Corrective Action Plan for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada

August 1998

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CORRECTIVE ACTION PLAN
FOR CORRECTIVE ACTION UNIT 424:
AREA 3 LANDFILL COMPLEX
TONOPAH TEST RANGE, NEVADA

Prepared for
U. S. Department of Energy
Nevada Operations Office
Under Contract No. DE-AC08-96NV11718

Prepared by
Bechtel Nevada
Environmental Restoration

August 1998
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CORRECTIVE ACTION PLAN
FOR CORRECTIVE ACTION UNIT 424:
AREA 3 LANDFILL COMPLEX
TONOPAH TEST RANGE, NEVADA

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Industrial Sites Subproject

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Nevada Environmental Restoration Project
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## ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
</tr>
<tr>
<td>CADD</td>
<td>Corrective Action Decision Document</td>
</tr>
<tr>
<td>CAIP</td>
<td>Corrective Action Investigation Plan</td>
</tr>
<tr>
<td>CAP</td>
<td>Corrective Action Plan</td>
</tr>
<tr>
<td>CAS</td>
<td>Corrective Action Site</td>
</tr>
<tr>
<td>CAU</td>
<td>Corrective Action Unit</td>
</tr>
<tr>
<td>COC</td>
<td>Constituent of Concern</td>
</tr>
<tr>
<td>DOE</td>
<td>U.S. Department of Energy</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>ft</td>
<td>feet</td>
</tr>
<tr>
<td>ft²</td>
<td>square feet</td>
</tr>
<tr>
<td>ft³</td>
<td>cubic feet</td>
</tr>
<tr>
<td>in</td>
<td>inches</td>
</tr>
<tr>
<td>km</td>
<td>kilometers</td>
</tr>
<tr>
<td>m</td>
<td>meters</td>
</tr>
<tr>
<td>m²</td>
<td>square meters</td>
</tr>
<tr>
<td>m³</td>
<td>cubic meters</td>
</tr>
<tr>
<td>mg/kg</td>
<td>milligrams per kilogram</td>
</tr>
<tr>
<td>mi</td>
<td>miles</td>
</tr>
<tr>
<td>NDEP</td>
<td>Nevada Division of Environmental Protection</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>TTR</td>
<td>Tonopah Test Range</td>
</tr>
<tr>
<td>TPH</td>
<td>total petroleum hydrocarbons</td>
</tr>
<tr>
<td>yd³</td>
<td>cubic yards</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

This Corrective Action Plan (CAP) provides the closure implementation methods for the Area 3 Landfill Complex, Corrective Action Unit (CAU) 424, located at the Tonopah Test Range (TTR). The Area 3 Landfill Complex CAU consists of eight landfill sites, each designated as a separate Corrective Action Site (CAS).

Results from the site investigation activities completed in 1997 are documented in the Corrective Action Decision Document (DOE, 1998). Results indicate landfill wastes were encountered at seven of the eight CASs. Since no waste was encountered in Landfill A3-7, the site is no longer considered a landfill. The state of Nevada Regulatory Action Level for total petroleum hydrocarbons (TPH) of 100 milligrams per kilogram (mg/kg) was exceeded in soil samples from Landfill A3-1 (200 mg/kg gasoline and 790 mg/kg diesel) and Landfill A3-2 (48,000 mg/kg waste oil in sludge sample).

Closure activities will consist of removal and closure-in-place of petroleum hydrocarbon-impacted wastes, and steps to minimize future exposure and contact with landfill wastes. Landfill A3-1 will be closed-in-place because the soil is impacted to a lesser degree but to greater depths, making removal less critical but more costly. An area in Landfill A3-2 will be cleaned closed by removing all soil impacted above the Regulatory Action Level because of the greater concentrations of petroleum hydrocarbons found at shallower depths. The following table summarizes closure activities planned for each of the eight CAU 424 Landfill sites:

SUMMARY OF PLANNED CLOSURE ACTIVITIES

<table>
<thead>
<tr>
<th>LANDFILL NUMBER</th>
<th>CAS NUMBER</th>
<th>REMOVE TPH WASTE</th>
<th>REPAIR/MAINTAIN COVERS</th>
<th>SITE POSTING¹</th>
<th>ENACT LURs²</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-1</td>
<td>03-08-001-A301</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-2</td>
<td>03-08-002-A302</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-3</td>
<td>03-08-002-A303</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-4</td>
<td>03-08-002-A304</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-5</td>
<td>03-08-002-A305</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-6</td>
<td>03-08-002-A306</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-7</td>
<td>03-08-002-A307</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-8</td>
<td>03-08-002-A308</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Notes: 1 Site posting will include the installation of signs and monuments.
2 Land-Use Restrictions (LURs).
1.0 INTRODUCTION

This Corrective Action Plan (CAP) describes the selected corrective action alternatives and closure implementation methods for the Area 3 Landfill Complex Corrective Action Unit (CAU) No. 424 at the Tonopah Test Range (TTR). The TTR is located approximately 225 kilometers (km) (140 miles [mi]) northwest of Las Vegas, Nevada (Figure 1). The Area 3 Landfill Complex CAU (Figure 2) consists of eight landfill sites, designated as separate Corrective Action Sites (CASs).

In general, each landfill site is comprised of one or more cells which received wastes from daily operations at the Area 3 Compound during different time intervals from before 1963 to approximately 1993. Cell locations and contents were poorly documented due to the unregulated disposal practices commonly associated with early landfill operations. The Corrective Action Investigation Plan (CAIP) (Department of Energy (DOE), 1997) described how potential cell locations were identified from worker interviews, TTR reports, historical aerial photographs, and geophysical surveys. A field investigation was performed in 1997 and described in the CADD. The results are summarized in Table 1.

**TABLE 1 - SUMMARY OF LANDFILL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>LANDFILL</th>
<th>CAS NUMBER</th>
<th>SITE MAP</th>
<th>NO WASTE</th>
<th>LANDFILL DEBRIS</th>
<th>PETROLEUM HYDROCARBON WASTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-1</td>
<td>03-08-001-A301</td>
<td>Figure 3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>A3-2</td>
<td>03-08-002-A302</td>
<td>Figure 3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>A3-3</td>
<td>03-08-002-A303</td>
<td>Figure 4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-4</td>
<td>03-08-002-A304</td>
<td>Figure 5</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-5</td>
<td>03-08-002-A305</td>
<td>Figure 6</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-6</td>
<td>03-08-002-A306</td>
<td>Figure 7</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-7</td>
<td>03-08-002-A307</td>
<td>Not shown</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-8</td>
<td>03-08-002-A308</td>
<td>Figure 8</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 1, no landfill waste was found in one landfill site (A3-7). Landfill debris was found at all the other landfill sites including the two where total petroleum hydrocarbons (TPHs) were found in excess of the Regulatory Action Level (A3-1 and A3-2). TPH was the only constituent of concern (COC) reported for the Area 3 Landfill Complex in the CADD (1998). The results summarized above in Table 1 are described in more detail below.

- Landfill A3-1 (including cell A3-1a) consists of six cells (Figure 3). These consist of four buried, one open, and one partially buried cells. Landfill debris was found in eleven of fifteen soil borings. Petroleum hydrocarbons were found in four soil samples from one boring (BH1-13) between the depths of 2.1 and 10.4 meters (m) (7 and 34 feet [ft]) and
FIGURE 1
LOCATION OF THE AREA 3 LANDFILL COMPLEX AT THE TONOPAH TEST RANGE
FIGURE 2
LOCATION OF EIGHT AREA 3 LANDFILL SITES
SAFETY TAPE OR ROPE STRETCHED BETWEEN T-POSTS WITH WARNING SIGNS. EXCLUSION ZONE WILL INCLUDE WASTE STORAGE AND DECONTAMINATION AREAS, AND AN ENTRANCE TO CONTROL ENTRY, WITH FINAL LOCATIONS TO BE DETERMINED BY BN SITE SUPERVISOR.

EXCLUSION ZONE WILL BE DELINEATED WITH SAFETY TAPE OR ROPE STRETCHED BETWEEN T-POSTS WITH WARNING SIGNS. EXCLUSION ZONE WILL INCLUDE WASTE STORAGE AND DECONTAMINATION AREAS, AND AN ENTRANCE TO CONTROL ENTRY, WITH FINAL LOCATIONS TO BE DETERMINED BY BN SITE SUPERVISOR.

SLIGHT DEPRESSION IS APPROXIMATE AREA TO BE EXCAVATED AND BACKFILLED

CLOSED GRAVEL ROAD WILL BE USED FOR PARKING AND MEETING AREA

FIGURE 3
SITE PLAN FOR LANDFILLS A3-1 AND A3-2
FIGURE 4
SITE PLAN FOR LANDFILL A3-3
FIGURE 5
SITE PLAN FOR LANDFILL A3-4
FIGURE 6
SITE PLAN FOR LANDFILL A3-5
FIGURE 7
SITE PLAN FOR LANDFILL A3-6
FIGURE 8
SITE PLAN FOR LANDFILL A3-8
were identified as gasoline (in concentrations up to 200 milligrams per kilogram [mg/kg]) and as diesel (in concentrations up to 790 mg/kg). The Regulatory Action Level for TPH is 100 mg/kg. The open cell is partially filled with asphalt, concrete, and other construction debris. Landfill wastes were not found in cell A3-1a but they were included in the CADD (DOE, 1998). It is a broad surface depression that should be backfilled.

- Landfill A3-2 (Figure 3) consists of one buried cell. Landfill debris was found in four of the six borings. Sludge was found in Boring BH2-3 at a depth of 3 m (10 ft) and contained 48,000 mg/kg of TPH as waste oil. After the field investigation was completed, a sinkhole appeared and revealed the presence of debris including a diesel storage tank. The sinkhole was backfilled and the tank was buried without documenting the location of the tank or investigating its condition and contents.

- Landfill A3-3 (Figure 4) consists of three buried cells. Landfill debris was found in six of the nine borings. No COCs were found.

