

Nevada  
Environmental  
Restoration  
Project

DOE/NV--1207



# Post-Closure Inspection Report for the Tonopah Test Range, Nevada

## For Calendar Year 2006

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Environmental Restoration  
Division



U.S. Department of Energy  
National Nuclear Security Administration  
Nevada Site Office

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**POST-CLOSURE INSPECTION REPORT FOR  
THE TONOPAH TEST RANGE, NEVADA  
FOR CALENDAR YEAR 2006**

**U.S. Department of Energy  
National Nuclear Security Administration  
Nevada Site Office  
Las Vegas, Nevada**

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THE TONOPAH TEST RANGE, NEVADA  
FOR CALENDAR YEAR 2006**

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ATTACHMENT F. POST-CLOSURE VEGETATION MONITORING REPORT

## **ACRONYMS AND ABBREVIATIONS**

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CADD	Corrective Action Decision Document
CAS	Corrective Action Site
CAU	Corrective Action Unit
CR	Closure Report
DOE/NV	U.S. Department of Energy, Nevada Operations Office
NDEP	Nevada Division of Environmental Protection
NNSA	U.S. Department of Energy, National Nuclear Security Administration
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
ROTC	Record of Technical Change
TTR	Tonopah Test Range

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## EXECUTIVE SUMMARY

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This report provides the results of the semiannual post-closure inspections conducted at the closed Corrective Action Unit (CAU) sites located on the Tonopah Test Range (TTR), Nevada. This report covers calendar year 2006 and includes inspection and repair activities completed at the following nine CAUs :

- CAU 400: Bomblet Pit and Five Points Landfill (TTR)
- CAU 404: Roller Coaster Lagoons and Trench (TTR)
- CAU 407: Roller Coaster RadSafe Area (TTR)
- CAU 423: Area 3 Underground Discharge Point, Building 0360 (TTR)
- CAU 424: Area 3 Landfill Complexes (TTR)
- CAU 426: Cactus Spring Waste Trenches (TTR)
- CAU 427: Area 3 Septic Waste Systems 2, 6 (TTR)
- CAU 453: Area 9 UXO Landfill (TTR)
- CAU 487: Thunderwell Site (TTR)

Post-closure inspections were conducted on May 9, 2006, May 31, 2006, and November 15, 2006. All inspections were conducted according to the post-closure plans in the approved Closure Reports. The post-closure inspection plan for each CAU is included in Attachment B, with the exception of CAU 400. CAU 400 does not require post-closure inspections, but inspections of the vegetation and fencing are conducted as a best management practice. The inspection checklists for each site inspection are included in Attachment C, the field notes are included in Attachment D, and the site photographs are included in Attachment E. Vegetation monitoring of CAU 400, CAU 404, CAU 407, and CAU 426 was performed in June 2006, and the vegetation monitoring report is included in Attachment F.

Maintenance and/or repairs were performed at CAU 400, CAU 407, CAU 426, CAU 453, and CAU 487 in 2006. During the May inspection of CAU 400, it was identified that the east and west sections of chickenwire fencing beyond the standard fencing were damaged; they were repaired in June 2006. Also in June 2006, the southeast corner fence post and one warning sign at CAU 407 were reinforced and reattached, the perimeter fencing adjacent to the gate at CAU 426 was tightened, and large animal burrows observed at CAU 453 were backfilled. Cracking observed in three monuments at CAU 487 was repaired using sealant during the May 9, 2006, inspection.

At this time, the TTR post-closure site inspections should continue as scheduled. Any potential problem areas previously identified (e.g., areas of erosion, subsidence) should be monitored closely, and periodic vegetation surveys of the vegetated covers should continue.

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## 1.0 INTRODUCTION

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### 1.1 SCOPE AND OBJECTIVES

This post-closure inspection report includes the results of inspections, maintenance and repair activities, and conclusions and recommendations for calendar year 2006 for nine Corrective Action Units (CAUs) located on the Tonopah Test Range (TTR), Nevada. The locations of the CAUs are shown in Figure 1 of Attachment A. The CAUs and Corrective Action Sites (CASs) covered in this report include the following:

- **CAU 400: Bomblet Pit and Five Points Landfill (TTR)**
  - CAS TA-19-001-05PT: Ordnance Disposal Pit
  - CAS TA-55-001-TAB2: Ordnance Disposal Pit
- **CAU 404: Roller Coaster Lagoons and Trench (TTR)**
  - CAS TA-03-001-TARC: Roller Coaster Lagoons
  - CAS TA-21-001-TARC: Roller Coaster N. Disposal Trench
- **CAU 407: Roller Coaster RadSafe Area (TTR)**
  - CAS TA-23-001-TARC: Roller Coaster RadSafe Area
- **CAU 423: Area 3 Underground Discharge Point, Building 0360 (TTR)**
  - CAS 03-02-002-0308: Underground Discharge Point
- **CAU 424: Area 3 Landfill Complexes (TTR)**
  - CAS 03-08-001-A301: Landfill Cell A3-1
  - CAS 03-08-002-A302: Landfill Cell A3-2
  - CAS 03-08-002-A303: Landfill Cell A3-3
  - CAS 03-08-002-A304: Landfill Cell A3-4
  - CAS 03-08-002-A305: Landfill Cell A3-5
  - CAS 03-08-002-A306: Landfill Cell A3-6
  - CAS 03-08-002-A308: Landfill Cell A3-8
- **CAU 426: Cactus Spring Waste Trenches (TTR)**
  - CAS RG-08-001-RGCS: Waste Trenches
- **CAU 427: Area 3 Septic Waste Systems 2, 6 (TTR)**
  - CAS 03-05-002-SW02: Septic Waste System
  - CAS 03-05-002-SW06: Septic Waste System
- **CAU 453: Area 9 UXO Landfill (TTR)**
  - CAS 09-55-001-0952: Area 9 Landfill
- **CAU 487: Thunderwell Site (TTR)**
  - CAS RG-26-001-RGRV: Thunderwell Site

Post-closure inspections are conducted on a semiannual basis (twice per calendar year) and consist of the following activities to evaluate and document the condition of the closed units. CAU-specific inspection requirements are included in Attachment B.

- Site inspections and photographs to verify site conditions and note variances from previous inspections
- Inspection of fencing, signs, monuments, and/or markers to determine if repairs and/or maintenance are needed
- Inspection of soil covers for indications of subsidence, erosion, unauthorized use, etc.
- Vegetation survey to quantify the condition of vegetative covers
- Subsidence survey to indicate any cover subsidence
- Preparation and submittal of an annual report

This Post-Closure Inspection Report includes the following sections:

- Section 1.0 - Introduction
- Section 2.0 - Post-Closure Inspections
- Section 3.0 - Summary
- Section 4.0 - References
- Attachment A - Figures
- Attachment B - Post-Closure Inspection Plans
- Attachment C - Post-Closure Inspection Checklists
- Attachment D - Field Notes
- Attachment E - Photographs
- Attachment F - Post-Closure Vegetation Monitoring Report
- Library Distribution List

## **2.0 POST-CLOSURE INSPECTIONS**

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Post-closure site inspections of TTR CAUs for the annual period January 2006 through December 2006 were conducted on May 9, 2006, May 31, 2006, and November 15, 2006. Copies of post-closure inspection plans as previously published in the applicable Closure Report (CR) are included in Attachment B. Copies of the site inspection checklists are included in Attachment C, field notes are included in Attachment D, and site photographs are included in Attachment E.

### **2.1 CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL (TTR)**

#### **2.1.1 Introduction**

There are no specific post-closure requirements in the CR for CAU 400, Bomblet Pit and Five Points Landfill (TTR); however, when the sites were vegetated in 1997 under the *Tonopah Test Range Closure Sites Revegetation Plan* (U.S. Department of Energy Nevada Operations Office [DOE/NV], 1997), fencing was installed at the Bomblet Pit (CAS TA-55-001-TAB2, Ordnance Disposal Pit) and the Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit). As stated in Section 3.5.4 of the revegetation plan (DOE/NV, 1997), fencing is required at both CASs for a minimum of 5 years in order to give the plants sufficient time to become established. Therefore, inspections are conducted at CAU 400 to document vegetation growth and inspect the integrity of the fences. Removal of site fencing may be proposed in the future, once vegetation on the covers is well established. Vegetation monitoring of CAU 400 was conducted in June 2006, and the results are included in Attachment F.

#### **2.1.2 CAU 400 Inspection Results**

##### **2.1.2.1 First Semiannual Inspection**

##### Bomblet Pit (CAS TA-55-001-TAB2, Ordnance Disposal Pit)

The Bomblet Pit is presented in Figure 2 of Attachment A. The first inspection was conducted on May 31, 2006. The cover vegetation was healthy, well established, and similar to the surrounding area outside the fence. The fence, site signs, and cover were in good condition, but the east and west sections of chickenwire fencing beyond the standard fencing were damaged, necessitating repair. Additionally, a bomblet with a suspected fuse was discovered at the conclusion of the inspection. The area was marked with orange flagging, and a Westinghouse safety representative was notified of the bomblet location.

##### Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit)

The Five Points Landfill is presented in Figure 3 of Attachment A. The first inspection was conducted on May 31, 2006. The inspection indicated some minor animal burrows within and outside of the fence at the northeast corner of the site. All signs and fencing were in good condition. The cover vegetation appeared normal, with the continuance of nominal growth after reseeding in 2004.

### **2.1.2.2 Second Semi-Annual Inspection**

#### **Bomblet Pit (CAS TA-55-001-TAB2, Ordnance Disposal Pit)**

The second inspection was conducted on November 15, 2006. Repairs made to the fencing in June 2006, as well as the rest of the fencing, signs, and vegetated cover, were in good condition. No other site issues were noted, and no repairs were required as a result of the inspection.

#### **Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit)**

The second inspection was conducted on November 15, 2006. All signs and fencing were in good condition. Evidence of animal burrows was observed near the front fence. However, due to apparent flooding in the area, no living vegetation remained in the low-lying areas of the cover. (See Attachment E, Photographs 5 and 6.) An ecological specialist will evaluate the site in 2007 for new vegetation growth, and options will be considered depending upon the site conditions at that time. Because of the loss of vegetation, the recommendation of the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) and Nevada Division of Environmental Protection (NDEP) to remove the fence following the 2006 inspection, contingent upon healthy vegetation, was not implemented. No maintenance or repairs were recommended as a result of this site inspection.

### **2.1.3 CAU 400 Maintenance and Repairs**

Repairs were made to the chicken wire fence at the CAU 400 Bomblet Pit, CAS TA-55-001-TAB2, in June 2006. No repairs were required at the Five Points Landfill.

### **2.1.4 CAU 400 Conclusions and Recommendations**

While the Bomblet Pit site was in excellent condition, the Five Points Landfill experienced a significant loss of vegetation. As stated in the revegetation plan (DOE/NV, 1997), the sites are to be fenced for a minimum of 5 years in order to give the vegetation sufficient time to become established. Based on the results of the 2006 inspections and the Post-Closure Vegetation Monitoring Report (Attachment F), it has been determined that the vegetation is not currently sufficiently established to remove the fences. Until it is determined that the vegetation has matured to the same extent as the surrounding undisturbed areas, both sites will remain fenced and semiannual site inspections will continue.

## **2.2 CAU 404: ROLLER COASTER LAGOONS AND TRENCH (TTR)**

### **2.2.1 Introduction**

CAU 404, Roller Coaster Lagoons and Trench (TTR), consists of two CASs (CAS TA-03-001-TARC, Roller Coaster Lagoons; and CAS TA-21-001-TARC, Roller Coaster N. Disposal Trench). Post-closure requirements are described in the CR for CAU 404 (DOE/NV, 1998a), which was approved by NDEP on May 18, 1999.

Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented as Figure 4 of Attachment A. The site inspections were conducted according to the CAU 404 post-closure inspection plan (Attachment B). In addition to site inspections, vegetation monitoring of the site was conducted in June 2006, and the results are included in Attachment F.

## **2.2.2 CAU 404 Inspection Results**

### **2.2.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. This site was in good condition. No damage was noted to the fencing, signs, or cover. The vegetation was healthy and well established. Some small animal burrows were noted outside of the site fencing, but no maintenance or repairs were needed.

### **2.2.2.2 Second Semiannual Inspection**

The second inspection was completed on November 15, 2006. The unit was in good condition, and no animal burrows were observed during the site inspection. The fence was in good condition, and all warning signs were intact and legible. No erosion, subsidence, or cracking of the cover was observed and the cover vegetation was healthy. No maintenance or repairs were recommended as a result of this inspection.

## **2.2.3 CAU 404 Maintenance and Repairs**

No maintenance or repairs were required at CAU 404 during 2006.

## **2.2.4 CAU 404 Conclusions and Recommendations**

The cover, fence, posted warning signs, and gates were all in good condition. Overall plant cover has met revegetation standards. Consequently, removal of the fence surrounding the cover may be considered during the next reporting period, and site inspections should continue as scheduled.

## **2.3 CAU 407: ROLLER COASTER RADSAFE AREA (TTR)**

### **2.3.1 Introduction**

CAU 407, Roller Coaster RadSafe Area (TTR), consists of one CAS (CAS TA-23-001-TARC, Roller Coaster RadSafe Area). The post-closure requirements for CAU 407 are described in the CR (DOE/NV, 2001a). Revision 1 of the CR was approved by the NDEP on February 22, 2002. Section 5.2 of the CR calls for site inspections to be conducted within the first 6 months following completion of cover construction. After the first 6 months, site inspections are to be conducted twice yearly for the next 2 years. Previous inspections have noted erosion rills on the cover margins, and subsequent maintenance was completed to repair the rills and help prevent future erosion; consequently, inspections will continue until the site stabilizes.

Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 5 of Attachment A. The site inspections were conducted according to the CAU 407 post-closure inspection plan (Attachment B). In addition to site inspections, vegetation monitoring of the site was conducted in June 2006, and the results are included in Attachment F.

## **2.3.2 CAU 407 Inspection Results**

### **2.3.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. The inspection indicated the cover was in good condition, and local grasses were becoming established on the cover. Many small animal burrows were present along the southern edge of the fencing, and options for mitigating burrowing were considered. Additionally, the southeast corner fence post required reinforcing, and one warning sign required reattachment. Otherwise, the fence and warning signs were intact and in good condition.

### **2.3.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. Repairs made to the fencing and signs in June 2006 were in good condition. No animal burrows were observed inside the fence, and no erosion cracks or subsidence of the cover was observed during the inspection. The fencing, signage, and cover were in good condition. No maintenance or repairs were recommended.

## **2.3.3 CAU 407 Maintenance and Repairs**

A loose radiological warning sign was reattached, and the southeast corner fence post was reinforced in June 2006.

## **2.3.4 CAU 407 Conclusions and Recommendations**

This site was in good condition. Vegetation on the cover had decreased by nearly 50 percent during the 2005-2006 reporting period. The site inspections should continue as scheduled, and the health of the vegetation and integrity of the cover should continue to be monitored until the site has stabilized.

## **2.4 CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT, BUILDING 0360 (TTR)**

### **2.4.1 Introduction**

CAU 423, Area 3 Underground Discharge Point, Building 0360 (TTR), consists of one CAS (CAS 03-02-002-0308, Underground Discharge Point). CAU 423 was closed in place, with one warning sign and one at-grade monument installed, as detailed in the CR (DOE/NV, 1999a). The CR did not originally require post-closure inspections. A Record of Technical Change (ROTC) to the CR (NNSA/NSO, 2005), specifying the post-closure inspection requirements, was approved by NDEP on June 6, 2005 (Attachment B). Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 6 of Attachment A.

## **2.4.2 CAU 423 Inspection Results**

### **2.4.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. The warning sign and at-grade monument were in excellent condition, and no site issues were observed.

