storage, except when it is necessary to add waste to or remove waste from the containers.

Containers may be filled and stored with derived waste in various areas of the underground as decontamination activities progress. Multiple containers may be used simultaneously, as needed, for derived waste. Once a container is filled and sealed, it will be relocated to a derived waste storage area within 72 hours or as otherwise specified in work control documents. Derived waste containers will be properly identified and marked prior to removing them from the location where they are filled.

The Permittees SOPs and training will assure that the Permittees will not open, handle, or store containers in a manner which may rupture the container or cause it to leak, as required by 20.4.1.500 NMAC (incorporating 40 CFR 264.173).

3.3.1.4 Inspection Schedules and Procedures (40 CFR 264.174)

The Permittees will inspect the underground derived waste storage area at least weekly (as access is permitted) to look for leaking containers and for deterioration of containers, as required by 20.4.1.500 NMAC (incorporating 40 CFR 264.174). If derived waste areas are not accessible due to maintenance activities (e.g., HEPA filter replacement) or work conditions (e.g., minimum ventilation is not available), then inspections will be completed once access to the area becomes available. These situations will be noted in the inspection records.

3.3.1.5 Containment Systems (40 CFR 264.175)

Because derived waste will not contain free liquids, there are no liquids resulting from precipitation in the underground, and there is no accumulated liquid in the underground, a containment system is not necessary pursuant with 20.4.1.500 NMAC (incorporating 40 CFR 264.175[c]).

Liquid waste that may be generated as a result of decontamination activities (e.g. brine from collection system boreholes) will be solidified in accordance with SOPs. Liquid within containers will be solidified prior to placement into the derived waste storage areas.

3.3.1.6 Special Requirements for Ignitable, Reactive, and Incompatible Waste (40 CFR 264.176 – 40 CFR 264.177)

No ignitable, reactive and incompatible wastes will be stored in derived waste areas. Items delivered to waste containers will be inspected in accordance with SOPs to ensure the absence of prohibited items including ignitable, corrosive, or reactive waste. Only derived waste or waste compatible with derived waste will be stored in designated derived waste storage areas.

3.3.1.7 Closure (40 CFR 264.178)

Because the WIPP underground repository is a miscellaneous unit, the conditions of 20.4.1.500 NMAC (incorporating 40 CFR 264.178) do not apply to derived waste storage areas. Closure of the derived waste storage areas will be conducted in accordance with the Permittees' Hazardous Waste Facility Permit Closure Plan. Derived waste stored in an area that is not an approved disposal panel will be moved to an approved disposal panel when the storage area is no longer needed.

3.3.2 TSDF-Waste Acceptance Requirements

The derived waste will comply with the TSDF waste acceptance criteria specified in Permit Section 2.3.3.

These requirements are met by controlling materials that will be used during decontamination and clean-up activities. Items delivered to waste containers will be inspected to ensure the absence of prohibited items, and the controls described in Section 3.3.1 above and in this section will be controlled by SOPs. Applicable procedures will be provided to the NMED.

3.4 Paragraph 17, Section (b) iv

The Order requires the Permittees to describe other applicable RCRA and Permit requirements.

3.4.1 Other RCRA and Permit Requirements Applicable to Storage of Derived Waste in the Underground

Because the Permit does not address storage of waste in the underground facility, except as authorized by the RCRA Contingency Plan, no other Permit requirements specifically apply. However, there are other RCRA requirements that apply (e.g., 40 CFR 264.35, Preparedness and Prevention). These other requirements are discussed below.

3.4.1.1 Container Locations (Paragraph 18[d] of the Order)

The location of underground derived waste containers will be reported in the bi-weekly report. Containers will not be stacked any higher than three high in the storage areas. The location of each container and the quantity (volume of waste container) of each hazardous waste will be recorded and maintained in the operating record as required by 20.4.1.500 NMEC incorporating 40 CFR 264.73(b)(2).

3.4.1.2 Minimum Aisle Space (40 CFR 264.35)

The Permittees will maintain a minimum aisle space that will ensure the containers can be inspected in accordance with the container storage requirements in 40 CFR 264 Subpart I. The minimum aisle space will be maintained to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the storage locations in an emergency. The minimum aisle space for derived waste containers is 44 inches.

3.4.1.3 Operating Record (40 CFR 264.73)

The Permittees shall use inspection logbooks and/or forms for the inspection of the underground derived waste containers. Original copies of these completed forms will be kept in the Operating Record in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.73[b][5]).