- Landfill A3-4 (Figure 5) consists of two buried cells. Landfill debris was found in seven of the eight borings. No COCs were found. Surface depressions and fissures were noted.

- Landfill A3-5 (Figure 6) consists of one buried cell. Landfill debris was found in two of the three borings. No COCs were found.

- Landfill A3-6 (Figure 7) consists of two buried cells. Landfill debris was found in all five borings. No COCs were found.

- Landfill A3-7 was no longer considered a landfill after no landfill debris or COCs were found in the one soil boring; therefore, a site plan is not provided.

- Landfill A3-8 (Figure 8) consists of two buried cells. Landfill debris was found in four of eight soil borings. No COCs were found. The western cell is partially overlain by two railroad boxcars used for storage. The boxcars were set in shallow excavations in order to lower their floors to near ground level. The CADD (DOE, 1998) reported that the excavations intersected the western cell and exposed landfill wastes. A site inspection by Bechtel Nevada on May 12, 1998, could not confirm (or deny) that the landfill cover was breached, but the trenches were observed to be approximately three feet deep and could collect surface debris and run-off.
1.1 PURPOSE

The purpose of this CAP is to provide the methods for implementing the corrective action alternatives proposed in the CADD (DOE, 1998).

1.2 SCOPE

The scope of this plan is to provide the methods for implementation of the closure of CAU 424. Corrective action alternatives were selected in the CADD (DOE, 1998) and include a number of steps to prevent contact and spread of landfill wastes. The corrective action alternatives consist of the following closure activities:

- Corrective Action Alternative 1 was selected for Landfill A3-7 and cell A3-1a and consists of no action, because landfill wastes were not found. Therefore, A3-7 and A3-1a are no longer considered landfills.

- Corrective Action Alternative 2 was selected for all the landfills except A3-7 and A3-2. This alternative consists of repair and maintenance of the soil cover (backfill, compaction, and re-contouring of surface depressions and subsidence fissures, where needed), posting of warning signs and monuments, and implementation of administrative controls to restrict land use. Alternative 2 will be used to administratively close-in-place Landfill A3-1 where soil samples exceeded Regulatory Action Levels for TPH.

- Corrective Action Alternative 3 was selected for Landfill A3-2, and consists of removal and disposal of petroleum hydrocarbon liquids, sludge, impacted soil (at concentrations above 100mg/kg), and possible discarded storage tanks and drums. Alternative 3 also includes all the activities described previously in Alternative 2, including backfilling the excavation. Clean closure is expected. However, if impacted soil is found to extend to depths or areas greater than predicted in the CADD (DOE, 1998), this corrective action will be re-evaluated and further characterization or closure-in-place may be considered.

1.3 CORRECTIVE ACTION PLAN CONTENTS

This CAP is divided into the following sections:

- Section 1.0 - Introduction
- Section 2.0 - Detailed Statement of Work
- Section 3.0 - Schedule
- Section 4.0 - Post-Closure Monitoring Plan
Section 5.0 - References

Appendix A - Engineering Drawings

Appendix B - Waste Management Plan

Appendix C - Document Review Sheet

This plan was developed using information and guidance from the following documents:


- **Corrective Action Investigation Plan For The Area 3 Landfill Complex**, Rev. 0, DOE/NV--476, DOE, 1997.


2.0 DETAILED STATEMENT OF WORK

2.1 ALTERNATIVE IMPLEMENTATION

The objectives of the corrective action alternatives selected in the CADD (DOE, 1998) are to prevent or mitigate human exposure to subsurface soils containing waste, remediate the site according to applicable state and federal regulations, and prevent adverse impacts to groundwater. The selected alternatives consist of the following closure activities:

TABLE 2 - SUMMARY OF CLOSURE ACTIVITIES

<table>
<thead>
<tr>
<th>LANDFILL</th>
<th>NO ACTION</th>
<th>REMOVE TPH WASTE</th>
<th>REPAIR/MAINTAIN SOIL COVERS</th>
<th>POST SIGNS AND MONUMENTS</th>
<th>ENACT LAND-USERESTRICTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-1</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-2</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-3</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-4</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-5</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-6</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-7</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-8</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Coordination of the closure will include the U.S. Air Force because of the location of the site and land-use status. The future use of any land related to this CAU will be restricted from any activity that may alter or modify the containment control as identified in the Closure Report unless appropriate concurrence is obtained in advance.

2.1.1 Removal of Petroleum-Hydrocarbon Wastes and Impacted Soils

Landfill A3-2 will be partially excavated to remove potential free liquids (including water), sludge, and impacted soils containing 100 mg/kg or more of TPH. The volume of soil to be excavated was estimated in the CADD (DOE, 1998) to be approximately 24 cubic meters (m³), or 31 cubic yards (yd³). Assuming a bulking factor of 30 percent, approximately 31 m³ (41 yd³) of soil may be impacted and require off-site disposal. A similar volume of backfill will be needed (discussed in Section 2.1.2). If possible, clean soil removed from the excavation will be segregated and re-used as backfill. Inert debris will be left in place. This excavation and removal plan will be re-evaluated if impacted soil extends to significantly greater areas or depths than anticipated, or if unexpected hazardous wastes are found. For example, administrative closure-in-place or more extensive characterization may be appropriate. Standard construction equipment will be used and may consist of, but will not be limited to, hoses, pumps, bailer, drums, vacuum truck, backhoe, and dump trucks.
Samples of impacted soil will be collected and analyzed with field test kits and instrumentation during excavation activities in order to determine when all soil exceeding the cleanup criteria has been removed. At least three final confirmation samples will be collected from the excavation walls and floor and sent to a laboratory for TPH analysis using Environmental Protection Agency (EPA) Method 8015, Modified. If unusual or unidentified waste is encountered, it will be sampled and analyzed prior to, or during, clean-up activities in order to determine waste handling and disposal procedures. Depending on field observations, a full suite of hazardous waste analyses may be performed on these unknown samples.

If containers such as drums or tanks are discovered, their condition and contents will be investigated. If drums or smaller containers are found intact and containing liquids or sludges, those containers will be removed, sampled if necessary, and placed in overpacks. Otherwise, liquids and sludges will be transferred into new drums or tanks. Containers found to be empty and crushed, or filled with inert material such as soil or cement, pose little hazard to ground subsidence and will not be removed from the landfill. Uncrushed empty containers, however, will eventually collapse, causing subsidence of the soil cover. If they can be backfilled properly, empty containers will be left in place. Any work involving excavating, segmenting, and disposal of storage tanks will follow current Bechtel Nevada Environmental Restoration procedures. All wastes removed from waste cells will be properly disposed off-site and not returned to any Area 3 Landfill.

2.1.2 Repair and Maintenance of Soil Covers

Soil covers for all landfills except A3-7 and cell A3-1a will be inspected, repaired, and maintained as needed. Portions of the landfills, which were excavated or have depressions or fissures, will be backfilled and compacted to grade. Construction debris in the open cell of Landfill A3-1 will be re-distributed more evenly along the bottom of the cell before backfilling. Roughly 1000 m³ (1300 yd³) of backfill is estimated to be needed to fill the large open cell of Landfill A3-1 and the smaller A3-1a surface depression. Berms will be constructed adjacent to and below the railroad cars which were installed over Landfill A3-8 (Figure 8) to inhibit precipitation run-on and infiltration into the landfill below the railroad cars.

Standard construction equipment will be used for transporting backfill soil to the sites and compaction activities. Equipment may consist of, but will not be limited to a front-end loader, dump trucks, bulldozer, sheeps-foot compactor, vibratory roller, and water truck. Soil for backfill and re-contouring activities will be obtained from the Sandia Borrow Pit located less than 1.6 km (1 mi) east of Area 3. Water for backfill conditioning, dust suppression, and other construction activities will be obtained from the Roller Coaster Well located approximately 7.2 km (4.5 mi) south of Area 3 (Figure 1).
2.1.3 Posting of Warning Signs and/or Monuments

Permanent signs, and/or monuments warning of buried wastes will be posted at boundary corners of all landfills except A3-7 and cell A3-1a. The signs will be attached to the posts or monuments with the following information:

- Landfill identification (for example, “CAU 424, boundary of Landfill A3-1”).
- Warning (for example, “Warning, Buried Landfill Wastes”).
- Instructions (for example, “Contact [office] at [phone no.] before digging, trenching, or removing this sign”).

Important locations such as cell corners and boreholes from previous investigations will be staked and surveyed for as-built documentation and land-use restrictions. Survey markers will be installed at grade where posts or monuments are not practical due to existing land-use.

2.1.4 Implementation of Administrative Controls to Restrict Land Use

Administrative controls will be implemented to restrict land-use at all landfills except A3-7 and cell A3-1a. This will be done through coordination with TTR administrative, maintenance, and operational organizations. These administrative controls should be effective because the TTR is a restricted access facility.
2.2 CONSTRUCTION QUALITY ASSURANCE / QUALITY CONTROL

Native, undisturbed soil densities are estimated to be between 60 and 80 percent of the maximum density. In order to minimize ponding, infiltration, and subsidence, backfill will be placed and compacted in all depressions 0.15 m (6 inches [in]) or greater in depth below grade and will be compacted to a minimum of 80 percent of maximum density. At least one Proctor Density Test (American Society for Testing and Materials [ASTM], 1995a) will be done on the backfill material. A minimum of four field nuclear-density tests (ASTM, 1995b) will then be done at the beginning of compaction activities on lifts of 0.2 m (8 in). The number of compaction equipment passes, which are needed to compact the lift to at least 80 percent of maximum density, will be designated as the field performance specification. Additional field tests will be done periodically during compaction activities to confirm or modify the field performance specification and to ensure that at least an 80 percent maximum density is achieved. A minimum of one field test will be done in any area backfilled requiring at least one full lift over an area of at least 1 square meter (m²) (10 square feet [ft²]). Additional tests will be done where backfill volumes exceed 1 m³ (35 cubic feet [ft³]) with at least one test in the final top lift. Additional density testing may be done if changes occur in the backfill material (such as significant visual change in the grain size distribution).