#### **2.4.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. The site was in excellent condition, and the warning sign and at-grade monument were in good condition. As per direction from the U.S. Department of Energy, National Nuclear Security Administration (NNSA), a waste oil line running to an underground discharge point will be removed or closed in place as a best management practice. Closure activities are scheduled for 2007.

#### **2.4.3 CAU 423 Maintenance and Repairs**

No maintenance or repairs at CAU 423 were required in 2006.

#### **2.4.4 CAU 423 Conclusions and Recommendations**

The warning sign and at-grade monument were in good condition. The site inspections should continue as scheduled.

### **2.5 CAU 424: AREA 3 LANDFILL COMPLEXES (TTR)**

#### **2.5.1 Introduction**

CAU 424, Area 3 Landfill Complexes (TTR), consists of eight CASs. Seven landfill cells (CAS 03-08-001-A301, Landfill Cell A3-1; CAS 03-08-002-A302, Landfill Cell A3-2; CAS 03-08-002-A303, Landfill Cell A3-3; CAS 03-08-002-A304, Landfill Cell A3-4; CAS 03-08-002-A305, Landfill Cell A3-5; CAS 03-08-002-A306, Landfill Cell A3-6; and CAS 03-08-002-A308, Landfill Cell A3-8) were closed with soil covers and require post-closure inspections. CAS 03-08-002-A307, Landfill Cell A3-7, was not used as a landfill site and was closed without taking any corrective action. CAU 424 closure activities included removing small volumes of soil containing petroleum hydrocarbons, repairing cell covers that were cracked and/or had subsided, and installing above-grade and at-grade monuments to mark the corners of the landfill cells. Post-closure requirements for CAU 424 are detailed in the CR, which was approved by NDEP in July 1999 (DOE/NV, 1999b).

Site inspections of the seven CASs were conducted on May 9, 2006, and November 15, 2006. The site inspections were conducted according to the CAU 424 post-closure inspection plan (Attachment B). A diagram showing the landfill locations is presented in Figure 7 of Attachment A.

#### **2.5.2 CAU 424 Inspection Results**

##### **2.5.2.1 First Semiannual Inspection**

The first site inspection was conducted on May 9, 2006.

##### **Landfill Cell A3-1 (CAS 03-08-001-A301)**

Landfill Cell A3-1 is located at the north end of CAU 424 and is the largest of the landfill cells. The cover and seven above-grade concrete monuments that demarcate the landfill cell were examined. All signs, survey markers, and monuments were in good condition. Vegetation is established throughout the site and no cracking, erosion, or subsidence of the cover was observed, though the surface did show the effects of weathering in some places.

#### Landfill Cell A3-2 (CAS 03-08-002-A302)

Landfill Cell A3-2 is located due south of Landfill Cell A3-1. The overall condition of the unit was good. All four above-grade monuments and the landfill cover were examined and found to be in good condition. All signs and brass survey markers were legible and intact. No signs of erosion, subsidence, or evidence of unauthorized use were observed, though the surface did show the effects of weathering in some places.

#### Landfill Cell A3-3 (CAS 03-08-002-A303)

Landfill Cell A3-3 straddles the western fence of the TTR Area 3 Compound, with the portion of the landfill outside the fence marked by three above-grade monuments, and the portion inside the fence marked by three at-grade monuments. The overall condition of the site was good. All six monuments were located and inspected. All monuments, brass survey markers, and warning signs were in good condition. No subsidence, cracking, or erosion was observed. Sparse vegetation was present near the above-grade monuments, but none was present near the at-grade monuments. No issues or concerns were observed for this site.

#### Landfill Cell A3-4 (CAS 03-08-002-A304)

Landfill Cell A3-4 is located south of Dykes Drive at the south end of the CAU. The overall condition of the site was good, and vegetation is established throughout the site. Five above-grade monuments and one at-grade brass survey marker were located and inspected. All monuments, the brass survey marker, and warning signs were in good condition. No issues or concern were raised as a result of this inspection.

#### Landfill Cell A3-5 (CAS 03-08-002-A305)

Landfill Cell A3-5 is located west of Moody Avenue inside a fenced area in Area 10 south of the Air Force First-Aid Station. All four above-grade monuments and attached warning signs and brass survey markers were located and found to be in excellent condition. No evidence of subsidence, cracking, or erosion was observed, and sparse vegetation is present. The overall condition of the site is good.

#### Landfill Cell A3-6 (CAS 03-08-002-A306)

Landfill Cell A3-6 is located immediately west and outside of the fence of the TTR Area 3 Compound. All four above-grade monuments and attached warning signs and brass survey markers were located and found to be in good condition. The overall condition of the landfill cover was good. No evidence of subsidence, cracking, or erosion was observed, and there were no issues or concerns with this site.

#### Landfill Cell A3-8 (CAS 03-08-002-A308)

Landfill Cell A3-8 is located southwest of the Area 3 Compound in the box car storage yard. Three of the four at-grade brass markers were located and determined to be in good condition. The southwest corner monument was not located due to its location in a posted radioactive materials area and the presence of surface debris. There was no indication that the debris was impacting the condition of the monument. The monument will be examined in future inspections when the surface debris is removed. No erosion, subsidence, or evidence of unauthorized use was observed at the site. The overall condition of the cover was good.



### **2.5.2.2 Second Semi-Annual Inspection**

The second inspection was conducted on November 15, 2006.

#### Landfill Cell A3-1 (CAS 03-08-001-A301)

All signs and survey markers were intact and legible. The seven above-grade monuments were in good condition. No cracking, erosion, or evidence of unauthorized use of the cover was observed. The overall condition of the site was good. No maintenance or repairs were recommended.

#### Landfill Cell A3-2 (CAS 03-08-002-A302)

The four above-grade monuments were located and found to be in good condition. The signs and brass survey markers were also in good condition. Vegetation was widely dispersed on the cover. The overall condition of the unit was good. No maintenance or repairs were recommended.

#### Landfill Cell A3-3 (CAS 03-08-002-A303)

The three above-grade monuments and three at-grade monuments were located and inspected. All monuments, brass survey markers, and signs were in good condition. No subsidence or erosion was observed. No issues or concerns were observed for this site, and no maintenance or repairs were recommended.

#### Landfill Cell A3-4 (CAS 03-08-002-A304)

The five above-grade monuments and one at-grade brass survey marker were located and inspected. All monuments, the brass survey marker, and warning signs were in good condition. The cover showed no erosion, subsidence, or evidence of unauthorized use, and the vegetation was healthy and well established. No maintenance or repairs were required.

#### Landfill Cell A3-5 (CAS 03-08-002-A305)

The four above-grade monuments were located and inspected. The monuments, attached warning signs, and survey markers were in good condition. The vegetation growing on the cover was healthy. No evidence of subsidence, cracking, or erosion was observed. The overall condition of the landfill cover was good. No maintenance or repairs were required.

#### Landfill Cell A3-6 (CAS 03-08-002-A306)

The four above-grade monuments were located and inspected. The monuments and survey markers were in good condition. The warning signs were intact and legible. No evidence of subsidence, cracking, or erosion was observed. The overall condition of the site was good. No maintenance or repairs were required.

#### Landfill Cell A3-8 (CAS 03-08-002-A308)

Three of the four at-grade monuments were located and found to be in good condition. The southwest corner monument is located in a posted and fenced radioactive materials area where it cannot be visually inspected. The corner monument is also covered by debris, but does not appear to be impacted by the debris, and there is no sign of ground disturbance. No erosion,

subsidence, or cracking was observed. The overall condition of the site was good. No maintenance or repairs were required.

### **2.5.3 CAU 424 Maintenance and Repairs**

No maintenance or repairs at CAU 424 were required in 2006.

### **2.5.4 CAU 424 Conclusions and Recommendations**

All seven CASs in CAU 424 are in good condition. The site inspections should continue as scheduled to monitor the landfill soil covers, markers, and warning signs.

## **2.6 CAU 426: CACTUS SPRING WASTE TRENCHES (TTR)**

### **2.6.1 Introduction**

CAU 426, Cactus Spring Waste Trenches (TTR), consists of one CAS (CAS RG-08-001-RGCS, Waste Trenches). The post-closure requirements are described in the CR for CAU 426 (DOE/NV, 1998b), which was approved by NDEP on May 13, 1999.

Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 8 of Attachment A. The site inspections were conducted according to the CAU 426 post-closure inspection plan (Attachment B). In addition to site inspections, vegetation monitoring of the site was conducted in June 2006, and the results are included in Attachment F.

### **2.6.2 CAU 426 Inspection Results**

#### **2.6.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. The fence perimeter was walked, and the site was found to be in excellent condition. While some tightening to the perimeter fencing was advised, there was no damage to the perimeter fence or signs, which were intact and legible. No erosion, subsidence, or evidence of unauthorized use was observed. Vegetation was well established and healthy throughout the site. No site maintenance or repairs are needed; however, it was recommended to tighten the fence as a best management practice.

#### **2.6.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. The overall condition of the unit was good. The fence was in excellent condition. The fence had been tightened in June 2006, as advised during the first semiannual inspection, and the wire mesh along the base of the fence was intact. Several small animal burrows were noted around the fence, but it was determined that they did not affect the integrity of the unit. The signs were legible and in good condition. The vegetation was healthy and has stabilized the soil cover. No subsidence, cracking, or evidence of unauthorized use was observed. No maintenance or repairs were recommended.

### **2.6.3 CAU 426 Maintenance and Repairs**

The perimeter fencing adjacent to the gate at CAU 426 was tightened in June 2006. No additional maintenance or repairs were performed during 2006.

## **2.6.4 CAU 426 Conclusions and Recommendations**

The cover, fence, and posted warning signs were all in excellent condition. Plant growth on the cover exceeds revegetation standards, and removal of the cover fence may be considered during the next reporting period. The site inspections should continue as scheduled.

## **2.7 CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2, 6 (TTR)**

### **2.7.1 Introduction**

CAU 427, Area 3 Septic Waste Systems 2, 6 (TTR), consists of two CASs (CAS 03-05-002-SW02, Septic Waste System; and CAS 03-05-002-SW06, Septic Waste System). The closed leachfields are located in the TTR Area 3 compound in a high-traffic area. For this reason, the leachfield corners are marked by subsurface metal markers each covered with red cinder rock to the ground surface. The red rock aids in visually locating the markers during site inspections. Post-closure requirements for CAU 427 are detailed in the CR for CAU 427 (DOE/NV, 1999c), which was approved by NDEP on August 27, 1999.

Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 9 of Attachment A. The site inspections were conducted according to the CAU 427 post-closure inspection plan (Attachment B).

### **2.7.2 CAU 427 Inspection Results**

#### **2.7.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. All 21 subsurface metal markers were located at the corners of Leachfield A (four markers), Leachfield B (four markers), Abandoned Leachfield (four markers), Pre-1965 Leachfield (four markers), and Septic Tank 33-5 (five markers). The five warning signs were intact, in place, and legible. The site was observed to be in excellent condition, and no maintenance or repairs were recommended.

#### **2.7.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. All 21 subsurface metal markers were located at the corners of Leachfield A (four markers), Leachfield B (four markers), Abandoned Leachfield (four markers), Pre-1965 Leachfield (four markers), and Septic Tank 33-5 (five markers). The five warning signs were located and found to be in good condition. No vegetation was present, and no evidence of subsidence, erosion, or intrusive activities into the use restricted areas was noted. The overall condition of the site was excellent. No maintenance or repairs were recommended.

### **2.7.3 CAU 427 Maintenance and Repairs**

No maintenance or repairs at CAU 427 were required in 2006.

### **2.7.4 CAU 427 Conclusions and Recommendations**

Overall the site was in excellent condition, and site inspections should continue as scheduled. The use of red rock to delineate each use-restriction marker was very effective, and no issues were associated with this site.

## **2.8 CAU 453: AREA 9 UXO LANDFILL (TTR)**

### **2.8.1 Introduction**

CAU 453, Area 9 UXO Landfill (TTR), consists of one CAS (CAS 09-55-001-0952, Area 9 Landfill). Post-closure requirements for CAU 453 are described in the CR for CAU 453 (DOE/NV, 1999d), which was approved by NDEP on September 10, 1999.

Site inspections were conducted on May 31, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 10 of Attachment A. The site inspections were conducted according to the CAU 453 post-closure inspection plan (Attachment B).

### **2.8.2 CAU 453 Inspection Results**

#### **2.8.2.1 First Semiannual Inspection**

The first inspection was conducted on May 31, 2006. The fence, signs, 16 above-ground monuments, and covers were all in excellent condition. However, several large animal burrows were noted during the inspection which required follow-up action.

#### **2.8.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. The fence, signs, and 16 above-grade monuments were in good condition. Small burrows were observed but did not impact the integrity of the cover or necessitate any follow-up action.

### **2.8.3 CAU 453 Maintenance and Repairs**

Large animal burrows observed during the initial CAU 453 inspection were backfilled in June 2006.

### **2.8.4 CAU 453 Conclusions and Recommendations**

The fence, posted warning signs, and monuments are all in good condition. The site inspections should continue as scheduled.

## **2.9 CAU 487: THUNDERWELL SITE (TTR)**

### **2.9.1 Introduction**

CAU 487, Thunderwell Site (TTR), consists of one CAS (CAS RG-26-001-RGRV, Thunderwell Site). The Corrective Action Decision Document (CADD)/CR was approved by NDEP on December 17, 2001 (DOE/NV, 2001b). Buried waste and debris were present at the site but no contamination was found. Use restrictions were implemented at the site as explained in the CADD/CR, but no post-closure inspections were proposed. Two separate use restrictions were implemented to address areas associated with subsurface geophysical anomalies (anomalies A-8 and A-17). Concrete monuments were installed at both locations of buried waste. A ROTC to modify the CADD/CR to include post-closure inspections and use restriction information was approved by NDEP on July 30, 2004 (NNSA/NSO, 2004).

Site inspections were conducted on May 9, 2006, and November 15, 2006. A diagram showing the site location and configuration is presented in Figure 11 of Attachment A.

## **2.9.2 CAU 487 Inspection Results**

### **2.9.2.1 First Semiannual Inspection**

The first inspection was conducted on May 9, 2006. All warning signs were in place, intact, and legible. At anomaly A-8, one monument showed evidence of cracking and was repaired using sealant. At anomaly A-17, two monuments showed evidence of cracking and were repaired with sealant.

### **2.9.2.2 Second Semiannual Inspection**

The second inspection was conducted on November 15, 2006. All monuments were observed to be in good condition, and warning signs were in place and legible. No site issues were observed during this inspection. No maintenance or repairs were recommended.

## **2.9.3 CAU 487 Maintenance and Repairs**

During the May 9, 2006, inspection, cracking observed in three monuments was repaired using sealant.

## **2.9.4 CAU 487 Conclusions and Recommendations**

The site was observed to be in excellent condition in 2006, and site inspections should continue as scheduled.

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## **3.0 SUMMARY**

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### **3.1 CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL (TTR)**

Site inspections at CAS TA-55-001-TAB2, Ordnance Disposal Pit (Bomblet Pit), indicated that the site is in excellent condition, while site inspections at CAS TA-19-001-05PT, Ordnance Disposal Pit (Five Points Landfill), indicated a dramatic loss of vegetation due to apparent flooding. Aside from the chicken wire fence, all fencing, signs, and vegetation are in good condition. Maintenance was conducted on the chicken wire fence at the Bomblet Pit site in June 2006. Site inspections should continue as scheduled, and an ecological specialist will evaluate vegetation conditions during 2007. The NNSA and NDEP recommendation for removing fencing after the 2006 inspections if the vegetation had matured to the same extent as the surrounding areas was not implemented.