3.4.1.4 Polychlorinated Biphenyls (U.S. Environmental Protection Agency Region 6 Conditions of Approval, May 21, 2013)

The *Conditions of Approval for the Disposal of PCB/TRU and PCB/TRU Mixed Waste at the WIPP Facility* authorizes the DOE to store PCB/TRU waste in the Parking Area Container Storage Unit and the Waste Handling Building Container Storage Unit. However, there is no indication that waste released in the February 14, 2014 incident was contaminated with polychlorinated biphenyls (PCBs). Therefore, PCB management requirements do not apply to the underground derived waste storage areas. If it is found that the waste is contaminated with PCBs, the Permittees will notify the EPA in writing and wait until the EPA submits a written approval authorizing the new storage area. Moreover, the storage of waste contaminated with PCBs will comply with the additional storage requirements in accordance with the conditions of approval.

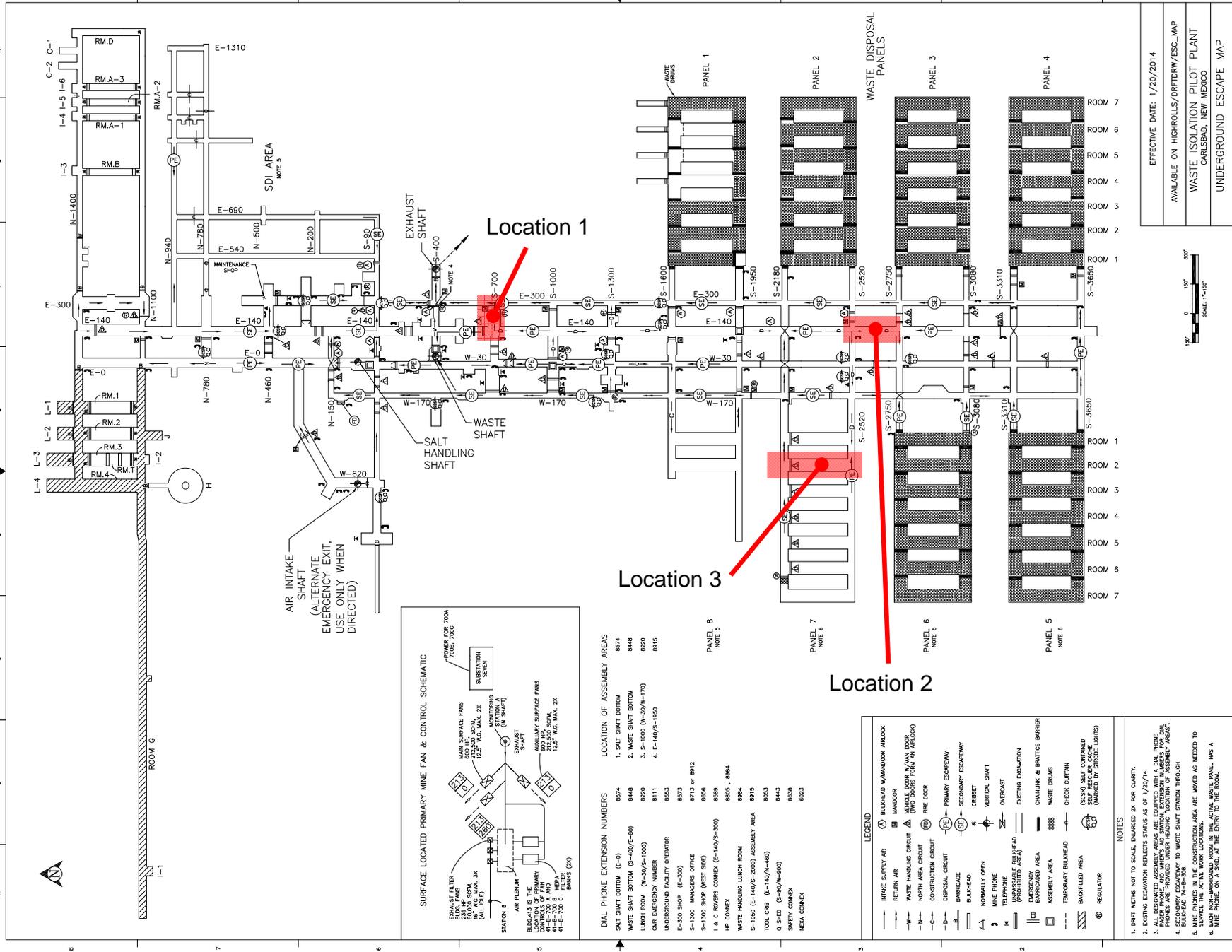
3.4.1.5 Traffic Pattern for Underground Derived Waste (Part 4, Section 4.5.3.1)

The flow of traffic in the underground during recovery will be managed to prevent the spread of radioactive contamination. Traffic routes will be specified in work control documents to achieve this goal. Records of traffic routes will be available at the facility for inspection.

4.0 PARAGRAPH 26

The Order requires the Permittees to post the final report and submissions to NMED related to this Order in the Information Repository within five (5) working days of submission to NMED. The Permittees will create a folder in the information repository specifically for these submissions.