2.3 WASTE MANAGEMENT

Wastes containing petroleum hydrocarbons will be generated at Landfill A3-2. Temporary on-site storage will consist of drums and/or overpacks for liquid and sludge wastes. Impacted soil will be stockpiled on, and covered by, plastic sheets. Only hydrocarbon and nonhazardous wastes are expected. If hazardous waste is generated, the waste will be managed and disposed in accordance with U.S. DOE Orders, U.S. Department of Transportation requirements, state and federal regulations, and agreements and permits between DOE/Nevada Operations Office and the NDEP. A Waste Management Plan (Appendix B) has been prepared to address the management of hazardous waste if found during site activities. Stockpiled petroleum hydrocarbon wastes will be transported for disposal to the Area 6 Hydrocarbon Landfill at the Nevada Test Site or other approved disposal facility.
3.0 SCHEDULE

The following schedule is planned for TTR Area 3 Landfill Complex CAU 424 closure activities:

- Begin TTR Area 3 Landfill Complex field closure activities within 60 days from the date that NDEP grants approval of the CAP.

- Complete field closure activities for TTR Area 3 Landfill Complex within 60 days after beginning field closure activities.

- Prepare the Closure Report for submittal to NDEP within approximately 120 days after completion of field closure activities.

Flexibility has been placed in the project schedule to account for minor difficulties (weather, equipment breakdowns, etc.). The DOE will keep the NDEP apprised of any condition that may impact the project schedule.
4.0 POST-CLOSURE MONITORING PLAN

A Post-Closure Monitoring Plan for the Area 3 Landfill Complex is proposed and consists of biannual (twice per year) visual inspections to verify that the soil covers remain intact and free of surface depressions, warning signs and monuments are in place and readable, and land-use restrictions are maintained. Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Identified maintenance and repair requirements will be remedied within 90 days of discovery and documented in writing at the time of repair. The proposed biannual inspections will be performed for approximately five years after site closure, and will be documented on inspection forms.

The proposed monitoring plan will include an annual report which will describe observations, modifications, and/or repairs made to the cover and cover area. The annual report will be prepared following the second inspection of each year that post-closure monitoring is conducted. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

A copy of each annual report will be submitted to the NDEP.
5.0 REFERENCES


DOE, 1996b, Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site.

DOE, 1997, Corrective Action Investigation Plan for the Area 3 Landfill Complex, Tonopah Test Range, Nevada (Corrective Action Unit 424), DOE/NV-476 UC-700.


EPA, 1996, Region IX Preliminary Remediation Goals (PRGs), San Francisco, CA.

APPENDIX A

ENGINEERING DRAWINGS
**SCOPE OF WORK**

This project includes the restoration of 8 existing landfill locations. Work will primarily involve filling of local surface depressions with native soils.

Area evaluation for residual soil contamination shall be performed by the contractor in accordance with DOE/NV 5460.11 and the contractor’s standard operating procedures prior to commencing construction activities.

**PROJECT NOTES**

All construction features, materials, tests and details shall conform to "DOE/NV STANDARD SPECIFICATIONS, DATED DECEMBER 1994," for standards referenced on this project. See the NTS OVERHEAD POWER LINE STANDARDS and the RHR DESIGN DRAWING STANDARDS.
PROJECT LOCATION
AREA 3 LANDFILL
COMPLEX
KEY NOTE

(1) ALL WORK POINT COORDINATE VALUES SHOWN ARE ASSUMED. ACTUAL MAP AS METRIC COORDINATES AND ELEVATIONS SHALL BE ESTABLISHED DURING TITLE III "AS-BUILT" EFFORT. DRAWINGS SHALL BE REVISED AS REQUIRED.
KEY NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BORROW SOURCE SHOWN ON DRAWING.

NOTES

1. ALL FILL SHALL BE COMPACTED TO 10% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
2. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX. TTR.
NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.

2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON Dwg C2.

3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.

4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX TTR.
KEY NOTE

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARRAGE SOURCE SHOWN ON DGC CO.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D5557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX. TTR.
A3-4 SITE PLAN
SCALE 1:400
KEY NOTES

1. USE EXISTING MOUND IF SUITABLE FOR BACKFILL.
2. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY RN FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. ALL FILL SHALL BE COMPACTED TO 83% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D698.
3. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.
NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARRIER SOURCE SHOWN ON SWG 42.
3. ALL FILL SHALL BE COMPACTED TO 80% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.
KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DRC CS.
3. ALL FILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D5551.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.
A3-8 SITE PLAN
SCALE 1:200
NOTES
1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE SURROUNDED BY EARTHEN BERRMS OR FILLED.
2. OBTAIN BACKFILL MATERIAL FROM BALLENG SOURCES SHOWN ON DWG C-2.
3. ALL FILL SHALL BE COMPACTED TO 96% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D5557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TRR.

GRAPHIC SCALE

SCALE 1:1000
(MONTOIR INTERVAL = 0.25M)
APPENDIX B

WASTE MANAGEMENT PLAN
WASTE MANAGEMENT PLAN
FOR CORRECTIVE ACTION ACTIVITIES
AREA 3 LANDFILL COMPLEX (CAU 424)
TONOPAH TEST RANGE, NEVADA

Prepared for
U. S. Department of Energy
Nevada Operations Office
Under Contract No. DE-AC08-96NV11718

Revision: 0

Prepared by:
Bechtel Nevada
Environmental Restoration

June 1998
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BN</td>
<td>Bechtel Nevada</td>
</tr>
<tr>
<td>CADD</td>
<td>Corrective Action Decision Document</td>
</tr>
<tr>
<td>CAS</td>
<td>Corrective Action Site</td>
</tr>
<tr>
<td>CAU</td>
<td>Corrective Action Unit</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>COCs</td>
<td>Contaminants of Concern</td>
</tr>
<tr>
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</tr>
<tr>
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<td>Environmental Restoration Division</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
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<tr>
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</tr>
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</tr>
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</tr>
<tr>
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<td>milliliter</td>
</tr>
<tr>
<td>NAC</td>
<td>Nevada Administrative Code</td>
</tr>
<tr>
<td>NDEP</td>
<td>Nevada Division of Environmental Protection</td>
</tr>
<tr>
<td>NTS</td>
<td>Nevada Test Site</td>
</tr>
<tr>
<td>acronym</td>
<td>definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>PPE</td>
<td>Personnel Protective Equipment</td>
</tr>
<tr>
<td>PRG</td>
<td>Preliminary Remediation Goal</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>RP</td>
<td>Remediation Projects</td>
</tr>
<tr>
<td>SVOCs</td>
<td>Semi-Volatile Organic Compounds</td>
</tr>
<tr>
<td>TCLP</td>
<td>Toxicity Characteristic Leaching Procedure</td>
</tr>
<tr>
<td>TPH</td>
<td>Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>TTR</td>
<td>Tonopah Test Range</td>
</tr>
<tr>
<td>VOCs</td>
<td>Volatile Organic Compounds</td>
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<tr>
<td>WMP</td>
<td>Waste Management Project</td>
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<tr>
<td>USAF</td>
<td>United States Air Force</td>
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</table>
1.0 INTRODUCTION

1.1 BACKGROUND

Corrective Action Unit (CAU) 424 is located on the Tonopah Test Range (TTR), approximately 225 kilometers (140 miles) northwest of Las Vegas, Nevada (Figure 1). CAU 424 consists of eight Corrective Action Sites (CAS):

- Landfill A3-1 is CAS No. 03-08-001-A301.
- Landfill A3-2 is CAS No. 03-08-002-A302.
- Landfill A3-3 is CAS No. 03-08-002-A303.
- Landfill A3-4 is CAS No. 03-08-002-A304.
- Landfill A3-5 is CAS No. 03-08-002-A305.
- Landfill A3-6 is CAS No. 03-08-002-A306.
- Landfill A3-7 is CAS No. 03-08-002-A307.
- Landfill A3-8 is CAS No. 03-08-002-A308.

The landfill sites are comprised of one or more cells which received wastes from daily operations at the Area 3 Compound during different time intervals from before 1963 to approximately 1993. Cell locations and contents were poorly documented due to the unregulated disposal practices commonly associated with early landfill operations. A site map is provided in Figure 2.

The results of the 1997 corrective action investigation of the locations and contents of landfill cells were reported in the Corrective Action Decision Document (CADD) (DOE, 1998) and are summarized below:

- Landfill A3-1 (including A3-1a) consists of six cells (four buried, one partially buried, and one open). Debris and/or contaminants of concern (COCs) were encountered in all four buried cells and in the partially buried cell. The COCs were total petroleum hydrocarbons (TPH) as gas and diesel. No debris or COCs were reported in the open cell (A3-1a) but it will be included in corrective action activities because it needs to be backfilled.
FIGURE 1
LOCATION OF THE AREA 3 LANDFILL COMPLEX
AT THE TONOPAH TEST RANGE
FIGURE 2
LOCATION OF EIGHT AREA 3 LANDFILL SITES
Landfill A3-2 consists of one buried cell. Debris and/or COCs were reported in the cell including petroleum-hydrocarbon sludge in one boring. In addition a sinkhole appeared in the eastern cell after the field investigation had completed and revealed the presence of debris including a diesel storage tank (DOE, 1998). The sinkhole and tank were re-buried without investigating the tank or its contents.

Results from the other landfill cells indicated COC's were below action levels.

1.2 SCOPE

The Corrective Action Plan for CAU 424 has been developed based upon the following alternatives that will be implemented:

- **Corrective Action Alternative 1:** no action for Landfill A3-7, which is no longer considered to be a landfill.

- **Corrective Action Alternative 2:** repair and maintenance of soil cover (including backfill, compaction, and re-contouring of surface depressions and subsidence fissures, where needed), posting of warning placards, and implementation of administrative controls to restrict land use for all the landfills except A3-7 and A3-2.