### **3.2 CAU 404: ROLLER COASTER LAGOONS AND TRENCH (TTR)**

Both site inspections indicated that the site was in good condition, and there was no damage noted to the fencing, signs, or cover. No animal burrowing was noted, and no maintenance or repairs were needed. The site was in good condition, and site inspections should continue as scheduled.

### **3.3 CAU 407: ROLLER COASTER RADSAFE AREA (TTR)**

Site inspections indicated that the cover and warning signs were in good condition, and local grasses were becoming established. Small animal burrows were observed outside the fence but do not affect the integrity of the unit. Repairs to a fence post and a warning sign were made in June 2006. The site was in good condition, and site inspections should continue as scheduled.

### **3.4 CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT, BUILDING 0360 (TTR)**

Site inspections indicated that the unit was in good condition. The warning sign and at-grade monument remained in good condition. No maintenance or repairs at CAU 423 were necessary in 2006. The removal of the oil line is scheduled for 2007. The site was in good condition, and site inspections should continue as scheduled.

### **3.5 CAU 424: AREA 3 LANDFILL COMPLEXES (TTR)**

Site inspections indicated that all signs and survey markers were in good condition. No subsidence, cracking, or evidence of unauthorized use of the cover was observed. All monuments were located and found to be in good condition. No repairs were necessary during 2006. The site is in excellent condition, and inspections should continue as scheduled.

### **3.6 CAU 426: CACTUS SPRING WASTE TRENCHES (TTR)**

The site inspections indicated that the site was in good condition. All signs were intact, in place, and legible, and the fence and cover were in good condition. As a best management practice, the fence was tightened in June 2006. Some small animal burrows were noted near to the fence, but

do not affect the integrity of the unit. The site was in good condition, and site inspections should continue as scheduled.

### **3.7 CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2, 6 (TTR)**

Site inspections at CAU 427 revealed that all warning signs and markers were intact and legible. The use of red rocks to delineate marker locations was effective. Overall, the site was in good condition, and site inspections should continue as scheduled.

### **3.8 CAU 453: AREA 9 UXO LANDFILL (TTR)**

Site inspections indicated that the fence, signs, and monuments were in good condition. During the first site inspection, several large animal burrows were identified, which were repaired in June 2006. Otherwise, the site was in excellent condition, and site inspections should continue as scheduled.

### **3.9 CAU 487: THUNDERWELL SITE (TTR)**

During the first site inspection three monuments were reported to be cracked. These monuments were repaired with sealant during the first inspection. The site appeared in good condition, and all monuments were upright, in place, and legible. Site inspections should continue as scheduled.



## 4.0 REFERENCES

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DOE/NV, see U.S. Department of Energy, Nevada Operations Office.

NNSA/NSO, see U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office.

U.S. Department of Energy, Nevada Operations Office. 1997. *Tonopah Test Range Closure Sites Revegetation Plan*, DOE/NV/11718-115 UC-702. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1998a. *Closure Report for Corrective Action Unit 404: Roller Coaster Sewage Lagoons and North Disposal Trench, Tonopah Test Range, Nevada*, DOE/NV/11718-187 UC-702. Las Vegas, NV.

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U.S. Department of Energy, Nevada Operations Office. 1999a. *Closure Report for Corrective Action Unit 423: Area 3 Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada*, DOE/NV/11718--319. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1999b. *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complexes, Tonopah Test Range, Nevada*, DOE/NV/11718--283. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1999c. *Closure Report for Corrective Action Unit 427: Area 3 Septic Waste Systems 2 and 6, Tonopah Test Range, Nevada*, DOE/NV/11718--326. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1999d. *Closure Report for Corrective Action Unit 453: Area 9 UXO Landfill, Tonopah Test Range, Nevada*, DOE/NV/11718--284. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001a. *Closure Report for Corrective Action Unit 407: Roller Coaster RadSafe Area, Tonopah Test Range, Nevada*, DOE/NV/11718--694-REV1. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001b. *Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada*, DOE/NV/11718--761. Las Vegas, NV.

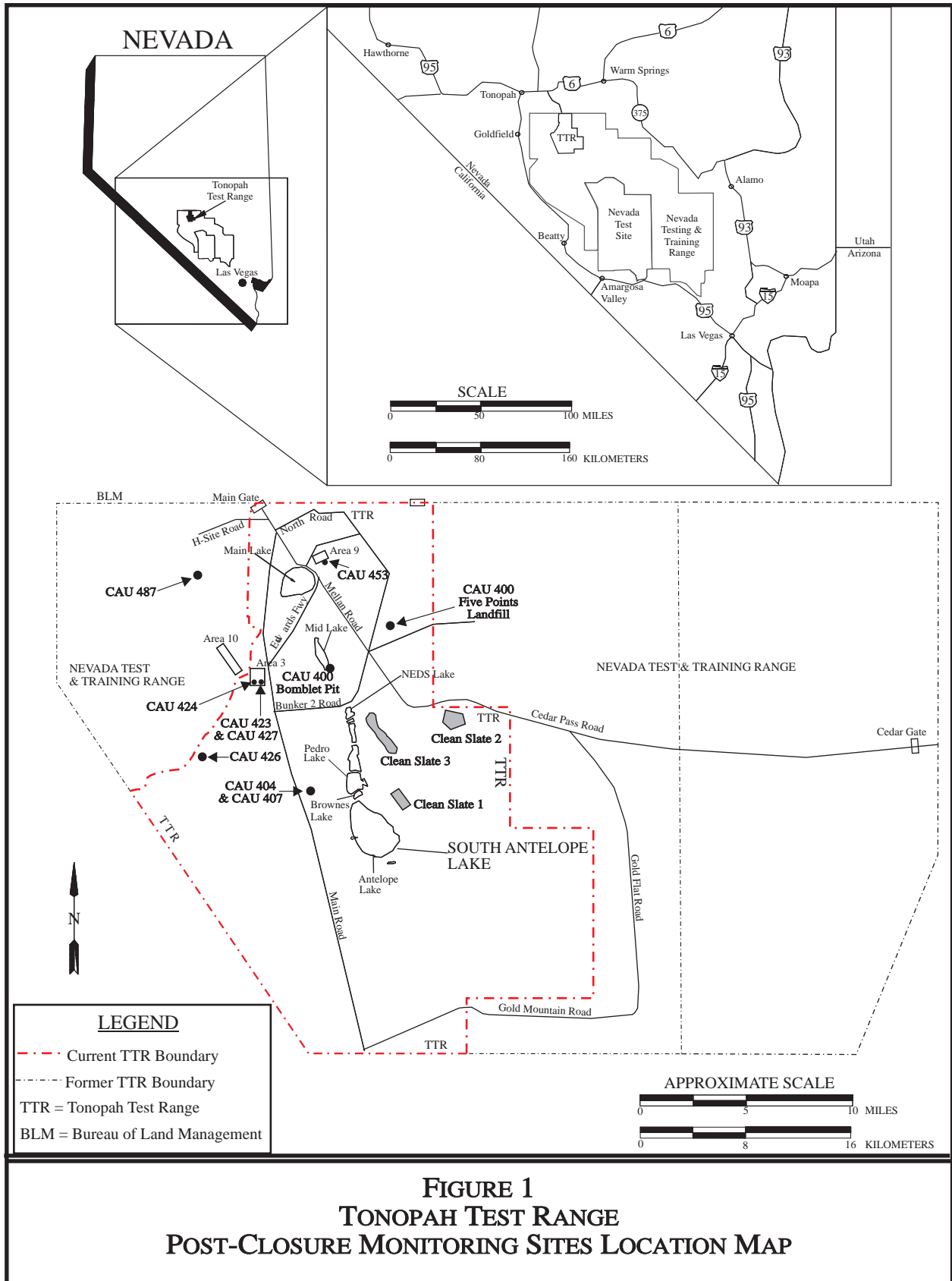
U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2004. *Record of Technical Change No. 2 for the Final Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada*, Revision 0, November 2001. Las Vegas, NV.

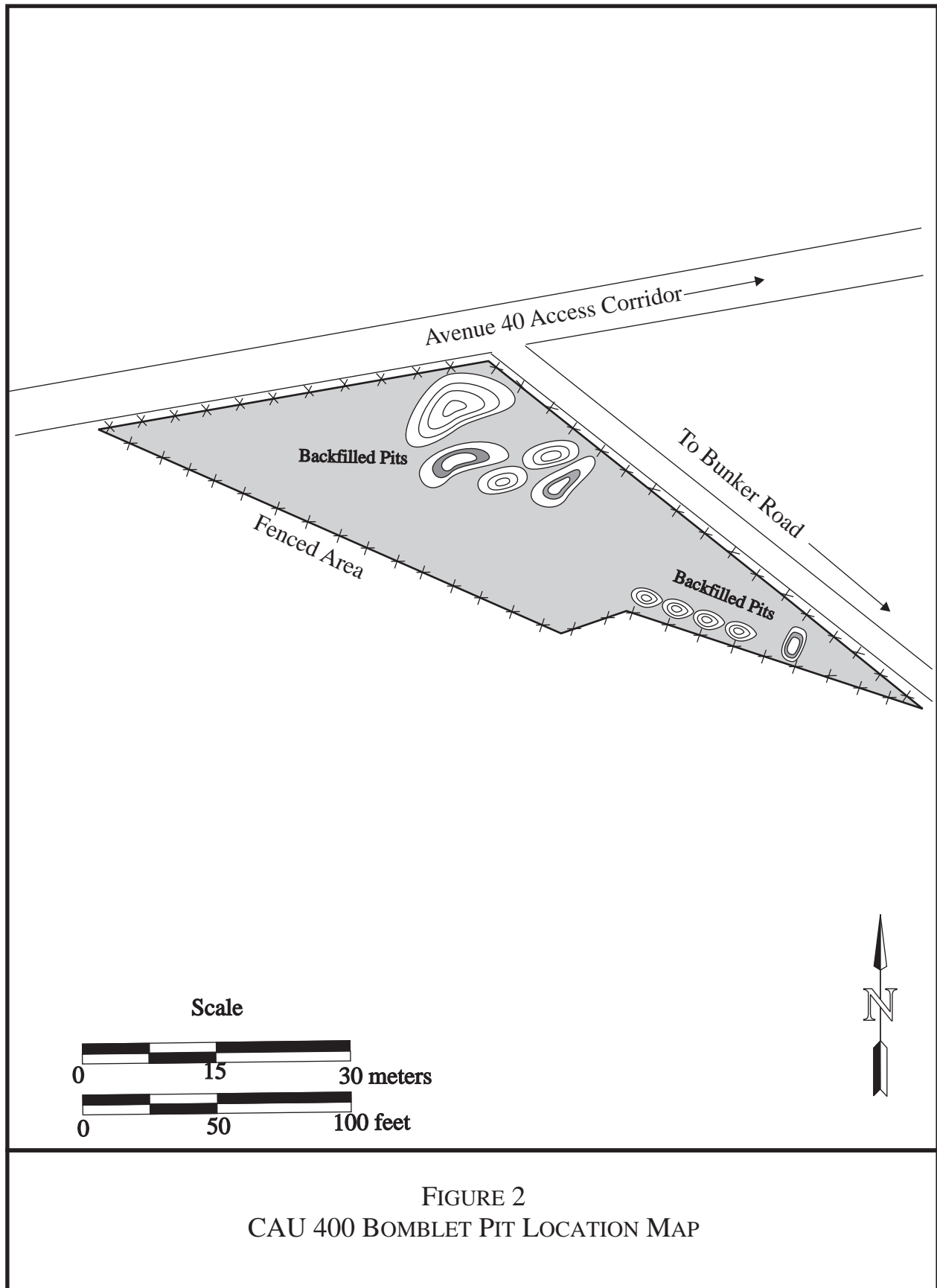
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2005. *Record of Technical Change No. CR-1 for the Final Closure Report for  
Corrective Action Unit 423: Area 3 Building 0360 Underground Discharge Point,  
Tonopah Test Range, Nevada*, Revision 0, July 1999. Las Vegas, NV.