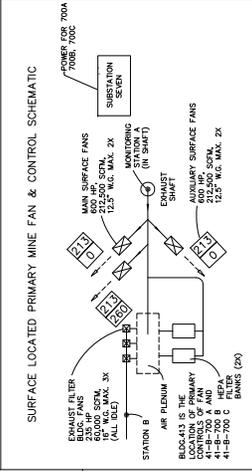
ATTACHMENT 1
DERIVED WASTE STORAGE AREAS



EFFECTIVE DATE: 1/20/2014
 AVAILABLE ON HIGHROLLS/DRFTDRW/ESC_MAP
 WASTE ISOLATION PILOT PLANT
 CARLSBAD, NEW MEXICO
 UNDERGROUND ESCAPE MAP



AIR INTAKE
 SHAFT
 (ALTERNATE
 EMERGENCY EXIT,
 USE ONLY WHEN
 DIRECTED)



LOCATION OF ASSEMBLY AREAS

- 1. SALT SHIFT BOTTOM 8574
- 2. WASTE SHIFT BOTTOM 8448
- 3. S-1000 (N-30/W-170) 8220
- 4. E-140/S-1950 8915

- DIAL PHONE EXTENSION NUMBERS
- SALT SHIFT BOTTOM (E-0) 8574
 - WASTE SHIFT BOTTOM (S-400/E-80) 8448
 - LUNCH ROOM (N-30/S-1000) 8220
 - OUR EMERGENCY NUMBER 8111
 - UNDERGROUND FACILITY OPERATOR 8553
 - E-300 SHOP (E-300) 8573
 - S-1300 MANAGERS OFFICE 8713 or 8012
 - S-1300 SHOP (WEST SIDE) 8656
 - I & C ROVERS CONNEX (E-140/S-300) 8589
 - HP CONNEX 8605, 8684
 - WASTE HANDLING LUNCH ROOM 8684
 - S-1950 (E-140/S-300) ASSEMBLY AREA 8915
 - TOOL CRIB (E-140/N-460) 8653
 - Q SHED (S-80/W-300) 8443
 - SAFETY CONNEX 8638
 - NECA CONNEX 6023

- LEGEND
- INTAKE SUPPLY AIR
 - RETURN AIR
 - WASTE HANDLING CIRCUIT
 - NORTH AREA CIRCUIT
 - DISPOSAL CIRCUIT
 - BARRIER
 - NORMALLY OPEN
 - PHONE
 - TELEPHONE
 - EMERGENCY AREA
 - ASSEMBLY AREA
 - TEMPORARY BARRIER
 - BACKFILLED AREA
 - REGULATOR
 - BLUHEAD W/AND/OR AIRLOCK
 - W/AND/OR
 - VEHICLE DOOR W/MAIN DOOR (TWO DOORS FORM AN AIRLOCK)
 - FIRE DOOR
 - CONSTRUCTION CIRCUIT
 - PRIMARY ESCAPEWAY
 - OVERCAST
 - VERTICAL SHAFT
 - EXISTING ESCAVATION
 - CHALKING & BRITICITE BARRIER
 - WASTE DRUMS
 - CHECK CURTAIN
 - SELF CONTAINED (SCSR) SELF CONTAINED (MARKED BY STORE LIGHTS)

- NOTES
1. SHIRT WITHIN NOT TO SCALE. DIMENSIONED ZX FOR CLARITY.
 2. EXISTING ESCAVATION REFLECTS STATUS AS OF 1/20/14.
 3. ALL DIMENSIONED ASSEMBLY AREAS ARE DIMENSIONED TO THE CENTERLINE OF THE AREA.
 4. DIAL PHONE NUMBERS AND SHIFTS ARE LISTED IN THE 'DIAL PHONE' SECTION OF THIS MAP.
 5. BLUHEAD W/AND/OR AIRLOCK, VEHICLE DOOR W/MAIN DOOR, AND FIRE DOOR ARE DIMENSIONED TO THE CENTERLINE OF THE AREA.
 6. BLUHEAD W/AND/OR AIRLOCK, VEHICLE DOOR W/MAIN DOOR, AND FIRE DOOR ARE DIMENSIONED TO THE CENTERLINE OF THE AREA.
 7. WASTE PHONES IN THE CONSTRUCTION AREA ARE MOVED AS NEEDED TO THE WASTE SHIFT BOTTOM.
 8. WASTE PHONES IN THE CONSTRUCTION AREA ARE MOVED AS NEEDED TO THE WASTE SHIFT BOTTOM.
 9. WASTE PHONES IN THE CONSTRUCTION AREA ARE MOVED AS NEEDED TO THE WASTE SHIFT BOTTOM.