- **Corrective Action Alternative 3:** removal and disposal of petroleum-hydrocarbon liquids, sludge, impacted soil, and possible discarded storage tanks, as well as all the activities described previously in Alternative 2, for Landfill A3-2.

Nonhazardous solid waste is anticipated to be generated during closure activities. The nonhazardous solid waste will consist of personnel protective equipment (PPE), paper, plastic sheeting, wood, cement/concrete, metal, and other miscellaneous material. Petroleum hydrocarbon impacted soils above the 100 mg/kg TPH Action Level (from Landfill A3-2) will be excavated and disposed of in the Area 6 Hydrocarbon Landfill located at the Nevada Test Site (NTS) or another approved disposal facility. Even though hazardous wastes are not anticipated to be generated, the following sections of this plan have been developed as a contingency to address potential hazardous wastes as well as the nonhazardous hydrocarbon and solid waste.

1.3 PURPOSE

The purpose of the Waste Management Plan is to identify all types of waste that could be generated during the closure process, describe proper sampling and management techniques for each waste stream, and provide recommendations for disposal. The following items are discussed in this plan:
• Segregating, containerizing, and labeling all waste types.
• Sampling the waste streams for disposal purposes.
• Tracking, controlling, and managing waste.
• Compiling analytical data.
• Coordinating disposal with the Bechtel Nevada (BN) Waste Management Project (WMP).
• Conducting inspections and maintaining storage areas until disposal is complete.
• Providing documentation for all disposal activities.

This plan was developed using information and guidance from the following documents:

• Corrective Action Investigation Plan for the Area 3 Landfill Complex, DOE, 1997.
• Corrective Action Decision Document for the Area 3 Landfill Complex, DOE, 1998.
• Nevada Environmental Restoration Project, Health and Safety Plan, DOE, 1996.
• Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, DOE, 1996.
2.0 WASTE STREAM DESCRIPTIONS

2.1 NONHAZARDOUS SOLID WASTE

Solid waste will consist predominantly of compactable trash associated with the posting of signs and monuments. The compactable trash is anticipated to be primarily PPE, paper and plastic sheeting, and miscellaneous rags. Noncompactable waste is anticipated to consist of miscellaneous wood, concrete, and metal.

2.2 DECONTAMINATION WATER

Decontamination water will be generated from construction and sampling equipment cleaning activities. Parts of the equipment that contact the impacted materials will be cleaned by pressure washing or hand-sprayers and scrubbing. Cleaning activities will be conducted over a container or temporary decontamination pad will be constructed and lined with plastic sheeting that will catch the decontamination water. The container or pad should be large enough to clean the largest piece of heavy equipment and contain any over spray. Liquid that collects in the pad sump will be transferred into 208 liter (L) (55 gallon [gal]) drums.

2.3 PETROLEUM HYDROCARBON WASTE

Petroleum hydrocarbon impacted waste is anticipated to consist of soil, wood, paper, plastic, and metal from the excavation activities in Landfill A3-2.

2.4 POTENTIAL RESOURCE CONSERVATION AND RECOVERY ACT WASTE

Potential Resource Conservation and Recovery Act (RCRA) waste may be generated during the closure activities. If suspect material (containers with liquids or other non-inert material) is encountered during the excavation activities in Landfill A3-2, this material will be handled in a manner appropriate for a hazardous waste as described in Section 3.0, "Investigation Derived Waste (IDW) Management."
3.0 INVESTIGATION DERIVED WASTE MANAGEMENT

All waste types that are generated will be managed and disposed of in accordance with all state and federal regulations, DOE orders, and BN procedures. Where additional information is required for waste characterization, samples will be collected and submitted for analysis to determine the concentrations of contaminants of concerns (COCs). Analytical results will be validated and submitted to the BN WMP for disposal recommendations and implementation.

Nonhazardous waste will be handled in accordance with DOE Environmental Restoration Division (ERD) Standard Operating Procedure ERD-05-210 (DOE, 1994). If the waste is determined to be hazardous based on analytical results, it will be handled in accordance with Standard Operating Procedure ERD-05-211 (DOE, 1994a). It is anticipated that no radiologically impacted material will be encountered. All waste will be handled in a manner that complies with the Nevada Test Site Performance Objective for Certification of Nonradioactive Hazardous Waste (REECo, 1995).

3.1 CONTAINER MANAGEMENT

All containers will be handled in accordance with Subpart I of 40 Code of Federal Regulations (CFR), Part 265 which deals with the use and management of containers. Additional requirements for storage of hazardous waste are described in Section 4.0, "Hazardous Waste Management Requirements." All containers must be in good condition (no rust or dents). If the container begins to leak, the contents must be transferred to a container that is in good condition. The containers must be lined or made of a material that will not react with the waste. The containers must always be closed while stored unless waste is added or removed. They must also be handled in such a manner that will not jeopardize the integrity of the container.

Rinsate and compactable solid waste will be stored in 208 L (55 gal) drums on pallets and handled as nonhazardous waste. An accumulation area will be set aside for the storage of the drums. This staging area will be located out of the way of heavy equipment traffic. The drum staging area will be fenced using orange safety fencing.

Waste drums will be new with no rust or dents and meet U.S. Department of Transportation requirements. The drums must have a metal ring securing the drum top to the drum. The ring will be secured with a drum lock. BN policy does not allow for a 208 L (55 gal) drum to be filled beyond a capacity of 7/8.

Appropriate labels and relevant information must be marked on each container or drum with an indelible marker and must be legible and clearly visible for inspection. Pertinent data may be written on duct tape or a blank adhesive label that is applied to the side of the container. The following information will be included:
• Waste-Tracking Label.
• Type of waste in container.
• Location waste was derived from.
• Date range that accumulation takes place.
• "Awaiting Analysis" sticker after sampling has been completed (if required).

BN Construction and/or WMP personnel are not permitted to remove drums from the site or have the contents of the drums disposed without written approval from BN Remediation Projects (RP) personnel. RP staff will make arrangements for the disposition of the waste with WMP staff.

3.2 SITE CONTROL

To prevent wild horses and unauthorized persons from entering the excavation area at Landfill A3-2, a rope fence or equal will be erected encompassing the excavation area and waste stockpiling area. "Keep Out" or similar warning signs will be posted on all sides of the fence. Since the waste stockpiling area will be placed in an area that is out of the construction traffic, the site location will be determined during the mobilization/site set-up.

3.3 IDW MANAGEMENT TECHNIQUES

Nonhazardous and petroleum hydrocarbon solid waste is anticipated to be generated during closure activities. The nonhazardous solid waste will most likely consist of PPE, paper, plastic sheeting, wood, cement/concrete, metal, and other miscellaneous material. The petroleum hydrocarbon impacted waste is anticipated to consist of soil, wood, paper, plastic, and metal.

Although hazardous wastes are not anticipated to be generated, this waste type is addressed because there is a potential of generation. Details for the management of IDW are provided in Table B-1.
### TABLE B-1 -- MANAGEMENT OF INVESTIGATION DERIVED WASTE

<table>
<thead>
<tr>
<th>WASTE TYPE</th>
<th>DECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOIL/SOLDS</strong></td>
<td></td>
</tr>
<tr>
<td>Impacted soil or other material with less than 100 mg/kg TPH, nonhazardous</td>
<td>This waste type is anticipated. If any excavated soil below 50 mg/kg TPH is encountered, it can be used as excavation backfill. If excavated soil is above 50 mg/kg TPH from a site exceeding the NDEP 100 mg/kg TPH Action Level, dispose of soil in Area 6 Hydrocarbon Landfill or another approved landfill (with WMP approval). Appropriate transfer documentation for disposal (letter recommending disposal, laboratory analytical results, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) is required to be placed into the task file. Documentation of decisions, correspondence, and site activities is required.</td>
</tr>
<tr>
<td>Impacted soil or other material with greater than 100 mg/kg TPH, nonhazardous</td>
<td>This waste type is anticipated. If any TPH wast exceeding 100 mg/kg, solidification will be completed, if required, prior to transfer to the Area 6 Hydrocarbon Landfill at the Nevada Test Site (NTS) for disposal with WMP approval. Appropriate documentation for disposal (letter from RP recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
<tr>
<td>RCRA-regulated hazardous waste</td>
<td>This waste type is anticipated. If anything TPH wastes exceed 100 mg/kg, solidification will be completed, if required, prior to transfer to the Area 6 Hydrocarbon Landfill at the Nevada Test Site (NTS) for disposal with WMP approval. Appropriate documentation for disposal (letter recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
<tr>
<td>Nonhazardous (PPE, plastic, paper, wood, etc.)</td>
<td>This waste type is anticipated based upon the proposed closure methodology (Section 2.1.1 in the CAP). Disposal in the TTR landfill is preferred if approved by the U.S. Air Force (USAF); otherwise, the materials will be transported to the NTS for disposal in the Area 9 (U10c) or Area 23 Sanitary Landfill. Appropriate documentation for disposal (letter recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
<tr>
<td><strong>RINSATE</strong></td>
<td></td>
</tr>
<tr>
<td>TPH is less than 1 mg/L, nonhazardous</td>
<td>This waste type is anticipated. The rinsate can be discharged into the NTS and possibly TTR (requires USAF approval) sanitary sewage lagoon, if the liquid has no hydrocarbon sheen. If the sheen can not be removed from the water through absorbent materials, then the liquid must be solidified and disposed of within the Area 6 Hydrocarbon Landfill. Appropriate documentation for disposal (letter recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
<tr>
<td>TPH is greater than 1 mg/L, nonhazardous</td>
<td>This waste type is anticipated. The rinsate will be solidified using soil or bentonite and disposed of within the Area 6 Hydrocarbon Landfill at the NTS. Appropriate documentation for disposal (letter recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
<tr>
<td>Hazardous waste</td>
<td>This waste type is not anticipated. However, if generated, drums containing rinse water will be placed into the drum storage area. Samples will be collected for waste characterization pending analysis. If rinse is identified as a hazardous waste, follow the 3-day Satellite Accumulation storage rule and the 12-month storage limit for the Area 6 Hazardous Waste Storage Pad. Appropriate documentation for transfer/disposal (letter recommending disposal, laboratory analytical results/process knowledge, radiological &quot;green tag&quot;, weight ticket, and/or bill of lading) are to be placed in the task file.</td>
</tr>
</tbody>
</table>
3.3.1 Solid Waste

Solid waste generated during the closure activities will be segregated from the waste generated from the excavated materials from Landfill A3-2. All solid waste from the posting of signs and monuments is considered nonhazardous waste and will be stored in drums or stockpiled until disposal is coordinated. All nonhazardous solid waste will be disposed of at a local landfill (TTR or Nye County) or a landfill at the NTS.