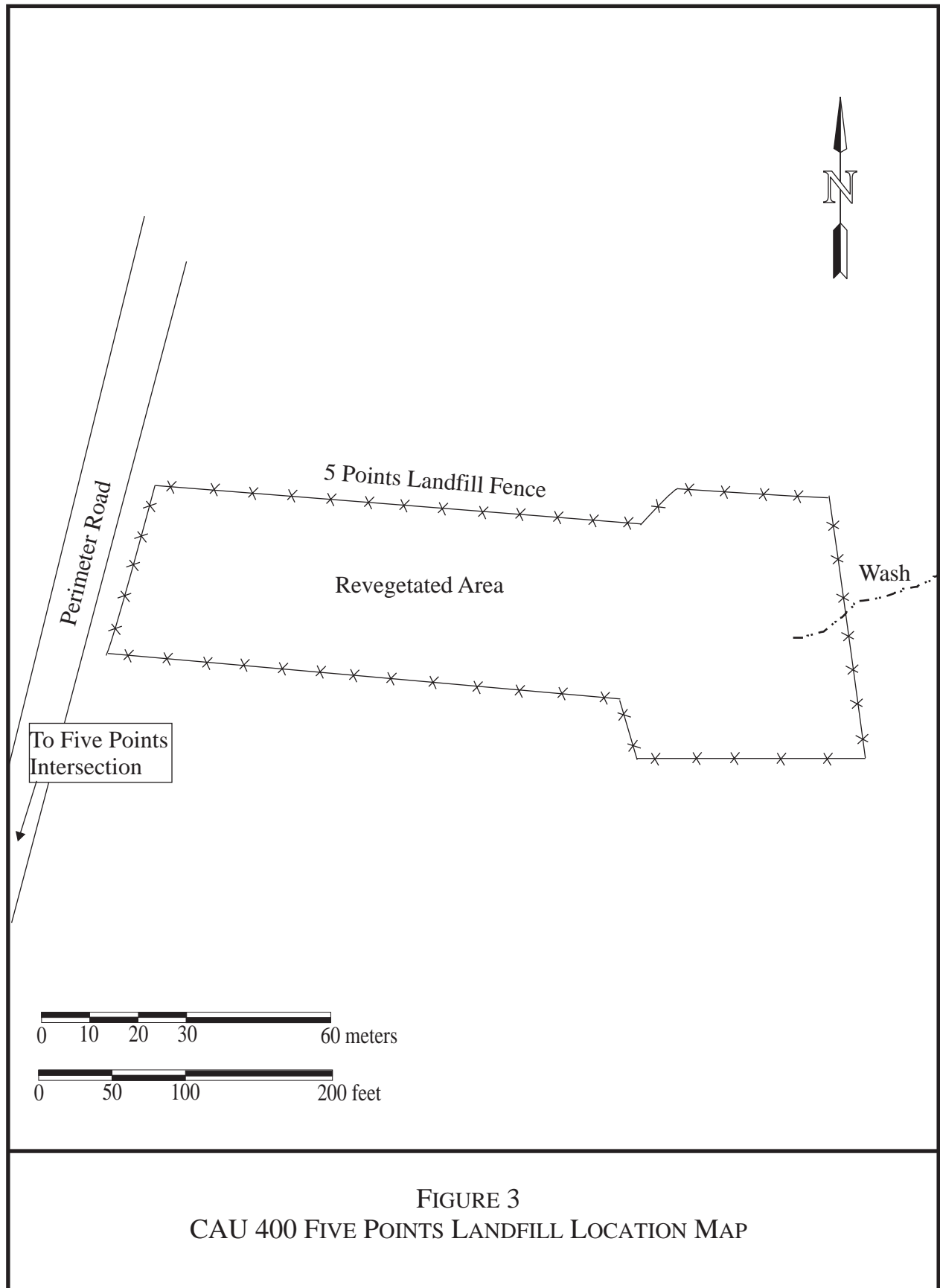
## **ATTACHMENT A**

### **FIGURES**

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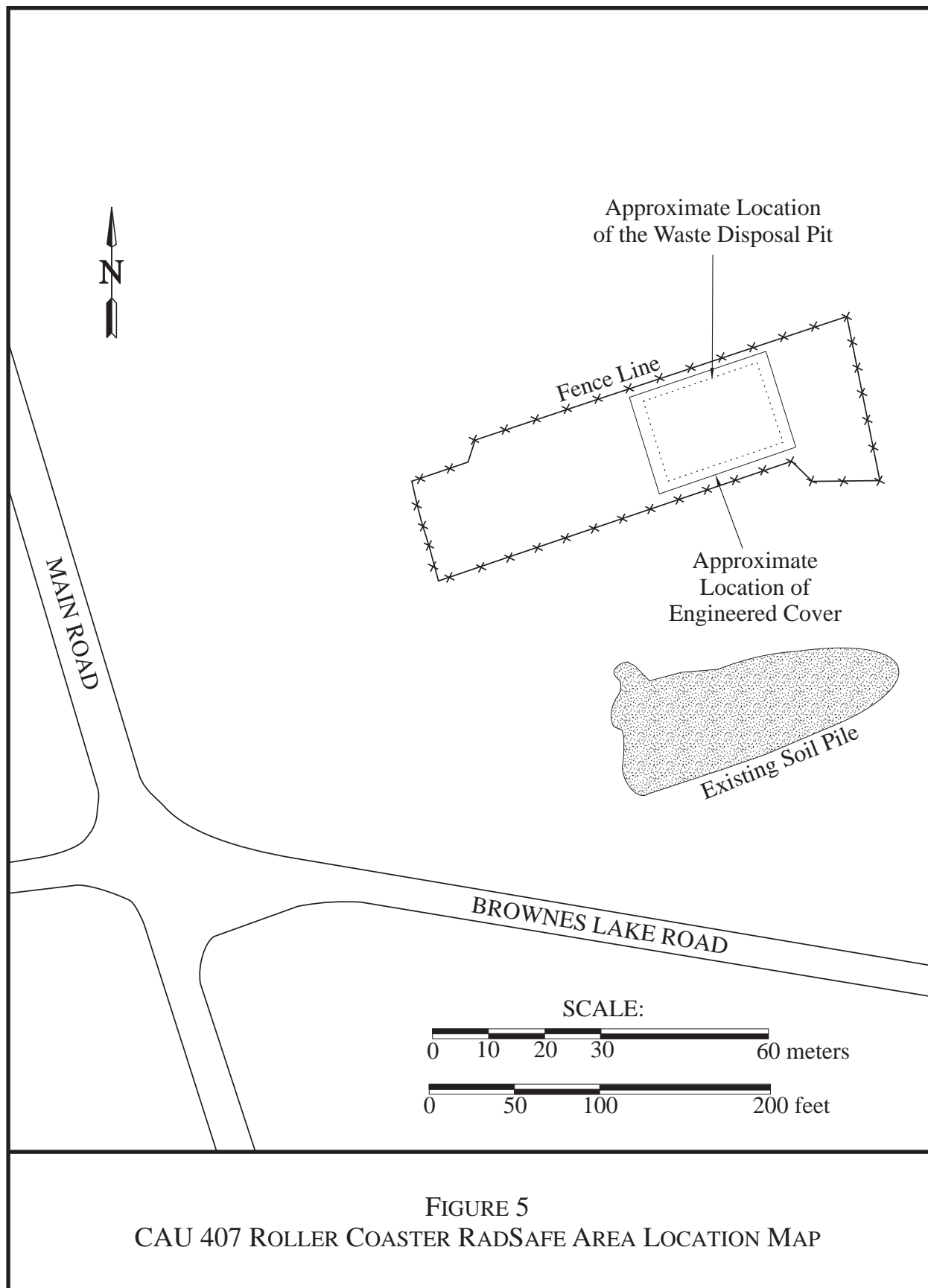


FIGURE 5  
CAU 407 ROLLER COASTER RADSAFE AREA LOCATION MAP

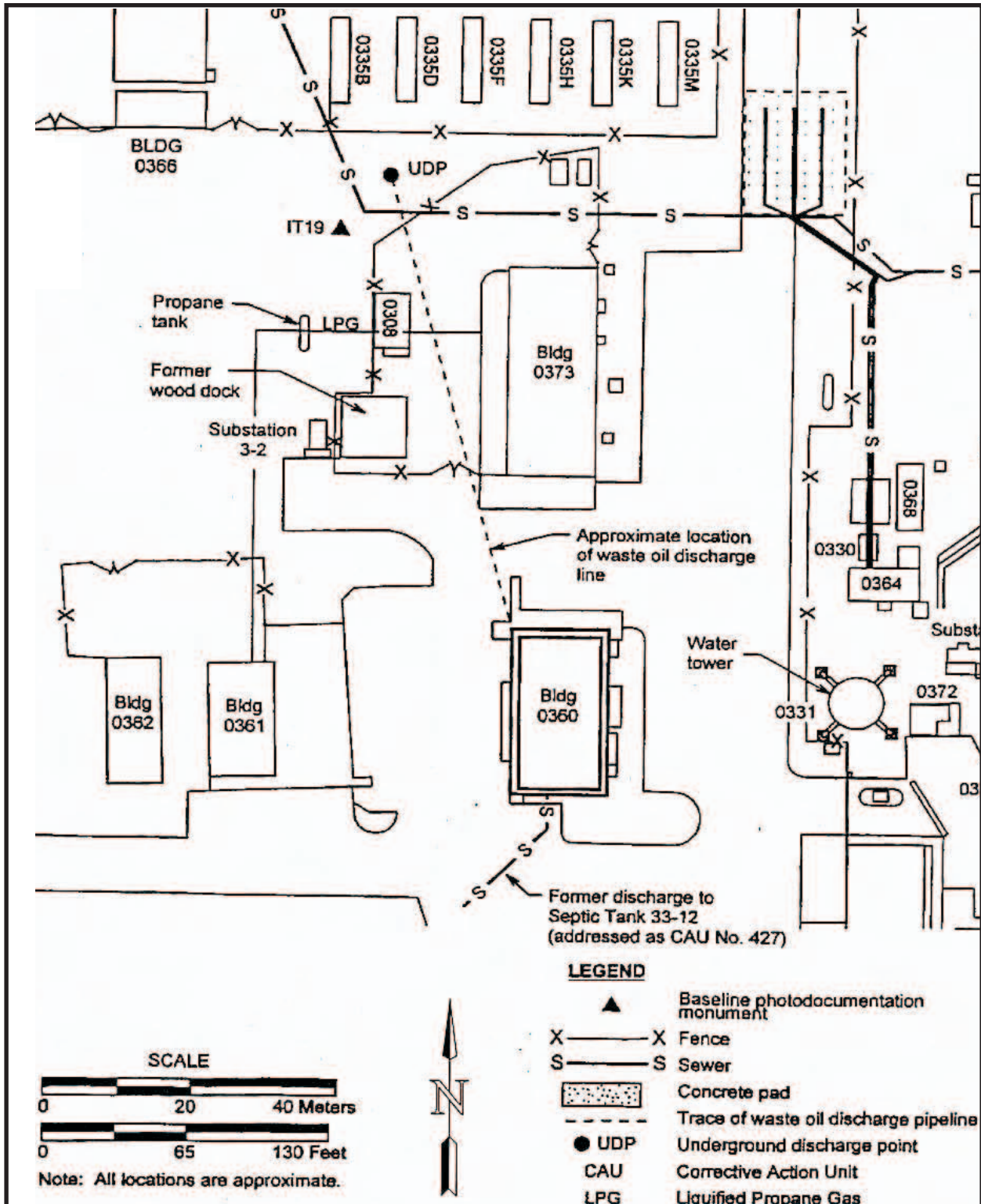
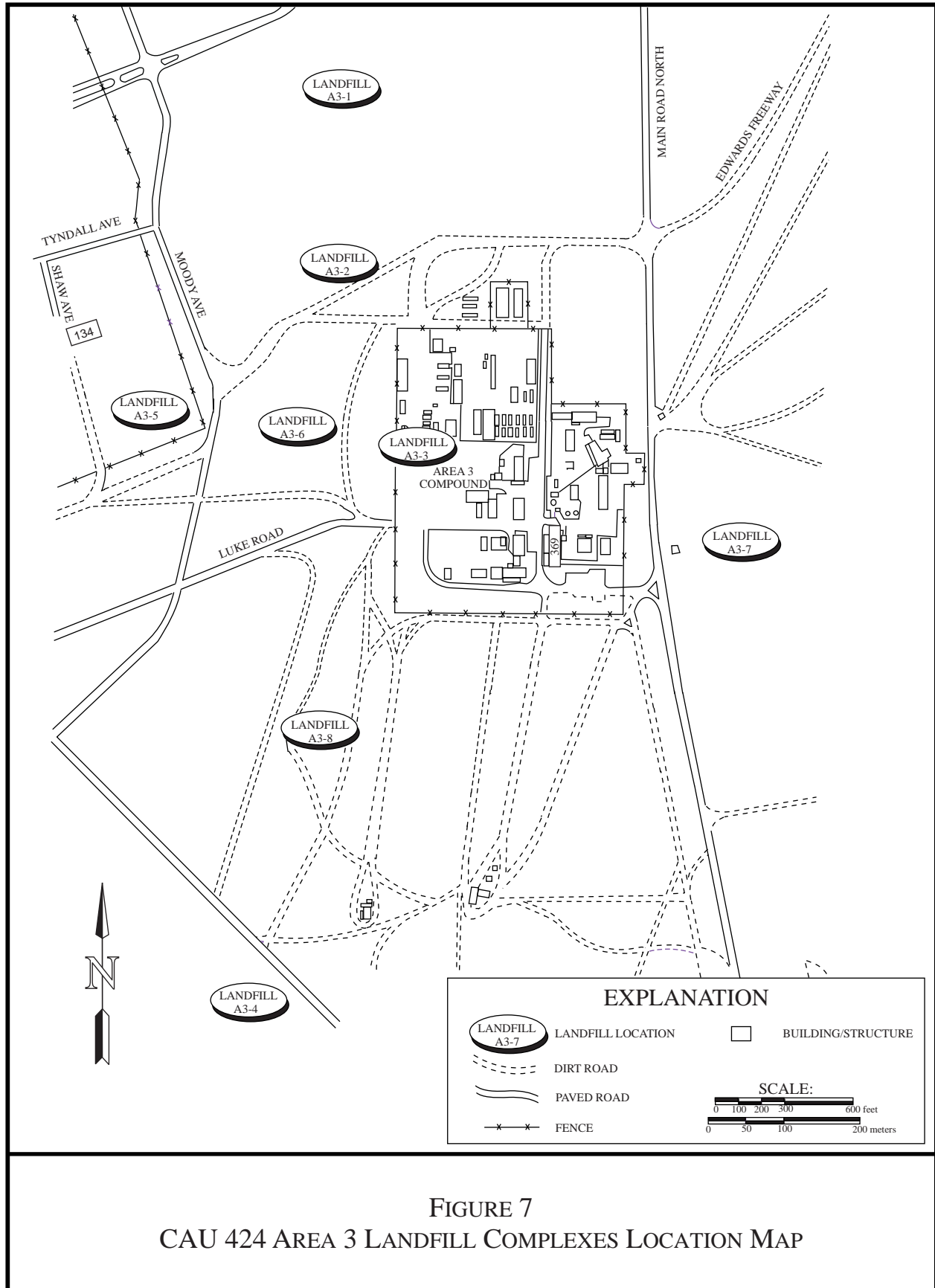