Solid waste will be segregated from liquid waste and stored in closed drums. Solid wastes must not contain any free liquids. If free liquids are noted, pads should be used to absorb the liquid or an absorbent-type material, such as bentonite, should be added to solidify the mixture.

3.3.2 Decontamination Water

Sampling and construction equipment decontamination water will be stored in 208 liter (L) (55 gallon [gal]) drums. If decontamination rinsate is generated from suspected hazardous waste, sampling will be required to determine disposal options for the rinsate. Cleaning of sampling equipment will be done according to Standard Operating Procedure ERD-05-701 (DOE, 1994b) if sampling is required after generation of rinsate.

Decontamination rinsate from the petroleum hydrocarbon excavation and sampling activities will be solidified and disposed of at the NTS Area 6 Hydrocarbon Landfill or another approved landfill. All rinsate will be stored and disposed of in accordance with applicable regulations.

3.3.3 Petroleum Hydrocarbon Waste

Petroleum hydrocarbon impacted material will be placed on and covered with plastic to minimize spread at the site. After excavation activities are completed, the impacted materials will be transported to the NTS Area 6 Hydrocarbon Landfill or another approved landfill. Transportation of the impacted materials will be conducted in accordance with applicable Department of Transportation Regulations.

3.3.4 Potential Resource Conservation And Recovery Act Waste

Potential Resource Conservation and Recovery Act (RCRA) waste may be generated during the excavation activities in Landfill A3-2. If containers such as drums or tanks are discovered, their condition and contents will be investigated. Containers found to be empty and crushed, or filled with inert material such as soil or cement, pose no threat of ground subsidence or hazardous waste release and will be left in place. Uncrushed empty containers, however, will eventually collapse, causing ground subsidence. If they can be backfilled properly, empty containers will be
left in place. If solid wastes, including any liquids, are found in the containers, the contents will be considered to be potential hazardous waste. Sampling and analysis will be implemented to characterize the material so that it can be properly handled and disposed off-site.

Liquids and sludges will be removed either by pumping or bailing into new drums before removing the buried container, or by placing intact containers into over packs. The potential RCRA material will be placed in 208 L (55 gal) drums and stored at the site. Containers will be labeled as "Awaiting Analysis"; however, a waste code, if applicable, will not be assigned until analytical data from the sampling is evaluated and a formal decision from the BN WMP is made as to the regulatory status of the material.
4.0 WASTE STORAGE REQUIREMENTS

4.1 CONTAINER MANAGEMENT

Drums/containers containing potential hazardous waste may be encountered during excavation activities in Landfill A3-2. If encountered, the containers will be removed from the excavation and placed in the appropriate containers to reduce the potential of release to the environment. Disposition of the containerized waste will be determined upon receipt and evaluation of analytical results.

4.2 PREPAREDNESS AND PREVENTION

All hazardous waste facilities must be maintained and operated in a manner that minimizes the possibility of a fire, explosion, or any unplanned event [40 CFR 265 Subpart C]. Even though, this site is not a hazardous waste facility and the hazards posed by the waste stored at this site do not require a specific kind of equipment, fire extinguishers will be available in all vehicles. Two-way radios will be available in field vehicles or as hand-held type.

Aisle space between the drums and containers will be sufficient to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area where the waste is stored in the event of an emergency.

TTR Emergency Response Teams, Fire Department, and TTR Security personnel, must be familiar with the layout of the facility, properties of the waste and constituents detected during the site characterization activities, possible excavation routes, etc. Hospitals must be informed of the type of injuries or illness which could result from fires, explosions, or releases at the site.

4.3 CONTINGENCY PLAN

Each owner or operator of a hazardous waste facility must comply with the requirements detailed in 40 CFR 265 Subpart D - Contingency Plan and Emergency Procedures. The generation of hazardous waste is potential during the excavation activities at Landfill A3-2. This plan is designed as a contingency and to minimize hazards to human health or the environment in the event of fire, explosion, or any unplanned or non-sudden release of hazardous waste or hazardous waste constituent. The provisions of the plan must be carried out immediately after such an event and provide actions site personnel must take. A copy of the Contingency Plan can be found in Attachment B-1.
A copy of the plan and all revisions will be maintained at the site and provided to TTR Security personnel and Fire Departments, Medical Facilities, and Emergency Response Teams, if potential hazardous waste is to be generated. Hazardous waste will only be generated if equipment, PPE, and/or personnel contact the impacted materials.

If hazardous waste is generated, there will be at least one employee either on the site or on call at all time. This person will have the authority to commit the resources needed to carry out the Contingency Plan. The emergency coordinator will have thorough knowledge of all aspects of the Contingency Plan, all operations and activities at the facility, the location and characteristics of the waste handled, the location of the records at the site, and the site layout.

4.4 PERSONNEL TRAINING

Title 29 CFR 1910.120 details the occupational safety and health requirements that will be followed for personnel supporting excavation activities. All personnel will be required to read and understand the Site-Specific Health and Safety Plan prior to working at the site. A Tailgate Safety Briefing will be conducted every morning and as needed as activities or circumstances change.

4.5 INSPECTIONS

An inspection of the areas in which the containers and soil piles are stored will be conducted at least monthly. The purpose is to identify leaking or deteriorating containers due to corrosion or other factors. An inspection form is included in Attachment B-2. Unusual circumstances must be reported immediately to the BN task manager so that corrective measures can be taken. Copies of completed inspection forms will be submitted to the WMP.
5.0 INVESTIGATION DERIVED WASTE SAMPLING AND DISPOSAL

This section is anticipated to be implemented only if potential hazardous waste is encountered during the excavation activities in Landfill A3-2.

5.1 INTRODUCTION

A representative waste sample must be collected for the characterization and disposal of the waste where additional information is needed. Sample handling, packaging, and shipping will be done in accordance with Standard Operating Procedure ERD-05-202 (DOE, 1994). All samples are to be immediately placed into laboratory supplied jars. The sample containers will be sealed, labeled, placed in an ice chest, cooled to four degrees centigrade, and transferred to the contract laboratory under Chain-Of Custody Procedure ERD-05-201 (DOE, 1994). Samples will be labeled with the date, time; sample number, parameter(s) to be analyzed, and the sampler's initials. Samples will be analyzed using a six-week turnaround. Table B-2 describes the parameters that will be analyzed.

Field observations and notes will be documented in a field notebook of all sampling procedures. All entries into the logbook will be made with indelible black ink. Field observations include:

- Time and date.
- Sampler(s).
- Waste type.
- Color.
- Odor.
- Unusual characteristics.

Soil samples will be collected with a stainless steel scoop. Sampling equipment will be decontaminated before and after use and will be stored in a plastic bag until used again. Liquid samples will be collected using a new coliwassa.
# TABLE B-2 — ANALYTICAL PARAMETERS FOR WASTE CHARACTERIZATION

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>METHOD</th>
<th>SAMPLE CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Metals</td>
<td>SW 846, EPA 6010</td>
<td>1- Liter, glass jar (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-250 ml glass (soil)</td>
</tr>
<tr>
<td>TCLP¹ Metals</td>
<td>SW 846, EPA 6010</td>
<td>1- Liter, glass jar (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-250 ml glass (soil)</td>
</tr>
<tr>
<td>pH</td>
<td>SW 846, EPA 9040/9045</td>
<td>1 - 250 ml plastic bottle (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-250 ml glass jar (soil)</td>
</tr>
<tr>
<td>Total Pesticides</td>
<td>SW 846, EPA 8080</td>
<td>1- Liter, glass jar (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-250 ml glass (soil)</td>
</tr>
<tr>
<td>Total VOCs²</td>
<td>SW 846, EPA 8260</td>
<td>3 - 40 ml vial (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-120 ml glass (soil)</td>
</tr>
<tr>
<td>Total SVOCS³</td>
<td>SW 846, EPA 8270</td>
<td>1 - Liter, glass (liquid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-500 ml glass (soil)</td>
</tr>
<tr>
<td>TPH</td>
<td>SW 846, EPA 8015 Modified</td>
<td>250 ml, glass jar (soil); 2-Liter glass + 120 ml glass with zero headspace (liquid)</td>
</tr>
</tbody>
</table>

Notes:  
1 TCLP: Toxicity Characteristic Leaching Procedure, EPA Method 1311.  
2 VOCs: Volatile Organic Compounds.  
3 SVOCs: Semi-Volatile Organic Compounds.
5.2 WASTE SAMPLING TECHNIQUES

Each waste stream generated at the site must be sampled unless process knowledge and/or previous sampling results provide adequate information for a disposal determination. Unless potential RCRA hazardous waste is encountered during the excavation activities in Landfill A3-2, sampling will not be required of the waste streams.

5.2.1 Solid Waste

Sampling is not required for wastes known to contain no COCs. Such determination can be based on process knowledge and/or analytical results from previous sampling events. Therefore, only materials/equipment that contact the potential hazardous waste are potentially suspect.