FIGURE 6  
CAU 423 AREA 3 UNDERGROUND DISCHARGE POINT,  
BUILDING 0360 LOCATION MAP



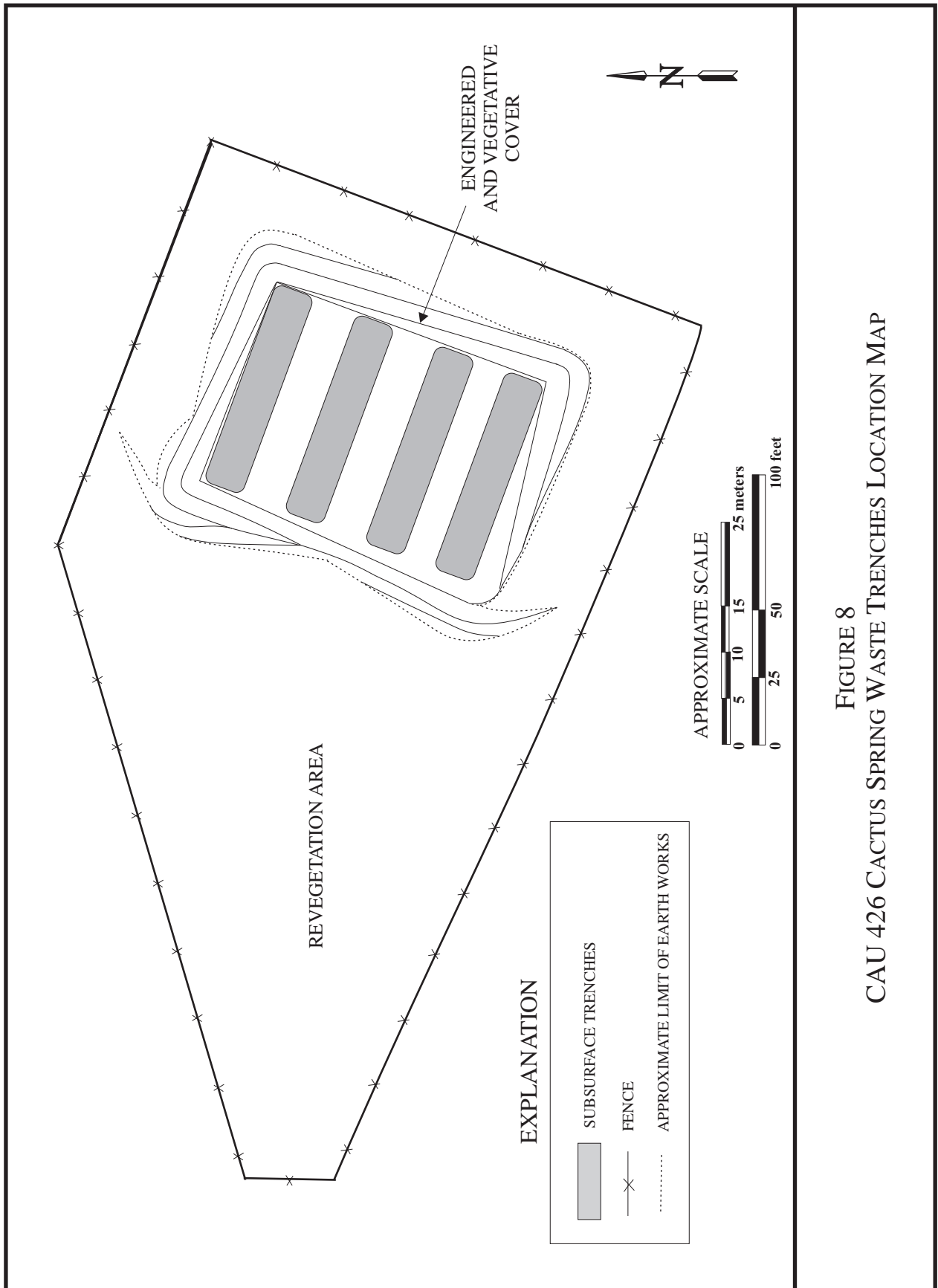


FIGURE 8  
CAU 426 CACTUS SPRING WASTE TRENCHES LOCATION MAP

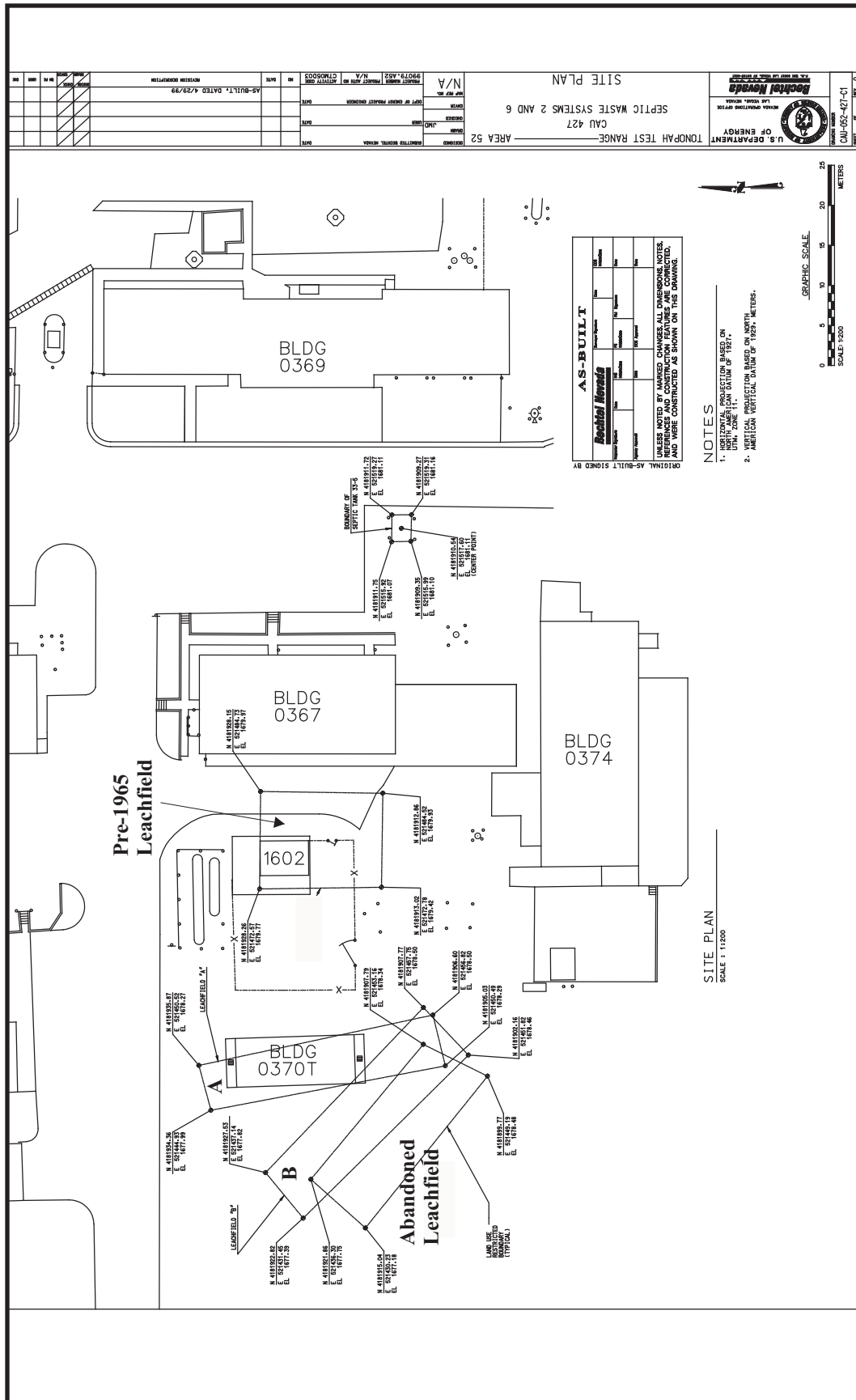
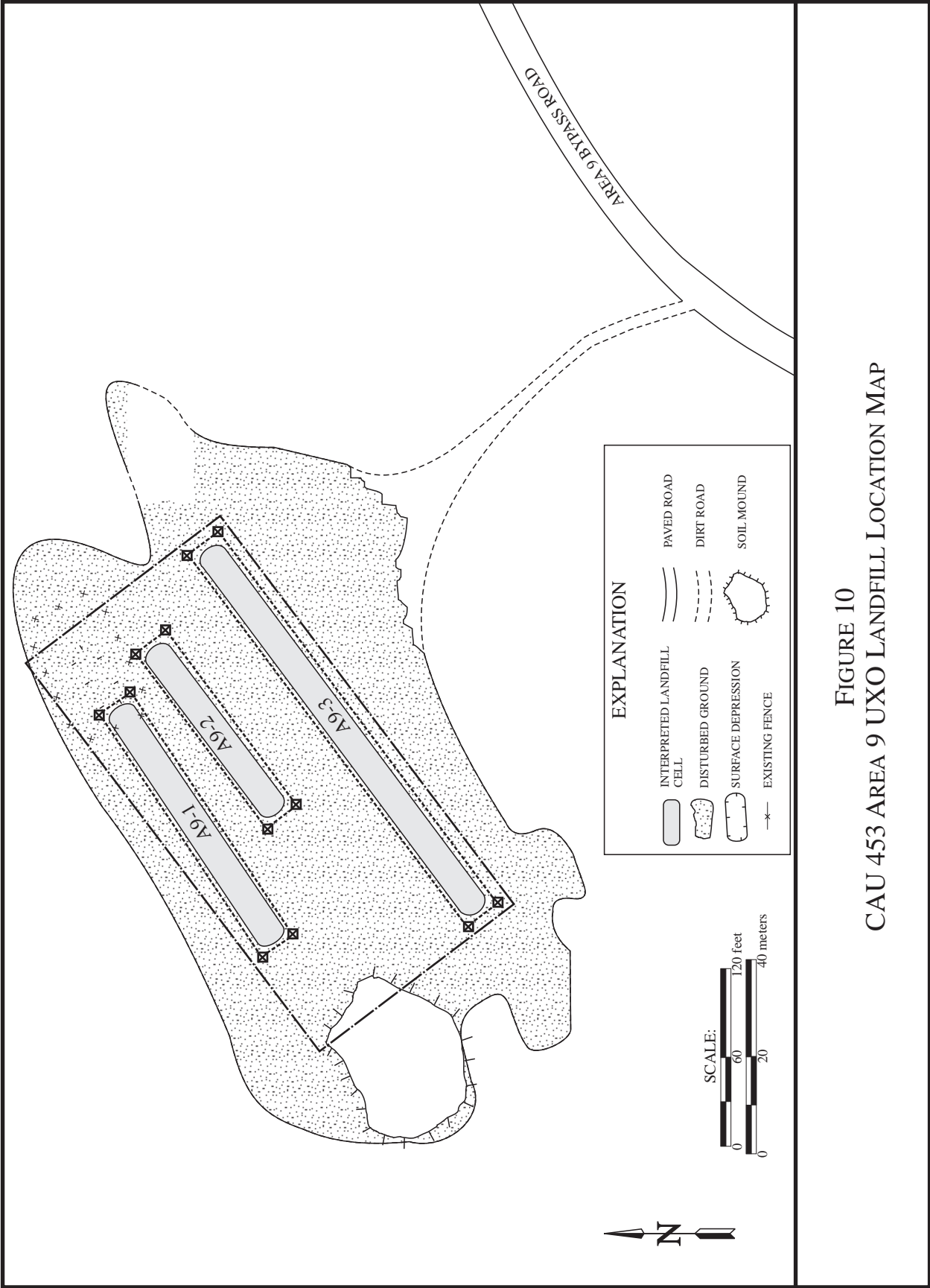
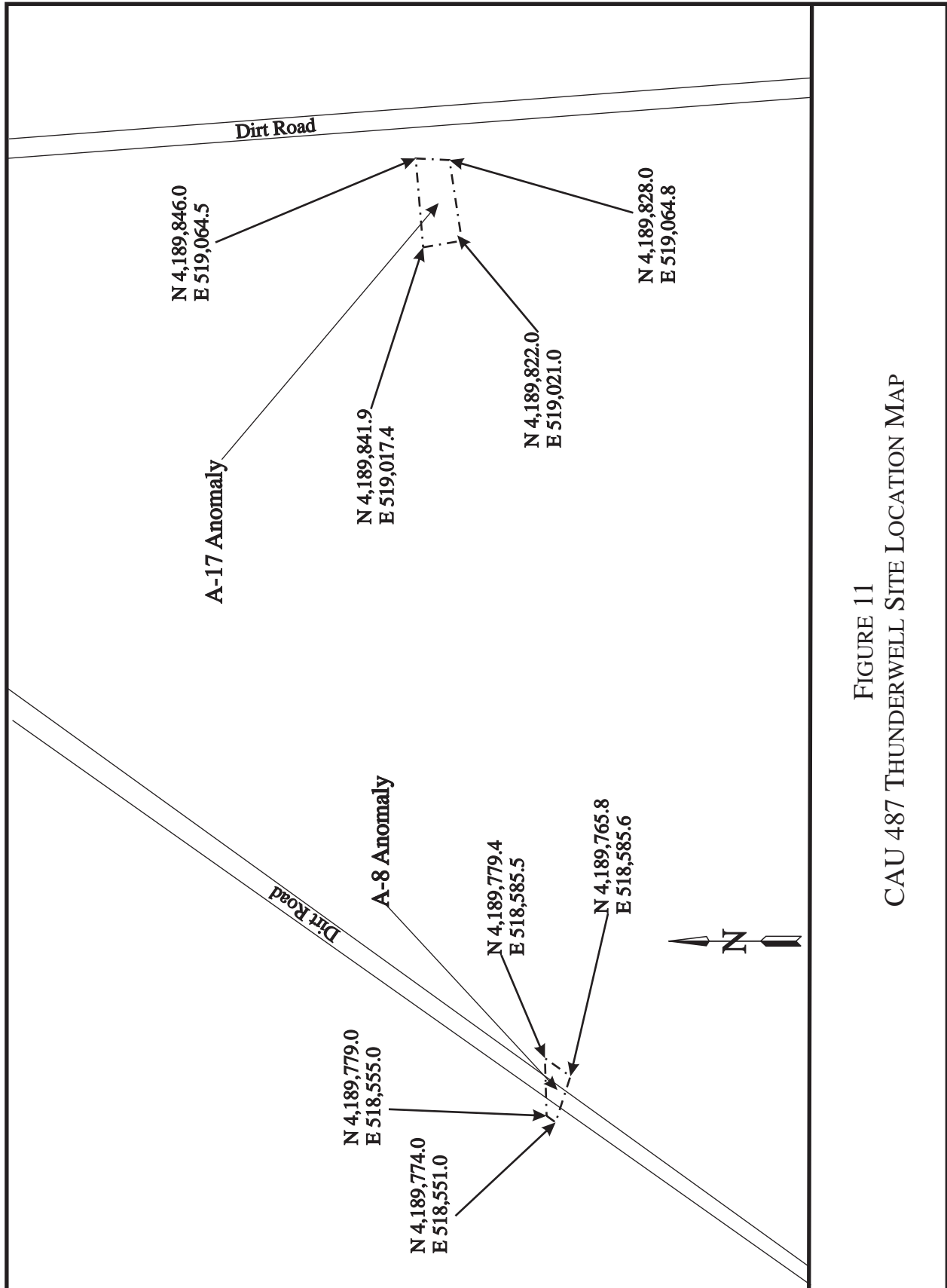


FIGURE 9  
CAU 427 AREA 3 SEPTIC WASTE SYSTEMS 2, 6 LOCATION MAP





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**ATTACHMENT B.**  
**POST-CLOSURE INSPECTION PLANS**

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## **CORRECTIVE ACTION UNIT (CAU) 404: ROLLER COASTER LAGOONS AND TRENCH POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved CAU 404 CR, Closure Report for Corrective Action Unit 404: Roller Coaster Sewage Lagoons and North Disposal Trench, Tonopah Test Range, Nevada, Revision 0, September 1998, DOE/NV-11718-187 UC-702. Las Vegas, Nevada

Post-Closure monitoring of the covers is intended to determine:

- If maintenance repairs to the perimeter fence are required.
- If remedial action is necessary to establish a vegetative cover.
- If maintenance and repairs to the engineered cover is required.
- When a cessation to post-closure monitoring can be proposed.

### **POST-CLOSURE MONITORING**

The monitoring will consist of biannual (twice per year) visual inspections of:

- The cover for condition (subsidence, significant erosion, unauthorized excavation, etc.) and plant development.
- The fence and signs to determine if repairs are required.

Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remediated within 90 days of discovery and documented in writing at the time of repair. Additional revegetation work would be conducted during the next revegetation window (October to February).

Intrusion into or sampling of the impacted materials in the East or West Sewage Lagoon is not proposed during the post-closure monitoring period.

Monitoring of the vegetative cover will be conducted during the first, third, and fifth year after revegetation. Monitoring during the first year will determine if germination of seeded plant species has occurred. By the third year, plant establishment will be evaluated. By the fifth year, the objective of determining if burrowing animals have moved onto the site and to what depth they might be expected to penetrate the cover. The erosion condition of the soil will be evaluated using a qualitative erosion condition classification developed by the Bureau of Land Management. Information gathered will be compared to natural conditions and will be used in assessing whether or not remedial action is necessary so that a viable vegetative cover is established.

## **ANNUAL REPORTING**

An annual report will be prepared that will provide the observations and describe 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.

## **DURATION**

The biannual inspections will be performed for five years after the planting of the vegetative covers, and will be documented on inspection forms.

Completion of post-closure monitoring of CAU 404 may be proposed after two consecutive years of visual inspections have not indicated the need to revegetate or provide maintenance to the vegetative covers. Completion of post-closure monitoring may be proposed within five years after the original revegetation of the site and include the removal of the fence since the plants will have attained a maturity to not be significantly affected by the grazing of wild horses.

## **CAU 407: ROLLER COASTER RADSAFE POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved CAU 407 CR, Closure Report for Corrective Action Unit 407: Roller Coaster RADSAFE Area, Tonopah Test Range, Nevada, Revision 1, December 2001, DOE/NV--694-rev 1. Las Vegas, Nevada

### **INSPECTIONS**

Inspections consist of visually inspecting the cover for signs of erosion, animal burrows, cracks, water ponding, vegetation, and inspecting the fencing and postings. Inspections will be performed twice during the first six months after construction of the cover has been completed. After completion of the quarterly inspections, the cover systems will be inspected and monitored semiannually (twice per year) for the next two years. The frequency after the second year will be determined by NDEP, based on the results of the previous inspections. Any identified maintenance and repair requirements will be remedied within 90 working days of discovery and documented in writing at the time of repair.

Results of all inspections in a given year will be addressed in a single annual report. The annual report 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. A copy of the inspection checklist is provided in Attachment B.

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## **CAU 423: AREA 3 BUILDING 0360 UNDERGROUND DISCHARGE POINT POST-CLOSURE INSPECTION PLAN**

The following text appeared in the approved and published Record of Technical Change Number CR-1 to the CAU 423 CR, Closure Report for Corrective Action Unit 423: Area 3 Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada, Revision 0, July 1999, DOE/NV/11718--319. Las Vegas, Nevada

Post-closure monitoring at CAU 423 will consist of biannual inspections (twice per year) to verify that the warning sign and concrete marker are in good condition and that the Use Restriction has been maintained. Any identified maintenance or repair requirements will be remedied within 90 working days of discovery and documented in writing at the time of repair. Results of all inspections in a given year will be addressed in a single annual report. The annual report 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.

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## **CAU 424: AREA 3 LANDFILL COMPLEXES POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved CAU 424 CR, Closure Report for Corrective Action Unit 424: Area 3 Landfill Complexes, Tonopah Test Range, Nevada, Revision 0, July 1999, DOE/NV/11718--283. Las Vegas, Nevada

Post-closure inspection of the Area 3 Landfill sites is intended to determine:

- If maintenance repairs to the landfill soil covers are needed.
- If maintenance and repairs to the landfill markers and warning signs are needed.
- If modifications to the Use Restriction administrative controls are needed.
- If termination of post-closure inspection can be proposed in the future.

### **POST-CLOSURE INSPECTION**

The inspection will consist of biannual (twice per year) visual inspections of:

- The soil cover for indications of subsidence, erosion, unauthorized use, etc.
- The landfill markers and warning signs, to verify they are in-place, intact, and readable.
- The inspections will be documented on a checklist and with photography, if needed.

If damage to the soil covers, landfill markers, or warning signs is noted, then maintenance will be performed and may include placement and compaction of additional backfill, and repair or replacement of markers and signs. Additional nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remedied within 90 days of discovery and documented in writing at the time of repair.

### **ANNUAL REPORTING**

An annual report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual post-closure inspection report will be prepared and submitted to NDEP following the second inspection of each year that post-closure inspection is conducted. The annual reports will include the following information:

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

### **DURATION**

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure inspection of CAU 424 may be proposed by DOE/NV to the NDEP after two consecutive years of visual inspections have not indicated recurrence of subsidence. Completion of post-closure monitoring may be proposed by DOE/NV to the NDEP within five years after the completion of closure activities.

## **CAU 426: CACTUS SPRING WASTE TRENCHES POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved CAU 426 CR, Closure Report for Corrective Action Unit 426: Cactus Spring Waste Trenches, Tonopah Test Range, Nevada, Revision 0, August 1998, DOE/NV/11718-226 UC-702. Las Vegas, Nevada

Post-Closure of the covers is intended to determine:

- If maintenance repairs to the perimeter fence are required.
- If remedial action is necessary to establish a vegetative cover.
- If maintenance and repairs to the engineered cover is required.
- When a cessation to post-closure monitoring can be proposed.

### **POST-CLOSURE MONITORING**

The monitoring will consist of biannual (twice per year) visual inspections of:

- The cover for condition (subsidence, significant erosion, unauthorized excavation, etc.) and plant development.
- The fence and signs to determine if repairs are required.

Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remediated within 90 days of discovery and documented in writing at the time of repair. Additional revegetation work would be conducted during the next revegetation window (October to February).

Intrusion into or sampling of the trench contents is not proposed during the post-closure monitoring period.

Monitoring of the vegetative cover will be conducted during the first, third, and fifth year after revegetation. Monitoring during the first year will determine if germination of seeded plant species has occurred. By the third year, plant establishment will be evaluated. By the fifth year, the objective of determining if burrowing animals have moved onto the site and to what depth they might be expected to penetrate the cover. The erosion condition of the soil will be evaluated using a qualitative erosion condition classification developed by the Bureau of Land Management. Information gathered will be compared to natural conditions and will be used in assessing whether or not remedial action is necessary so that a viable vegetative cover is established.

## **ANNUAL REPORTING**

An annual report will be prepared that will provide the observations and describe 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.

## **DURATION**

The biannual inspections will be performed for five years after the planting of the vegetative covers, and will be documented on inspection forms.

Completion of post-closure monitoring of CAU 426 may be proposed after two consecutive years of visual inspections have not indicated the need to revegetate or provide maintenance to the vegetative covers. Completion of post-closure monitoring may be proposed within five years after the original revegetation of the site and include the removal of the fence since the plants will have attained a maturity to not be significantly affected by the grazing of wild horses.

## **CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2, 6 POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved CAU 427 CR, Closure Report for Corrective Action Unit 427 Area 3 Septic Waste Systems 2 and 6, Tonopah Test Range, Nevada, Revision 0, August 1999, DOE/NV--561. Las Vegas, Nevada

Post-Closure inspection of CAU 427 use restricted land is intended to determine:

- If maintenance and repairs to the closed leachfield or septic tank soil and asphalt covers are needed.
- If maintenance and repairs to the closed leachfield and septic tank markers and warning signs are needed.
- If modifications to the Use Restriction administrative controls are needed.
- If termination of post-closure inspection can be proposed in the future.

### **POST-CLOSURE INSPECTION**

The inspection will consist of annual (once per year) visual inspections of:

- The soil and asphalt cover for indications of subsidence, erosion, unauthorized use, etc.
- The leachfield and septic tank markers and warning signs to verify they are in-place, intact, and readable
- The inspections will be documented on a checklist (Attachment C) and, if needed, with photography

Repairs to the soil covers (placement and compaction of additional backfill), landfill markers, and warning signs (repair, reposition, and/or replacement) may be required.

Inspections are not required after severe weather events such as heavy rainfall, flash floods, and high winds, because the leachfield waste is buried in the subsurface. However, any identified maintenance and repair requirements noted before or after a inspection will be remedied within 90 days of discovery and documented in writing at the time of repair.

### **ANNUAL REPORTING**

An annual report will provide the inspector's observations of CAU 427s land-use-restricted areas and describe modifications and/or repairs made to Leachfield A, Leachfield B, Pre-1965 Leachfield, 1965-1975 Leachfield, and/or Septic Tank 33-5. The annual post-closure inspection report will be prepared and submitted to NDEP before the completion of the fiscal year in which the inspection was conducted. The annual reports will include the following information:

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

- Conclusions and recommendations.

## **DURATION**

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure monitoring of CAU 427 may be proposed by the DOE/NV to the NDEP if after two consecutive years of visual inspections, indications of subsidence depression recurrences have not been detected. Completion of post-closure inspection may be proposed by DOE/NV to the NDEP within five years after the completion of closure activities.

## **CAU 453: AREA 9 UXO LANDFILL INSPECTION PLAN**

The following text appeared in the published and approved CAU 453 CR, Closure Report for Corrective Action Unit 453: Area 9 UXO-Landfill, Tonopah Test Range, Nevada, Revision 0, July 1999, DOE/NV/11718--284. Las Vegas, Nevada

Post-Closure of the covers is intended to determine:

- If maintenance and repairs to the cell soil covers are needed.
- If maintenance and repairs to the perimeter fence, warning signs, and monuments are needed.
- If modifications to the administrative Use Restrictions are needed.
- If termination of post-closure inspection can be proposed in the future.

### **POST-CLOSURE INSPECTION**

The inspection will consist of biannual (once per year) visual inspections of:

- The cell soil cover, for indications of subsidence, erosion, unauthorized use, etc.
- The perimeter fence, warning signs, and monuments, for signs of wear disturbance, etc.

The inspections will be documented on a checklist and with photography, if needed. Repairs to the cell soil covers (placement and compaction of additional fill), perimeter fence, warning signs, and monuments (repair, reposition, and/or replacement) may be required. Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remediated within 90 days of discovery and documented in writing at the time of repair.

### **ANNUAL REPORTING**

An annual post-closure inspection report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual report will be prepared and submitted to NDEP following the second inspection of each year that post-closure inspection is conducted. The annual reports will include the following information:

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

### **DURATION**

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure inspection of CAU 453 may be proposed by DOE/NV to NDEP within five years after the completion of closure activities. Completion of post-closure inspection may also be proposed by DOE/NV to NDEP if two consecutive years of visual inspections do not indicate the recurrence of subsidence depressions.



## **CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION PLAN**

The following text appeared in the published and approved Record of Technical Change Number 2 for the final Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada, Revision 0, November 2001, DOE/NV--761. Las Vegas, Nevada

The post-closure inspection of CAS RG-26-001-RGRV will consist of semi-annual (twice per year) visual inspections of the monument markers and postings to verify that they are in-place, intact, and readable. Visual inspections of the monuments and signage, and indications of ground disturbance within the Use Restriction area will be conducted. Observations and any modifications and/or repairs to the monuments or postings will be included in the annual Post-Closure Inspection Report for the Tonopah Test Range, Nevada.

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**ATTACHMENT C.**  
**POST-CLOSURE INSPECTION CHECKLISTS**

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# CAU 400: BOMBLET PIT, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/31/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Kevin Cabbie

Date of Last Inspection: 11/15/05

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson

Assistant Inspector (name, title, organization): Reed Paderis

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?		X	N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: <u>0</u> )		X	
c. Were gates locked?		X	No Lock because there is no gate.

# CAU 400: BOMBLET PIT, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
<b>3. Waste Unit cover.</b>				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?			
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	N/A
<b>4. Vegetative cover.</b>				
a.	Is perimeter fence or mesh fencing damaged?	X		Chicken wire fencing is damaged on east side of fence.
b.	Is there evidence of horses or rabbits on site?		X	west
c.	Is organic mulch and/or plants adequate to prevent erosion?	X	BL	
d.	Are weedy annual plants present? If yes, are they a problem?		X	
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	
<b>5. Photo Documentation</b>				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( 3 )			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?	X		Chicken wire fencing needs repair.
5.	Is current status/condition of vegetative cover satisfactory?	X		
6.	Rationale for field conclusions: The site appears to be in good condition. However, chicken wire fencing is damaged on the east and west section of the fence. Repairs to the chicken wire fencing are necessary.			
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the Bomblet Pit, CAU 400, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature:		Printed Name: Glenn Richardson		
Title: Task Manager		Date: 5/31/06		

# CAU 400: BOMBLET PIT, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/31/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

YES NO EXPLANATION

1. Site as-built plans and site base map reviewed.

X

2. Previous inspection reports reviewed.

X

a. Were anomalies or trends detected on previous inspections?

X

b. Was maintenance performed?

X

Fence repairs were completed in June 2006.

3. Site maintenance and repair records reviewed.

X

a. Has site repair resulted in a change from as-built conditions?

X

b. Are revised as-builts available that reflect repair changes?

N/A

## C. SITE INSPECTION (To be completed during inspection)

YES NO EXPLANATION

1. Adjacent off-site features within watershed areas.

a. Have there been any changes in use of adjacent area?

X

b. Are there any new roads or trails?

X

c. Has there been a change in the position of nearby washes?

X

d. Has there been lateral excursion or erosion/deposition of nearby washes?

X

e. Are there new drainage channels?

X

f. Change in surrounding vegetation?

X

2. Security fence, signs.

a. Displacement of fences, site markers, boundary markers, or monuments?

X

b. Have any signs been damaged or removed?

X

(Number of signs replaced: 0)

c. Were gates locked?

X

N/A

# CAU 400: BOMBLET PIT, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
<b>3. Waste Unit cover.</b>				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?		X	
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	
<b>4. Vegetative cover.</b>				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?		X	
c.	Is organic mulch and/or plants adequate to prevent erosion?		X	
d.	Are weedy annual plants present? If yes, are they a problem?	X	X	
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	
<b>5. Photo Documentation</b>				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( <u>3</u> )			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?		X	
6. Rationale for field conclusions: <i>There were no issues or concerns at this site.</i>				
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the Bomblet Pit, CAU 400, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: <i>Glenn Richardson</i>		
Title: <i>Task Manager</i>		Date: <i>11/15/06</i>		



# CAU 400: 5 POINTS LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date:

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KEVIN CASHLE

Date of Last Inspection: 11/15/2005

Reason for Last Inspection: SEVERAL MONTHS

Inspector (name, title, organization): GLENN RICHMONDS, TM, JR. JR.

Assistant Inspector (name, title, organization): SHARON BURTON, FL, JR. JR.

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?		X	N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	
c. Were gates locked?		X	No lock on gate

# CAU 400: 5 POINTS LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
3. Waste Unit cover				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?	X		Noticed small animal burrowing on NE corner of fencing (minor)
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	N/A

4. Vegetative cover				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?		X	
c.	Is organic mulch and/or plants adequate to prevent erosion?		X	
d.	Are weedy annual plants present? If yes, are they a problem?		X	
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	

5. Photo Documentation				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( )			

## D. FIELD CONCLUSIONS

1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		42
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?	X		

6. Rationale for field conclusions: *The vegetation and site fencing appear to be in good condition. There are no significant issues that require a follow-up action.*

## E. CERTIFICATION

I have conducted an inspection of the 5 Points Landfill, CAU 400, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature: \_\_\_\_\_

Printed Name: *Glenn Richardson*

Title: *Environmental Remediation Tech. Mgr.*

Date: *5/31/06*

# CAU 400: 5 POINTS LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/31/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Tusk Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?	X		Vegetation is dead due to flooding in the area.
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	
c. Were gates locked?			N/A

# CAU 400: 5 POINTS LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
<b>3. Waste Unit cover.</b>				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?	X		Small evidence of animal burrowing near front of fence.
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	
<b>4. Vegetative cover.</b>				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?		X	
c.	Is organic mulch and/or plants adequate to prevent erosion?		X	Plant life is dead due to flooding.
d.	Are weedy annual plants present? If yes, are they a problem?		X	Plant life. The majority of plant life is dead due to flooding.
e.	Are seeded plant species found on site?			
f.	Is there evidence of plant mortality?	X		Plant mortality exists due to flooding in the general area.
<b>5. Photo Documentation</b>				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( 3 )			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?		X	Plant life is dead due to flooding in the general area.
6. Rationale for field conclusions: Due to flooding in the general area, all plant life is dead. The site conditions will be monitored in the spring season for new vegetation growth or to evaluate other options.				
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the 5 Points Landfill, CAU 400, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: Glenn Richardson		
Title: Task Manager		Date: 11/15/06		

# CAU 404: ROLLER COASTER LAGOONS & N. DISPOSAL TRENCH, POST-CLOSURE MONITORING CHECKLIST

Inspection Date: 5/9/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KESHA CHASE

Date of Last Inspection: 11/15/2005

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): GLENN RICHARDSON, TASK MANAGER, BN ER

Assistant Inspector (name, title, organization): SHAUGHN BARNISON, TECH LEAD, BN ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?		X	N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 6)		X	
c. Were gates locked?		X	NO GATES LOCK

# CAU 404: ROLLER COASTER LAGOONS & N. DISPOSAL TRENCH, POST-CLOSURE MONITORING CHECKLIST

## 3. Waste Unit cover.

YES

NO

EXPLANATION

a. Is there evidence of settling?

X

b. Is there cracking?

X

c. Is there evidence of erosion around the cap (wind or water)?

X

d. Is there evidence of animal burrowing?

X

ROCK SIDES, FENCE

e. Have the site markers been disturbed by man or natural processes?

X

f. Do natural processes threaten to integrity of any cover or site marker?

X

g. Other?

N/A

## 4. Vegetative cover.

a. Is perimeter fence or mesh fencing damaged?

X

b. Is there evidence of horses or rabbits on site?

X

ROCK SIDE OF FENCE

c. Is organic mulch adequate to prevent erosion?

X

d. Are weedy annual plants present? If yes, are they a problem?

X

e. Are seeded plant species found on site?

X

f. Is there evidence of plant mortality?

X

## 5. Photo Documentation

a. Has a photo log been prepared?

X

c. Number of photos exposed ( 1 )

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

5. Is current status/condition of vegetative cover satisfactory?

X

6. Rationale for field conclusions: PHYSICAL WALK AROUND AND VISUAL INSPECTION OF SITE  
INDICATES NO ISSUES OR CONCERNS WITH THE UNIT.