Solid waste, such as PPE, plastic, wood, concrete, etc. will not be sampled. Disposal will be based primarily on the associated activity that generated the waste. If construction material or debris (includes PPE) contact the potential hazardous waste, the materials will be visually inspected by the Site Supervisor. The waste may be considered nonhazardous if it is not significantly impacted by a hazardous material. Final disposal recommendations will be determined by WMP personnel.

5.2.2 Liquids

Suspect hazardous liquid waste could be encountered in containers in Landfill A3-2 or from equipment cleaning activities after contact with suspect hazardous materials. Decontamination water will be sampled if equipment contacts suspect hazardous materials. Each container containing suspect hazardous materials or rinsate from equipment contacting suspect hazardous materials will be sampled with a newoliniassa. The samples will be submitted for laboratory analysis for the parameters listed in Table B-2. A composite sample may be collected from two or three drums containing rinse water generated by the same activity.

5.3 QUALITY ASSURANCE SAMPLES

Field quality control samples will be collected in accordance with Standard Operating Procedure ERD-05-401 (DOE, 1994). One trip blank sample will be collected each day that sampling activities are conducted and analyzed for volatile organic compounds. One complete blind replicate set will be collected for every ten rinsate sample set. Additional samples will be collected for matrix spike and matrix spike duplicate samples.

B-16
5.4 DISPOSAL

All waste types that are generated will be managed and disposed of in accordance with all state and federal regulations, DOE orders, and BN procedures. After receipt and evaluation of the analytical results, a letter will be submitted to the BN WMP or TTR waste management group requesting disposal support. Disposal will be documented with the bill-of-lading, waste manifest, chain-of-custody, etc, as applicable.
6.0 REFERENCES

DOE, September 1994; Nevada Operations Office, Environmental Restoration Division, Standard Operating Procedure, Management and Minimization of Nonhazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project, Revision 0.

DOE, September 1994a; Nevada Operations Office, Environmental Restoration Division, Standard Operating Procedure, Management and Minimization of Hazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project, Revision 0.

DOE, September 1994b; Nevada Operations Office, Environmental Restoration Division, Sampling Equipment Decontamination, Revision 0.

DOE, 1997, Corrective Action Investigation Plan for the Area 3 Landfill Complex, Tonopah Test Range, Nevada (Corrective Action Unit 424), DOE/NV--476 UC-700.


EPA, 1996, Region IX Preliminary Remediation Goals (PRGs), San Francisco, CA.


REECo, December 18, 1995, Nevada Test Site Performance Objective for Certification of Nonradioactive Hazardous Waste.

ATTACHMENT B-1

of APPENDIX B

CONTINGENCY PLAN
CONTINGENCY PLAN AND EMERGENCY PROCEDURES
AREA 3 LANDFILL COMPLEX (CAU 424)
corrective action activities

Prepared for
U. S. Department of Energy
Nevada Operations Office
Under Contract No. DE-AC08-96NV11718

Revision: 0

Prepared by:
Bechtel Nevada
Environmental Restoration

June 1998
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ATTACHMENT 2 - INJURY/ILLNESS/INCIDENT REPORT
ATTACHMENT 3 - EMERGENCY EQUIPMENT
ACRONYMS AND ABBREVIATIONS

BN  Bechtel Nevada
CADD  Corrective Action Decision Document
CAS  Corrective Action Site
CAU  Corrective Action Unit
CFR  Code of Federal Regulations
cm  centimeter
DOE  United States Department of Energy
EC  Emergency Coordinator
ER  Environmental Restoration Division
EPA  U.S. Environmental Protection Agency
EMP  Emergency Management Plan
ft  feet
in  inch
m  meters
mg/kg  milligrams/kilogram
m/s  meters per second
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheets</td>
</tr>
<tr>
<td>NAC</td>
<td>Nevada Administrative Code</td>
</tr>
<tr>
<td>NTS</td>
<td>Nevada Test Site</td>
</tr>
<tr>
<td>PPE</td>
<td>Personnel Protective Equipment</td>
</tr>
<tr>
<td>PRG</td>
<td>Preliminary Remediation Goal</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>RP</td>
<td>Remediation Projects</td>
</tr>
<tr>
<td>TPH</td>
<td>Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>TTR</td>
<td>Tonopah Test Range</td>
</tr>
<tr>
<td>ug/kg</td>
<td>micrograms/kilogram</td>
</tr>
</tbody>
</table>

B-Aiv
1.0 INTRODUCTION

1.1 PURPOSE

This document satisfies the requirements for a contingency plan and emergency procedures required by the federal hazardous waste regulations defined in the Resource Conservation and Recovery Act (RCRA). These requirements are prescribed by:

- Title 40 Code of Federal Regulations (CFR) Part 265, Subparts C and D.
- Title 40 CFR 262.34.
- Bechtel Nevada (BN) Procedure 4.2.9, Response to Spills of Known Substances.
- BN Emergency Management Plan (EMP).

This plan discusses the actions that the BN Environmental Restoration (ER), Nevada Test Site (NTS), and Tonopah Test Range (TTR) personnel will take in response to fires, explosions, or unplanned sudden or non-sudden releases of hazardous waste or hazardous waste constituents to the air, soil, or surface water at the Area 3 Landfill Complex during closure activities.

1.2 SCOPE

This Plan covers a variety of possible emergencies at the Area 3 Landfill Complex during closure activities. This document applies to all personnel assigned to the site closure activities. This Plan does not cover any releases incurred by subcontractors who are under contract to remove hazardous waste from the TTR once they have physically left the Area 3 Landfill Complex site.

1.3 FACILITY DESCRIPTION

1.3.1 Site Location

The site is located on the TTR, approximately 225 kilometers (140 miles) northwest of Las Vegas, Nevada (Figure 1).
1.3.2 Site Description

The site consists of eight landfills. The landfill sites are comprised of one or more cells which received wastes from daily operations at the Area 3 Compound during different time intervals from before 1963 to approximately 1993. Cell locations and contents were poorly documented due to the unregulated disposal practices commonly associated with early landfill operations. A site map is provided in Figure 2.

A summary of closure activities are provided as follows:

SUMMARY OF CLOSURE ACTIVITIES

<table>
<thead>
<tr>
<th>LANDFILL</th>
<th>NO ACTION</th>
<th>REMOVE TPH WASTE</th>
<th>REPAIR/MAINTAIN SOIL COVERS</th>
<th>POST SIGNS AND MONUMENTS</th>
<th>ENACT LAND-USE RESTRICTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-1</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-2</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-3</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-4</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-5</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-6</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-7</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3-8</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

An area at the site will be used for storage of personal protective equipment (PPE), other supplies/equipment, and waste generated during the closure activities. A temporary decontamination pad may be constructed at the site if equipment contacts suspect hazardous waste.

1.3.3 Topography

The TTR is located in the Great Basin of the Basin and Range province. The Area 3 Landfill Complex is located on the west side of Cactus Flat and east of the Cactus Range. Cactus Flat is a valley consisting of alluvial fans and dry lakes. The elevation at the site is approximately 1,642 m (5,400 ft) above mean sea level.
FIGURE 1
LOCATION OF THE AREA 3 LANDFILL COMPLEX
AT THE TONOPAH TEST RANGE

B-A3
FIGURE 2
LOCATION OF EIGHT AREA 3 LANDFILL SITES
1.3.4 Climate

The TTR receives approximately 15 cm (6 in) of precipitation annually. Annual wind patterns are characterized by strong winds in the spring. The daily cycle is generally light winds at night, increasing winds from morning to afternoon and declining wind speed in the evening. Average monthly wind speed vary from 4.0 m/s (13 feet per second) in April to 2.7 m/s (9 feet per second) in November.
2.0 WASTE DESCRIPTIONS AND ASSOCIATED HAZARDS

Results from the 1997 characterization activities are documented in the Corrective Action Decision Document (CADD) (DOE/NV, 1998). The results indicate the following:

### SUMMARY OF LANDFILL CHARACTERISTICS

<table>
<thead>
<tr>
<th>LANDFILL</th>
<th>CAS NUMBER</th>
<th>NO WASTE</th>
<th>LANDFILL DEBRIS</th>
<th>PETROLEUM HYDROCARBON WASTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-1</td>
<td>03-08-001-A301</td>
<td>.X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-2</td>
<td>03-08-002-A302</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A3-3</td>
<td>03-08-002-A303</td>
<td>X</td>
<td>.X</td>
<td>.X</td>
</tr>
<tr>
<td>A3-4</td>
<td>03-08-002-A304</td>
<td>X</td>
<td>.X</td>
<td>.X</td>
</tr>
<tr>
<td>A3-5</td>
<td>03-08-002-A305</td>
<td>X</td>
<td>.X</td>
<td>.X</td>
</tr>
<tr>
<td>A3-6</td>
<td>03-08-002-A306</td>
<td>.X</td>
<td>.X</td>
<td>.X</td>
</tr>
<tr>
<td>A3-7</td>
<td>03-08-002-A307</td>
<td>.X</td>
<td>.X</td>
<td>.X</td>
</tr>
<tr>
<td>A3-8</td>
<td>03-08-002-A308</td>
<td>.X</td>
<td>.X</td>
<td>.X</td>
</tr>
</tbody>
</table>

Total petroleum hydrocarbons (TPH) was the only constituent of concern (COC) reported for the Area 3 Landfill Complex in the CADD (DOE, 1998). The state of Nevada Regulatory Action Level for TPH of 100 milligrams per kilogram (mg/kg) was exceeded in soil samples from Landfill A3-1 (200 mg/kg gasoline and 790 mg/kg diesel) and Landfill A3-2 (48,000 mg/kg waste oil).

Corrective action activities which will penetrate the landfill cover will be conducted only in Landfill A3-2 to remove and dispose of petroleum hydrocarbon impacted materials. Hazardous waste could be encountered during the excavation and removal activities. Although excavation activities will be conducted with a backhoe (to reduce or eliminate the potential for personnel contact with the impacted materials), potential routes of entry could include inhalation, ingestion, absorption, and injection. The specific hazards associated with the site are described in the following sections.