## E. CERTIFICATION

I have conducted an inspection of the Roller Coaster Sewage Lagoons & North Disposal Trench, CAU 404, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: GLENN RICHARDSON

Title: TTR TASK MANAGER

Date: 5/9/2006

# CAU 404: ROLLER COASTER LAGOONS & N. DISPOSAL TRENCH, POST-CLOSURE MONITORING CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/9/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

YES NO EXPLANATION

1. Site as-built plans and site base map reviewed. ☒
2. Previous inspection reports reviewed. ☒
  - a. Were anomalies or trends detected on previous inspections? ☒
  - b. Was maintenance performed? ☒
3. Site maintenance and repair records reviewed. ☒
  - a. Has site repair resulted in a change from as-built conditions? ☒
  - b. Are revised as-builts available that reflect repair changes? ☒ N/A

## C. SITE INSPECTION (To be completed during inspection)

YES NO EXPLANATION

1. Adjacent off-site features within watershed areas.
  - a. Have there been any changes in use of adjacent area? ☒
  - b. Are there any new roads or trails? ☒
  - c. Has there been a change in the position of nearby washes? ☒
  - d. Has there been lateral excursion or erosion/deposition of nearby washes? ☒
  - e. Are there new drainage channels? ☒
  - f. Change in surrounding vegetation? ☒
2. Security fence, signs.
  - a. Displacement of fences, site markers, boundary markers, or monuments? ☒
  - b. Have any signs been damaged or removed?  
(Number of signs replaced: 0) ☒
  - c. Were gates locked? ☐ Not Required.

# **CAU 404: ROLLER COASTER LAGOONS & N. DISPOSAL TRENCH, POST-CLOSURE MONITORING CHECKLIST**

		YES	NO	EXPLANATION
<b>3. Waste Unit cover.</b>				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?		X	
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	
<b>4. Vegetative cover.</b>				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?		X	
c.	Is organic mulch adequate to prevent erosion?	X		
d.	Are weedy annual plants present? If yes, are they a problem?	X		Weedy Annual Plants are not a problem.
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	
<b>5. Photo Documentation</b>				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( )			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?	X		
6.	Rationale for field conclusions: <i>The cover, fencing, and signage are in good condition. Vegetation on the cover appeared to be in good condition. There was no evidence of animal burrows at the site.</i>			
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the Roller Coaster Sewage Lagoons & North Disposal Trench, CAU 404, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: <i>Glenn Richardson</i>		
Title: <i>Task Manager</i>		Date: <i>11/15/06</i>		



# CAU 407: ROLLER COASTER RADSAFE AREA, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/19/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KENNETH CARROLL

Date of Last Inspection: 11/10/2005

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): GLENN RICHARDSON, TASK MGR, BDF

Assistant Inspector (name, title, organization): SHAWN BRUNSON, TECH LEAD, BDF

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?	X		MINOR FENCE REPAIR WORK NEEDED
b. Was maintenance performed?	X		FENCE REPAIRED
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?		X	N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?	X		SE CORNER POST OF FENCE NEEDS REPLACEMENT
b. Have any signs been damaged or removed? (Number of signs replaced: 2)	X		ONE SIGN NEEDS REATTACHMENT. FINDING NOTED ON TWO OTHERS
c. Were gates locked?		X	NO GATE (REMOVABLE SECTION)

# CAU 407: ROLLER COASTER RADSAFE AREA, POST-CLOSURE INSPECTION CHECKLIST

## 3. Waste Unit cover.

YES

NO

EXPLANATION

a. Is there evidence of settling?

X

b. Is there cracking?

X

c. Is there evidence of erosion around the cap (wind or water)?

X

d. Is there evidence of animal burrowing?

X

MANY SMALL ANIMAL BURROWS  
CHARTER ON SOUTH EDGE

e. Do natural processes threaten to integrity of any cover or site marker?

X

f. Other?

## 4. Vegetative cover.

a. Is perimeter fence or mesh fencing damaged?

X

SE CORNER OF POST CLOSURE MONITORING  
FENCING DAMAGED

b. Is there evidence of horses or rabbits on site?

X

HUSB. EVIDENCE OUTSIDE OF FENCE

c. Is organic mulch adequate to prevent erosion?

X

PROBABLY - SEE EVIDENCE

d. Are weedy annual plants present? If yes, are they a problem?

X

e. Are seeded plant species found on site?

X

LOCAL GRASSES TAKING HOLD

f. Is there evidence of plant mortality?

X

## 5. Photo Documentation

a. Has a photo log been prepared?

X

c. Number of photos exposed ( 2 )

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

FENCE REPAIR, POSSIBLE TRAMP  
RELOCATE, SIGN REMOUNT, SIGN WORK

5. Is current status/condition of vegetative cover satisfactory?

X

6. Rationale for field conclusions: AFTER PHYSICAL WALKDOWN & VISUAL INSPECTION, SOME MINOR  
FENCE & SIGN ISSUES WERE IDENTIFIED FOR REPAIR. A REMEDY FOR BURROWING ANIMALS  
NOT RECOMMENDED. VEGETATION PROGRESS LOOKS GOOD. GENERALLY GOOD CONDITION.

## E. CERTIFICATION

I have conducted an inspection of the Roller Coaster RadSafe Area, CAU 407, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: GLENN RICHARDSON

Title: BUREAU TASK MANAGER

Date: 5/9/2006

# CAU 407: ROLLER COASTER RADSAFE AREA, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/9/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?	X	X	Maintenance was performed in June 2006.
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.		X	
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	
c. Were gates locked?		X	N/A

# CAU 407: ROLLER COASTER RADSAFE AREA, POST-CLOSURE INSPECTION CHECKLIST

3. Waste Unit cover.		YES	NO	EXPLANATION
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?		X	
e.	Do natural processes threaten to integrity of any cover or site marker?		X	
f.	Other?		X	
4. Vegetative cover.				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?		X	
c.	Is organic mulch adequate to prevent erosion?	X		
d.	Are weedy annual plants present? If yes, are they a problem?	X		No issue.
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	
5. Photo Documentation				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed (6)			
D. FIELD CONCLUSIONS				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?	X		
6.	Rationale for field conclusions: <i>The fencing, signage, and cover are in good condition. There were no animal burrows at the site.</i>			
E. CERTIFICATION				
I have conducted an inspection of the Roller Coaster RadSafe Area, CAU 407, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: <i>Glenn Richardson</i>		
Title: <i>Task Manager</i>		Date: <i>11/15/06</i>		

# **CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT, POST-CLOSURE INSPECTION CHECKLIST**

Inspection Date: 5/7/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KEVIN CARROLL

Date of Last Inspection: 11/15/2005

Reason for Last Inspection: SEMI-ANNUAL

Inspector (name, title, organization): ANDREW BURNISON, TASK MGR, BJO ER

Assistant Inspector (name, title, organization): SHARON BURNISON, TASK MGR, BJO ER

## **A. GENERAL INSTRUCTIONS**

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## **B. PREPARATION (To be completed prior to site visit)**

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			N/A

## **C. SITE INSPECTION (To be completed during inspection)**

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: _____)		X	

# **CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT, POST-CLOSURE INSPECTION CHECKLIST**

## 3. Use Restricted Area:

YES

NO

EXPLANATION

a. Is there evidence of settling?

X

b. Is there cracking?

X

c. Is there evidence of erosion (wind or water)?

X

d. Is there evidence of animal burrowing?

X

e. Have the site markers been disturbed by man or natural processes?

X

f. Is there vegetation in the area?

X

g. Do natural processes threaten to integrity of any cover or site marker?

X

NA - NO COVER

h. Other?

## 4. Photo Documentation

a. Has a photo log been prepared?

X

b. Number of photos exposed ( 3 )

MANAGEMENT, CLIPBOARD RECORDS, SIGN & COVERING EAST

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

5. Is current status/condition of the site satisfactory?

X

YES

6. Rationale for field conclusions:

PHYSICAL INSPECTION SHOWS SITE TO BE IN EXCELLENT  
CONDITION.

## E. CERTIFICATION

I have conducted an inspection of the Area 3 Underground Discharge Point, CAU 423, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: GLENN RICHMOND

REGIONAL RESIDENTS TASK MANAGER

Date: 5/9/2006

**CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT,  
POST-CLOSURE INSPECTION CHECKLIST**

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/9/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

**A. GENERAL INSTRUCTIONS**

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

**B. PREPARATION (To be completed prior to site visit)**

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	<input checked="" type="checkbox"/>		
2. Previous inspection reports reviewed.	<input checked="" type="checkbox"/>		
a. Were anomalies or trends detected on previous inspections?		<input checked="" type="checkbox"/>	
b. Was maintenance performed?		<input checked="" type="checkbox"/>	
3. Site maintenance and repair records reviewed.			<u>N/A</u>
a. Has site repair resulted in a change from as-built conditions?		<input checked="" type="checkbox"/>	
b. Are revised as-builts available that reflect repair changes?			<u>N/A</u>

**C. SITE INSPECTION (To be completed during inspection)**

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		<input checked="" type="checkbox"/>	
b. Are there any new roads or trails?		<input checked="" type="checkbox"/>	
c. Has there been a change in the position of nearby washes?		<input checked="" type="checkbox"/>	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		<input checked="" type="checkbox"/>	
e. Are there new drainage channels?		<input checked="" type="checkbox"/>	
f. Change in surrounding vegetation?		<input checked="" type="checkbox"/>	
2. Security fence, signs.			
a. Displacement of site markers, boundary markers, or monuments?		<input checked="" type="checkbox"/>	
b. Have any signs been damaged or removed? (Number of signs replaced: <u>0</u> )		<input checked="" type="checkbox"/>	

**CAU 423: AREA 3 UNDERGROUND DISCHARGE POINT,  
POST-CLOSURE INSPECTION CHECKLIST**

3. Use Restricted Area:		YES	NO	EXPLANATION
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion (wind or water)?		X	
d.	Is there evidence of animal burrowing?		X	
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Is there vegetation in the area?		X	
g.	Do natural processes threaten to integrity of any cover or site marker?		X	
h.	Other?		X	
4. Photo Documentation				
a.	Has a photo log been prepared?	X		
b.	Number of photos exposed (    )			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?			N/A
4.	Is other maintenance/repair necessary?	X		Waste oil line removal activities are planned in FY 2007 as best management practice.
5.	Is current status/condition of the site satisfactory?	X		
6.	Rationale for field conclusions: <i>General site conditions are good. A waste oil line that runs to the Underground Discharge Point will be removed or closed in place as a best management practice. Per NNSA direction, this is planned in FY07.</i>			
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the Area 3 Underground Discharge Point, CAU 423, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached site field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: <i>Glenn Richardson</i>		
Title: <i>Task Manager</i>		Date: <i>11/15/06</i>		



# CAU 424: AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/9/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KEVIN CASSE

Date of Last Inspection: 11/11/2005

Reason for Last Inspection: Semi Annual

Inspector (name, title, organization): GLENN RICHARDSON, TM, BN ER

Assistant Inspector (name, title, organization): SHAGHUS BULLISON, TL, BN ER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	NA
b. Are revised as-builts available that reflect repair changes?			NA

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: )		X	
c. Were gates locked?			NA

# CAU 424: AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

## 3. Waste Unit cover.

YES

NO

EXPLANATION

a. Is there evidence of settling?

X

b. Is there cracking?

X

c. Is there evidence of erosion around the cap (wind or water)?

X

d. Is there evidence of animal burrowing?

X

e. Have the site markers been disturbed by man or natural processes?

X

f. Is the vegetation on the cover?

X

N/A

g. Do natural processes threaten to integrity of any cover or site marker?

X

h. Other?

N/A

## 4. Photo Documentation

a. Has a photo log been prepared?

X

c. Number of photos exposed ( )

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

5. Is current status/condition of vegetative cover satisfactory?

X

6. Rationale for field conclusions:

Physical walkdown of each landfill unit & visual inspection of each unit confirms each is in good condition.

## E. CERTIFICATION

I have conducted an inspection of the Area 3 Landfill Complex, CAU 424, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name:

CHERRY RICHARDSON

Title:

LR, Task MGR

Date:

5/9/2006

# CAU 424: AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager:

Pete Sanders

Date of Last Inspection: 5/9/06

Reason for Last Inspection:

Semi-Annual

Inspector (name, title, organization):

Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization):

Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

YES

NO

EXPLANATION

1. Site as-built plans and site base map reviewed.

X

2. Previous inspection reports reviewed.

X

a. Were anomalies or trends detected on previous inspections?

X

b. Was maintenance performed?

X

3. Site maintenance and repair records reviewed.

X

a. Has site repair resulted in a change from as-built conditions?

X

b. Are revised as-builts available that reflect repair changes?

X

N/A

## C. SITE INSPECTION (To be completed during inspection)

YES

NO

EXPLANATION

1. Adjacent off-site features within watershed areas.

a. Have there been any changes in use of adjacent area?

X

b. Are there any new roads or trails?

X

c. Has there been a change in the position of nearby washes?

X

d. Has there been lateral excursion or erosion/deposition of nearby washes?

X

e. Are there new drainage channels?

X

f. Change in surrounding vegetation?

X

2. Security fence, signs.

a. Displacement of fences, site markers, boundary markers, or monuments?

X

b. Have any signs been damaged or removed?  
(Number of signs replaced: \_\_\_\_\_)

X

c. Were gates locked?

X

N/A

### CAU 424: AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
<b>3. Waste Unit cover.</b>				
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?		X	
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Is the vegetation on the cover?	X	<del>X</del> or	
g.	Do natural processes threaten to integrity of any cover or site marker?		X	
h.	Other?		X	
<b>4. Photo Documentation</b>				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed (14)			
<b>D. FIELD CONCLUSIONS</b>				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?	X		
6.	Rationale for field conclusions: <i>Overall site conditions are good. There was no damage to the fencing or the vegetative covers.</i>			
<b>E. CERTIFICATION</b>				
I have conducted an inspection of the Area 3 Landfill Complex, CAU 424, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature:		Printed Name: <i>Glenn Richardson</i>		
Title: <i>Task Manager</i>		Date: <i>11/15/06</i>		

# CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/9/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KYLE CASPER

Date of Last Inspection: 11/15/2005

Reason for Last Inspection: SEMI-ANNUAL

Inspector (name, title, organization): GREGORY RICHMOND, T.M. BAKER

Assistant Inspector (name, title, organization): JAMES BARNETT, T.M. BAKER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			NO

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: )		X	
c. Were gates locked?	X		

# CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE INSPECTION CHECKLIST

## 3. Waste Unit cover.

YES NO EXPLANATION

- a. Is there evidence of settling?
- b. Is there cracking?
- c. Is there evidence of erosion around the cap (wind or water)?
- d. Is there evidence of animal burrowing?
- e. Have the site markers been disturbed by man or natural processes?
- f. Do natural processes threaten to integrity of any cover or site marker?
- g. Other?

	X	
	X	
	X	
X		INSIDE THE FENCE
	X	
	X	
	X	

## 4. Vegetative cover.

- a. Is perimeter fence or mesh fencing damaged?
- b. Is there evidence of horses or rabbits on site?
- c. Is organic mulch and/or plants adequate to prevent erosion?
- d. Are weedy annual plants present? If yes, are they a problem?
- e. Are seeded plant species found on site?
- f. Is there evidence of plant mortality?

	X	SOME TIGHTENING NEAR GATE IS ADVISED, NOT CRITICAL
X		MANY HORSES PRESENT
X		
	X	
X		
	X	

## 5. Photo Documentation

- a. Has a photo log been prepared?
- c. Number of photos exposed ( 3 )

X		

## D. FIELD CONCLUSIONS

- 1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

	X	
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Person/Agency to whom report made:

- 2. Are more frequent inspections required?
- 3. Are existing maintenance/repair actions satisfactory?
- 4. Is other maintenance/repair necessary?
- 5. Is current status/condition of vegetative cover satisfactory?