### 2.1 CHEMICAL HAZARDS

The following is a generalization of the hazards associated with the various chemical classes that may possibly be encountered at the Landfill A3-2.
2.1.1 Hydrocarbons

Hydrocarbons may be fatal if swallowed or inhaled. They are capable of being absorbed through the skin, can cause eye damage, chemical burns, and oxygen deficiency in confined spaces.

2.1.2 RCRA-Regulated Constituents

It is possible that RCRA-regulated hazardous constituents may be encountered in the excavation area in Landfill A3-2. These compounds are often strong oxidizers that may be harmful or fatal if inhaled, swallowed, or absorbed through the skin. Contact can cause irritation of the eyes, nose, and throat, fatigue, headaches, and drowsiness. Target organs include the respiratory system, eyes, liver, and kidneys.

2.2 PHYSICAL HAZARDS

The following are generalizations of the physical hazards associated with the various chemical classes that may possibly be encountered at Landfill A3-2.

2.2.1 Hydrocarbons

Petroleum hydrocarbon materials may burn, but do not usually ignite readily. When burned, these chemicals give off gases such as carbon monoxide, soot, etc. The vapors of this chemical class are denser than air and will sink to the bottom of depressions such as the ponds. These irritating vapors may build up to toxic or, under unusual conditions, explosive levels. They can degrade the integrity of plastic.

2.2.2 RCRA-Regulated Constituents

For specific physical hazard information consult the Material Safety Data Sheet (MSDS) for the material, an Industrial Hygienist, or other source.

2.2.3 Other Physical Hazards

Other physical hazards present at Landfill A3-2 in the Area 3 Landfill Complex are associated with container-handling, heavy equipment operations, and working outdoors. These may include potential back injury, vehicle accidents, and heat and cold stress. Physical hazards are discussed in BN Safety Procedures and the Site-Specific Health and Safety Plan.

B-A7
3.0 EMERGENCY NOTIFICATION PROCEDURES

The reporting and notification procedure outlined in BN Safety Procedure M-A11-007, Accidents/Incident Notifying, Investigating, and Reporting will be followed in the event of an accident, injury or other incident. Expedient reporting and notification will be made for, but not limited to, personnel injury or fatality, toxic material release, fire, or explosion. Attachment 1 includes the Emergency/Contingency Plan notice that will be posted at the site. Information includes a list of the telephone numbers, emergency response procedures, waste description, etc.

3.1 DESIGNATION OF EMERGENCY COORDINATOR

The Emergency Coordinator (EC) system consists of one primary EC, one secondary EC, and one alternate EC. The ECs are onsite or on call at all times. In the event of an emergency, the primary EC should be contacted; if not available, the secondary EC should be contacted. If neither of these are available the alternate should be contacted. The individual who is available first becomes the EC for the situation. The ER Project Manager will appoint the ECs prior to field activities. The Emergency Coordinator list is a field document to be prepared prior to field activities.

3.2 RESPONSIBILITIES

The ECs have the authority to commit the necessary resources to implement this plan. Personnel resources will be applied consistent with the requirements of Title 40, CFR 1910.120. The ECs will remain thoroughly familiar with the following:

- All aspects of this Plan.
- All operations and activities under control at the Area 3 Landfill Complex Corrective Action Unit (CAU).
- The locations and characteristics of the wastes handled.
- The locations of all the records.
- The Area 3 Landfill Complex CAU.

In the event of an emergency, the EC will be responsible for the following:

- Stopping all operations, where applicable.
• Implementing this Plan.

• Contacting the TTR Safety Coordinator through the MAYDAY/911 system and making notification of the emergency.

• Notifying all Area 3 Landfill Complex CAU personnel of the emergency.

• Acting as the incident coordinator.

• Attempting to stop, slow, or dike the discharge, if it can be done safely with the materials at hand.

• Providing the technical expertise necessary so that all responders (including those outside the ER) are fully informed of the potential hazards.

The secondary EC will also be responsible for preparing, posting, and maintaining an emergency information sheet which provides the emergency response information, such as telephone numbers for emergency response teams. The secondary EC is also responsible for personnel evacuation. In the event the secondary EC is not available the alternate EC will conduct these duties.

3.3 NOTIFICATION

The first person who becomes aware of an emergency at the Area 3 Landfill Complex shall immediately notify the proper authorities. Initial notification should be to their supervisor. If the emergency involves only a release of hazardous materials, the supervisor shall contact the EC who will start the necessary notification.

When the nature of the emergency is a fire, explosion, or involves personnel injury, the supervisor shall immediately notify Advanced Security Incorporated (ASI) Security ("Cactus") and the TTR ES&H (Environment, Safety, and Health) Coordinator via the radio on the Cedar Net or the 911 telephone system. The supervisor shall contact the EC.

If the first person to become aware of an emergency is not a RP employee and there are no ER personnel in the area, that person should follow the notification instructions posted at the perimeter of each landfill at the Area 3 Landfill Complex.
3.4 RESPONSE PROCEDURES

There are two general classifications of release incidents that could occur at the Area 3 Landfill Complex; fire and/or explosions and a spill of potentially hazardous materials. The initial response will be to protect human health and safety, and then the environment. The following actions will be taken:

1) Work in the area will cease immediately.

2a) For fire: If necessary, contact "Cactus" via the radio on the Cedar Net or by telephone by using the 911 system or use the ABC-type fire extinguisher.

2b) For spill: Attempt to stop, slow, or dike the discharge without compromising health and safety.

3) Notify the cognizant EC who will obtain additional emergency response assistance as required. Verify that all personnel are out of area.

4) Remove injured persons and administer first aid as required.

5) Shut down operating equipment as practical.

6) Complete appropriate documentation (Attachment 2).

3.5 EVACUATION PLAN

Notification for personnel to evacuate the area will be received via an emergency signal. The EC will be in possession of a blow-horn that will signal all workers to leave the area and gather in the designated assembly area. All radio nets will be kept clear and be used to transmit emergency information only. The EC must account for all personnel.

The assembly area for evacuated personnel will be the BN site office in Area 3. If cover must be taken, personnel will be instructed to use equipment/vehicles and other topographic features at the site.

3.6 EMERGENCY DECONTAMINATION AND FIRST AID

If a worker is contaminated with a chemical substance, direct the worker to proceed at once to the temporary decontamination pad and drench the worker with copious amounts of water. Pay particular attention to the victim’s eyes and face. Do not remove PPE until all contamination has
been thoroughly rinsed off. Contact the Emergency Medical provider (ASI or the USAF) for assistance and advice. Move the victim to fresh air.

3.7 CLEANUP

Cleanup of potential hazardous waste will be conducted by personnel having the appropriate training and PPE as determined by the EC. Cleanup will meet all current applicable standards and regulations.
4.0 EMERGENCY SERVICES

4.1 ON-SITE CONDITION OF EMERGENCY SERVICES

The onsite Fire Protection and Emergency Medical Services (ASI Security) are capable of responding to all credible emergencies at the TTR. These services are linked to the emergency communications dispatch system and have the capability to respond to emergencies involving hazardous, radioactive, or mixed waste constituents.

4.2 MEDICAL SERVICES

Emergency services are provided at the Sandia Compound during normal working hours, Monday through Thursday. During other than normal working hours, emergency services are provided by Sandia paramedic personnel and U.S. Air Force personnel only. All nurses and physicians are licensed by the state of Nevada. Paramedical qualifications meet or exceed Department of Transportation Highway Safety Program requirements for emergency medical services. Response time to the Area 3 Landfill Complex is approximately five minutes. Services are also available at the Nye County Regional Medical Center located in Tonopah, Nevada.

4.3 FIRE PROTECTION SERVICES

The Sandia TTR Fire Station serves the TTR 24 hours a day, 7 days a week. It is located in the Sandia Compound and will be the primary response team. The Fire Protection Services responds to spills, explosions, fires, and non-fire emergencies involving cleanup.
5.0 EMERGENCY EQUIPMENT

Emergency equipment includes equipment for fire control, emergency communications, spill control and cleanup, personnel protection, and first aid. The onsite emergency equipment is inspected monthly to ensure there is adequate inventory and that it is in good working order. Extra PPE and environmental monitoring equipment are available. Descriptions and on-site locations of the emergency equipment are listed in Attachment 3.
6.0 REFERENCES


United States Environmental Protection Agency, 1996, Region IX Preliminary Remediation Goals (PRGs), San Francisco, CA.


United States Occupational Safety and Health Administration, Title 29, CFR 1910.120, Hazardous Waste Operations and Emergency Response.
ATTACHMENT 1

of ATTACHMENT B-1

of APPENDIX B

EMERGENCY/CONTINGENCY PLAN
EMERGENCY/CONTINGENCY PLAN

COMPANY: Bechtel Nevada
ADDRESS: Mercury, Nevada
LOCATION OF FACILITY: Tonopah Test Range, Area 3 Landfill Complex

PRIMARY EMERGENCY COORDINATOR
To Be Determined (TBD) Work:
Home:

SECONDARY EMERGENCY COORDINATOR
TBD Work:
Home:
Cellular:

ALTERNATE EMERGENCY COORDINATOR
TBD Work:
Home:

DESCRIPTION OF WASTE HANDLED
Petroleum hydrocarbons (diesel and waste oil) and possible Resource Conservation and Recovery Act hazardous wastes (not determined). Wastes may be in the form of impacted soils, concrete, wood, metal, or other debris. Wastes may also be in containers (buckets, drums, tanks) in the form of liquids, solids, or sludge.

EMERGENCY RESPONSE CONTACTS
All emergency response teams can be contacted through ASI Security ("Cactus") on the Cedar Net Radio and by telephone using the "911" System:

EMERGENCY DISPATCH: 295-8345 or 295-8290

PRIMARY HOSPITAL:
Area 3 Medical Facility
(Building 0369)
295-8345 or 295-8290

SECONDARY HOSPITAL:
Nye Regional Medical Center
825 South Main Street
Tonopah, NV
(702) 482-6233
ATTACHMENT 2

of ATTACHMENT B-1

of APPENDIX B

INJURY/ILLNESS/INCIDENT REPORT
The supervisor completes this report immediately after being notified of any work-related accident or incident (injury, illness, vehicle accident, property damage, or near-miss incident) and forwards it to the assigned Safety Representative or the Occupational Safety Department within two working days. Be specific. Provide enough data that anyone reading the report, who is not familiar with the incident, can understand what happened. For near-miss incidents complete Parts I and IV. For accidents,

### PART I

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### PART II - INJURY/ILLNESS

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<tr>
<td>7. Employee Name:</td>
<td>Social Security No.:</td>
<td>Job Classification</td>
<td>Age</td>
<td>Male</td>
<td>Female</td>
<td></td>
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<tr>
<td>8. Job Being Done at Time of Incident</td>
<td>9. Experience on This Job or This Equipment (Months)</td>
<td>Under 3</td>
<td>3 to 12</td>
<td>Over 12</td>
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<td>10. Length of Present Employment (Months)</td>
<td>Under 3</td>
<td>3 to 12</td>
<td>Over 12</td>
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<tr>
<td>11. Body Part(s) Involved</td>
<td>Left</td>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12. Nature of Injury/illness</td>
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<tr>
<td>13. Object/Equip./Substance Inflicting Injury</td>
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### PART III - VEHICLE OR PROPERTY DAMAGE

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<tbody>
<tr>
<td>17. Activity in Progress At Time of Incident</td>
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</tbody>
</table>

### PART IV - DESCRIPTION OF EVENTS, ANALYSIS OF CAUSES, AND ACTIONS TO PREVENT RECURRANCE

20. Describe clearly how the Accident/incident occurred:

21. What acts, failures to act and or conditions contributed most directly to this accident/incident?

22. What root causes, basic or fundamental reasons, caused the existence of these failures and/or conditions?

23. What action has or will be taken to prevent recurrence? Implementation Date(s):

24. Preventable

25. Witnesses

26. Investigating Supervisor: | Phone: | Signature: | Date: |

27. Reviewing Safety Representative: | Phone: | Signature: | Date: |

28. Manager: | Phone: | Signature: | Date: |
INSTRUCTIONS FOR COMPLETION OF THIS FORM

The following information will assist in the completion of this form.

1. Company: Bechtel or Subcontractor.
2. Org./Dept. No.: As applicable.
3. Date of Occurrence: Date event happened.
4. Time: Use military time.
5. Location: (Examples: Bldg. 7, Area 6; Whse. A Yard, Area 233)
6. Date Reported: Date the incident was reported to supervisor.
7. Employee Name, Social Security No., Job Classification, Age, Sex: Self-explanatory
8. Job Being Done at Time of Incident: (Examples: Stocking shelves; installing a receptacle; cleaning equipment parts; carrying files to a desk; etc.)
9. Experience on This Job or This Equipment: Self-explanatory.
10. Length of Present Employment: Check applicable box, based on employee hire date.

ILLNESS/INJURY

11. Body Part(s) Involved: (Examples: left arm; right foot; back; both eyes; thumb, left hand; etc.)
12. Nature of Injury/Illness: (Examples: Sprain; strain; fracture; laceration; dermatitis; etc.)
13. Object/Equip./Substance Inflicting Injury: (Examples: Corner of shelf; point of screwdriver; solvent in dip tank)

PROPERTY DAMAGE

14. Description of Vehicle/Property/Equipment: (Clark forklift, warehouse roll-up door; 1987 Dodge pickup; etc.)
15. Property No.: Use property number on equipment or license number of vehicles. Note N/A if there is no identifying number.
16. Nature of Damage: (Examples: Broken window, left side; second rung of ladder bent, telephone cable cut; etc.)
17. Activity in Progress at Time of Incident: (Examples: Placing a pallet on a shelf; Rearranging office furniture, etc.)
19. Seat Belts: Check applicable block to indicate if seat belts were used or not applicable.

DESCRIPTION OF EVENTS, ANALYSIS OF CAUSES, AND ACTIONS TO PREVENT RECURRENCE

20. Description of how accident/incident occurred: Include all facts surrounding the incident. Do not use one-line descriptions.
21. Acts/failures to act, unsafe conditions contributing to accident: Be as specific as possible in identifying the contributing factors. The following examples are offered, but should not be considered as the only factors to be considered. Keep in mind that a single incident can involve multiple unsafe acts and unsafe conditions.

Examples of Unsafe Acts:
- Used defective equipment
- Used wrong tool
- Took unsafe position/posture
- No protective equipment used
- Did not follow established procedure

Examples of Unsafe Conditions:
- Inadequate or no guard/safety device
- Poor housekeeping
- Protruding object hazard
- Defective tools/equipment
- Close clearance/congestion

22. Basic or fundamental reasons causing failures, unsafe acts, or unsafe conditions: Include all identified root causes. Usually there are management failures.

Examples include, but are not limited to:
- Inadequate employee training
- Inadequate procedures
- Inadequate enforcement of procedure
- Inadequate maintenance or repair
- Inadequate employee selection or placement
- Inadequate safety rules or equipment

23. Preventive action and implementation dates: Describe what actions have or will be taken to prevent similar incidents. If an action has already been taken, enter the date it was completed. If an action is planned, enter the proposed date of completion.

24. Preventable: Determine if the employee reasonably could have done anything to prevent the accident/incident.


SIGNATURE AND REVIEW PROCESS

26. The supervisor can either complete the form solely and send it to the Safety Representative for review or complete the form along with the assigned Safety Representative.
27. When the form has been signed by both the Supervisor and Safety Representative, submit it to the Manager for signature.
28. After the Manager has signed the form, his/her office will make appropriate distribution of the copies.

NOTE: Forward all photos, statements, diagrams, etc. concerning the accident/incident to the Occupational Safety Dept.
ATTACHMENT 3

of ATTACHMENT B-1

of APPENDIX B

EMERGENCY EQUIPMENT
# EMERGENCY EQUIPMENT

**EQUIPMENT**

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<tr>
<th>Item</th>
<th>Location</th>
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<tr>
<td>Fire Extinguishers 20 lb. ABC</td>
<td>Each vehicle Decon Area Office</td>
</tr>
<tr>
<td>First Aid Kits</td>
<td>Each vehicle Decon Area Office</td>
</tr>
<tr>
<td>Eye Wash Station</td>
<td>Decon Area</td>
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<tr>
<td>PPE</td>
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<tr>
<td>Tyvek</td>
<td>Office or Designated Field Vehicle</td>
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<td>Nitrile Gloves</td>
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<tr>
<td>Surgical Gloves</td>
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<tr>
<td>Rubber Boots</td>
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<tr>
<td>Rain Suits (3)</td>
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<tr>
<td>Hard Hats</td>
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<tr>
<td>Face Shields</td>
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<tr>
<td>Safety Glasses</td>
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<tr>
<td>Portable Net 15 Radio (2)</td>
<td>Office and Site Supervisor Vehicle</td>
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<tr>
<td>With charger</td>
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<tr>
<td>Spill Response Materials</td>
<td>Office or Designated Field Vehicle</td>
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<tr>
<td>55-gallon drums</td>
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<tr>
<td>Spill Kit</td>
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<tr>
<td>Absorbent Pads</td>
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<tr>
<td>Miscellaneous</td>
<td>Office or Designated Field Vehicle</td>
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<td>Garbage Bags</td>
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<td>Buckets</td>
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<td>Brushes</td>
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<td>Kimwipes</td>
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<td>Plastic</td>
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<td>Sandbags</td>
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<td>Duct tape</td>
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ATTACHMENT B-2

of APPENDIX B

FIELD INSPECTION FORM
TTR AREA 3 LANDFILL COMPLEX (CAU 424)
INSPECTION FORM

Inspect the unit and surrounding area. Look for any unusual change in the unit such as accumulation of water, chemical odors, erosion, etc. Refer to the previous inspection of the unit in order to identify any changes. Inspections should be completed after a problem is reported by a contractor, DOE, NDEP, ER or other BN employees. Routine inspections will be done monthly.

GENERAL INFORMATION
1. Date of inspection: ________________________________

2. Facility Manager (name and organization): Bechtel Nevada Environmental Restoration

Details (Name, organization and telephone number of person reporting problem): ________________________________

4. Describe weather conditions over the past few weeks (high winds, precipitation, local flooding):

CONDITION OF UNIT
5. Describe the condition of the signs (missing, fading, damaged, etc.): ________________________________

6. Describe any subsidence, erosion (run-on, run-off, or standing water), excessive vegetation, etc., on the landfill covers: ________________________________

7. Describe any unusual activity or condition which could impact the proper operation of the covers: ________________________________

8. Any trash or other waste in area? No ____ Yes ____ No change ____
Details: ________________________________

9. What is the (possible) effect of the change? ________________________________

ACTIVITIES
10. Describe any activities apparent at the time of inspection: ________________________________
WASTE MANAGEMENT

11. Type of waste present at the site: ________________________________

12. Number and volume of containers of waste: ________________________________

13. Condition of waste/containers: ________________________________

AREA SURROUNDING THE CAU

14. Describe any significant changes within several hundred feet of the unit. Changes can include construction, change in land use, storage of materials nearby, soil piles, change in use of the facility, etc.: ________________________________

15. Describe the effect (or possible effect) of any changes noted above: ________________________________

16. Describe any other discharges into the landfill or along the top of the landfill: ________________________________

17. Additional comments, observations, or recommendations: ________________________________

FOLLOW UP

18. Based on the findings indicated above, is an additional inspection required before the next scheduled inspection: _____ If yes, when will this inspection be completed: ________________________________

Any significant changes must be reported to the appropriate supervisor immediately.

Inspected by: ________________________________ (Print)

Signed: ________________________________ Date: ________________________________

Names of other persons present during inspection (print):

__________________________  __________________________  __________________________
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