	X	
X		
	X	
X		

6. Rationale for field conclusions: *PHYSICAL WALKDOWN, VISUAL INSPECTION SHOW COVER IN EXCELLENT CONDITION, FENCE & SIGNS IN GOOD CONDITION. NO SIGNIFICANT ISSUES OF CONCERN NOTED*

## E. CERTIFICATION

I have conducted an inspection of the Cactus Spring Waste Trenches, CAU 426, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: *GLENN RICHMOND*

Title: *ENVIRONMENTAL TEAM MANAGER*

Date: *5/19/2006*

# CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/9/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

YES NO EXPLANATION

1. Site as-built plans and site base map reviewed.

X

2. Previous inspection reports reviewed.

X

a. Were anomalies or trends detected on previous inspections?

X

b. Was maintenance performed?

X

Fence repairs were completed in June 2006.

3. Site maintenance and repair records reviewed.

X

a. Has site repair resulted in a change from as-built conditions?

X

b. Are revised as-builts available that reflect repair changes?

N/A

## C. SITE INSPECTION (To be completed during inspection)

YES NO EXPLANATION

1. Adjacent off-site features within watershed areas.

a. Have there been any changes in use of adjacent area?

X

b. Are there any new roads or trails?

X

c. Has there been a change in the position of nearby washes?

X

d. Has there been lateral excursion or erosion/deposition of nearby washes?

X

e. Are there new drainage channels?

X

f. Change in surrounding vegetation?

X

2. Security fence, signs.

a. Displacement of fences, site markers, boundary markers, or monuments?

X

b. Have any signs been damaged or removed?  
(Number of signs replaced: 0)

X

c. Were gates locked?

N/A

# CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE INSPECTION CHECKLIST

3. Waste Unit cover.		YES	NO	EXPLANATION
a.	Is there evidence of settling?		X	
b.	Is there cracking?		X	
c.	Is there evidence of erosion around the cap (wind or water)?		X	
d.	Is there evidence of animal burrowing?	X	X	Small animal burrowing was noticed outside the fenced area but no significant for a follow-up action.
e.	Have the site markers been disturbed by man or natural processes?		X	
f.	Do natural processes threaten to integrity of any cover or site marker?		X	
g.	Other?		X	
4. Vegetative cover.				
a.	Is perimeter fence or mesh fencing damaged?		X	
b.	Is there evidence of horses or rabbits on site?	X		There is evidence of horses within the general area, but not within the fenced boundary.
c.	Is organic mulch and/or plants adequate to prevent erosion?	X		
d.	Are weedy annual plants present? If yes, are they a problem?	X		No issues or problems.
e.	Are seeded plant species found on site?	X		
f.	Is there evidence of plant mortality?		X	
5. Photo Documentation				
a.	Has a photo log been prepared?	X		
c.	Number of photos exposed ( 4 )			
D. FIELD CONCLUSIONS				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		X	
3.	Are existing maintenance/repair actions satisfactory?	X		
4.	Is other maintenance/repair necessary?		X	
5.	Is current status/condition of vegetative cover satisfactory?	X		
6.	Rationale for field conclusions: Use restriction signage is visible and adequate. The vegetation on the cover is in great condition. Small animal burrowing was noticed, but it was not significant to warrant a follow-up action.			
E. CERTIFICATION				
I have conducted an inspection of the Cactus Spring Waste Trenches, CAU 426, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature: _____		Printed Name: Glenn Richardson		
Title: Task Manager		Date: 11/15/06		



# CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2 & 6, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/9/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KEVIN CABLE

Date of Last Inspection: 11/15/2005

Reason for Last Inspection: SEED. ANOMALY

Inspector (name, title, organization): STEVEN RICHARDSON, TM, BN ER

Assistant Inspector (name, title, organization): SHAWN BARNES, TM, BN ER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?	X		
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
2. Security signs.			
a. Displacement of site markers, boundary markers, or monuments? (disturbed by man or natural processes?)		X	
b. Have any signs been damaged or removed? (Number of signs replaced: _____)		X	
c. Were all subsurface markers detected? (i.e., using a magnetometer or equivalent)	X		

# CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2 & 6, POST-CLOSURE INSPECTION CHECKLIST

## 3. Soil/asphalt cover.

YES NO EXPLANATION

- a. Is there evidence of settling?
- b. Is there cracking?
- c. Is there evidence of erosion near use restriction boundaries?
- d. Is there evidence of animal burrowing?
- e. Is there vegetation?
- f. Do natural processes threaten to integrity of any cover or site marker?
- g. Is there evidence suggesting unauthorized excavations have taken place?
- h. Other?

## 4. Photo Documentation

- a. Has a photo log been prepared?
- c. Number of photos exposed ( )

## D. FIELD CONCLUSIONS

- 1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

Person/Agency to whom report made:

- 2. Are more frequent inspections required?

- 3. Are existing maintenance/repair actions satisfactory?

- 4. Is other maintenance/repair necessary?

- 5. Rationale for field conclusions: VISUAL INSPECTIONS REVEAL SITE IN EXCELLENT CONDITION NO ISSUES.

## E. CERTIFICATION

I have conducted an inspection of the Area 3 Septic Waste Systems 2 & 6, CAU 427, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: GLENN RICHARDSON

Title: ENV. REST. TASK MGR.

Date: 5/9/2006

**CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2 & 6, POST-CLOSURE INSPECTION CHECKLIST**

 Inspection Date: 11/15/06

 Responsible Agency: NNSA/NSO ER

 NNSA Project Manager: Pete Sanders

 Date of Last Inspection: 5/9/06

 Reason for Last Inspection: Semi-Annual

 Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

 Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER
**A. GENERAL INSTRUCTIONS**

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

**B. PREPARATION (To be completed prior to site visit)**

YES	NO	EXPLANATION
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		
	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>		
	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	N/A

1. Site as-built plans and site base map reviewed.

2. Previous inspection reports reviewed.

a. Were anomalies or trends detected on previous inspections?

b. Was maintenance performed?

3. Site maintenance and repair records reviewed.

a. Has site repair resulted in a change from as-built conditions?

b. Are revised as-builts available that reflect repair changes?

**C. SITE INSPECTION (To be completed during inspection)**

YES	NO	EXPLANATION
	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>		Red rock was used to delineate each use restriction boundary marker.

1. Adjacent off-site features within watershed areas.

a. Have there been any changes in use of adjacent area?

b. Are there any new roads or trails?

2. Security signs.

a. Displacement of site markers, boundary markers, or monuments? (disturbed by man or natural processes?)

 b. Have any signs been damaged or removed? (Number of signs replaced: 8 )

c. Were all subsurface markers detected? (i.e., using a magnetometer or equivalent)

# CAU 427: AREA 3 SEPTIC WASTE SYSTEMS 2 & 6, POST-CLOSURE INSPECTION CHECKLIST

## 3. Soil/asphalt cover.

YES NO EXPLANATION

- a. Is there evidence of settling?
- b. Is there cracking?
- c. Is there evidence of erosion near use restriction boundaries?
- d. Is there evidence of animal burrowing?
- e. Is there vegetation?
- f. Do natural processes threaten to integrity of any cover or site marker?
- g. Is there evidence suggesting unauthorized excavations have taken place?
- e. Other?

X  
X  
X  
X  
X  
X  
X  
X

## 4. Photo Documentation

- a. Has a photo log been prepared?
- c. Number of photos exposed ( 3 )

X

## D. FIELD CONCLUSIONS

- 1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

- 2. Are more frequent inspections required?

X

- 3. Are existing maintenance/repair actions satisfactory?

X

- 4. Is other maintenance/repair necessary?

X

5. Rationale for field conclusions: *The site is in excellent condition. Signage is visible and the red rock used clearly delineates each use restriction boundary.*

## E. CERTIFICATION

I have conducted an inspection of the Area 3 Septic Waste Systems 2 & 6, CAU 427, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name:

*Glenn Richardson*

Title:

*Task Manager*

Date:

*11/15/06*

# CAU 453: AREA 9 UXO LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/31/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Kevin Cabbie

Date of Last Inspection: 11/15/05

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson

Assistant Inspector (name, title, organization): Reed Poderis

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	<input checked="" type="checkbox"/>		
2. Previous inspection reports reviewed.	<input checked="" type="checkbox"/>		
a. Were anomalies or trends detected on previous inspections?	<input checked="" type="checkbox"/>		<i>Subsidence were repaired in the previous inspections.</i>
b. Was maintenance performed?	<input checked="" type="checkbox"/>		
3. Site maintenance and repair records reviewed.	<input checked="" type="checkbox"/>		
a. Has site repair resulted in a change from as-built conditions?		<input checked="" type="checkbox"/>	
b. Are revised as-builts available that reflect repair changes?			<i>N/A</i>

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		<input checked="" type="checkbox"/>	
b. Are there any new roads or trails?		<input checked="" type="checkbox"/>	
c. Has there been a change in the position of nearby washes?		<input checked="" type="checkbox"/>	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		<input checked="" type="checkbox"/>	
e. Are there new drainage channels?		<input checked="" type="checkbox"/>	
f. Change in surrounding vegetation?		<input checked="" type="checkbox"/>	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		<input checked="" type="checkbox"/>	
b. Have any signs been damaged or removed? (Number of signs replaced: <u>0</u> )		<input checked="" type="checkbox"/>	
c. Were gates locked?	<input checked="" type="checkbox"/>		

# CAU 453: AREA 9 UXO LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

		YES	NO	EXPLANATION
3. Waste Unit cover.				
a.	Is there evidence of settling?		✓	
b.	Is there cracking?		✓	
c.	Is there evidence of erosion around the cap (wind or water)?		✓	
d.	Is there evidence of animal burrowing?	✓		large animal burrows discovered at the surface and near the fenced area.
e.	Have the site markers been disturbed by man or natural processes?		✓	
f.	Is vegetation present?	✓		
g.	Do natural processes threaten to integrity of any cover or site marker?		✓	
h.	Other?		✓	N/A
4. Photo Documentation				
a.	Has a photo log been prepared?	✓		
c.	Number of photos exposed ( 5 )	✓		
D. FIELD CONCLUSIONS				
1.	Is there an imminent hazard to the integrity of the unit? (Immediate report required)		✓	
Person/Agency to whom report made:				
2.	Are more frequent inspections required?		✓	
3.	Are existing maintenance/repair actions satisfactory?	✓		
4.	Is other maintenance/repair necessary?	✓		
5.	Is current status/condition of vegetative cover satisfactory?	✓		
6.	Rationale for field conclusions: The site fencing, signage, and monuments are in excellent condition. However, very large animal burrows were discovered that will require a follow-up action.			
E. CERTIFICATION				
I have conducted an inspection of the Area 9 UXO Landfill, CAU 453, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.				
Chief Inspector's Signature:		Printed Name: Glenn Richardson		
Title: Task Manager		Date: 5/31/06		

# CAU 453: AREA 9 UXO LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/31/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER.

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

YES

NO

EXPLANATION

1. Site as-built plans and site base map reviewed.

X

2. Previous inspection reports reviewed.

X

a. Were anomalies or trends detected on previous inspections?

X

b. Was maintenance performed?

X

Large burrows were backfilled in June 2006.

3. Site maintenance and repair records reviewed.

X

a. Has site repair resulted in a change from as-built conditions?

X

b. Are revised as-builts available that reflect repair changes?

N/A

## C. SITE INSPECTION (To be completed during inspection)

YES

NO

EXPLANATION

1. Adjacent off-site features within watershed areas.

a. Have there been any changes in use of adjacent area?

X

b. Are there any new roads or trails?

X

c. Has there been a change in the position of nearby washes?

X

d. Has there been lateral excursion or erosion/deposition of nearby washes?

X

e. Are there new drainage channels?

X

f. Change in surrounding vegetation?

X

2. Security fence, signs.

a. Displacement of fences, site markers, boundary markers, or monuments?

X

b. Have any signs been damaged or removed?  
(Number of signs replaced: 0)

X

c. Were gates locked?

X

# CAU 453: AREA 9 UXO LANDFILL, POST-CLOSURE INSPECTION CHECKLIST

## 3. Waste Unit cover.

- a. Is there evidence of settling?
- b. Is there cracking?
- c. Is there evidence of erosion around the cap (wind or water)?
- d. Is there evidence of animal burrowing?
- e. Have the site markers been disturbed by man or natural processes?
- f. Is vegetation present?
- g. Do natural processes threaten to integrity of any cover or site marker?
- h. Other?

YES NO EXPLANATION

	X	
	X	
	X	
X		Small evidence of animal burrowing.
	X	
X		Vegetation is present, but sparse in certain areas.
	X	
	X	

## 4. Photo Documentation

- a. Has a photo log been prepared?
- c. Number of photos exposed ( 3 )

X		

## D. FIELD CONCLUSIONS

- 1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

	X	
--	---	--

Person/Agency to whom report made:

- 2. Are more frequent inspections required?
- 3. Are existing maintenance/repair actions satisfactory?
- 4. Is other maintenance/repair necessary?
- 5. Is current status/condition of vegetative cover satisfactory?

	X	
X		
	X	
	X	

- 6. Rationale for field conclusions: *The aboveground monuments are in good condition. Small animal burrowing was noticed, but significant enough to warrant a follow-up action.*

## E. CERTIFICATION

I have conducted an inspection of the Area 9 UXO Landfill, CAU 453, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name:

*Glenn Richardson*

Title:

*Task Manager*

Date:

*11/15/06*



# CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 5/9/2006

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: KEVIN CASSIDY

Date of Last Inspection: 1/1/2005

Reason for Last Inspection: SEMI ANNUAL

Inspector (name, title, organization): GLENN RICHMONDSON, TASK MGR, BN ER

Assistant Inspector (name, title, organization): SHARON BURWISON, TELLER, BN ER

## A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
2. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
3. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
4. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
5. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?	X	X	2 MONUMENTS AT H-17 & ONE AT H-8 SHOWED CRACKING
b. Was maintenance performed?	X		SEALANT / THINSET USED TO REPAIR
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?			
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?			N/A
b. Have any signs been damaged or removed? (Number of signs replaced: _____)		X	

# CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION CHECKLIST

3. Waste Unit cover. YES NO EXPLANATION

a. Is there evidence of settling?

X

b. Is there evidence of animal burrowing?

X

c. Have the site markers been disturbed by man or natural processes?

X

d. Other?

N/A

4. Photo Documentation

a. Has a photo log been prepared?

X

c. Number of photos exposed ( # )

2 sheets of film, 11 x 14  
2 sheets of film, 11 x 14

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

5. Is current status/condition of vegetative cover satisfactory?

N/A

6. Rationale for field conclusions:

PHYSICAL WALKDOWN & VISUAL INSPECTION SHOWS SITE  
(BOTH LOCATIONS) TO BE IN EXCELLENT CONDITION.

## E. CERTIFICATION

I have conducted an inspection of the Area 9 UXO Landfill, CAU 453, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name: GLENN KIMMENSEN

Title: TTR MANAGER

Date: 5/9/2006

# CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION CHECKLIST

Inspection Date: 11/15/06

Responsible Agency: NNSA/NSO ER

NNSA Project Manager: Pete Sanders

Date of Last Inspection: 5/4/06

Reason for Last Inspection: Semi-Annual

Inspector (name, title, organization): Glenn Richardson, Task Manager, NSTec ER

Assistant Inspector (name, title, organization): Reed Poderis, Technical Manager, NSTec ER

## A. GENERAL INSTRUCTIONS

- All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is provided. Attach the additional pages and number all pages upon completion of the inspection.
- Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, and annotated site maps.
- The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to examine the entire surface and all features specifically described in the checklist.
- A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
- This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

## B. PREPARATION (To be completed prior to site visit)

	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			N/A

## C. SITE INSPECTION (To be completed during inspection)

	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	

# CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION CHECKLIST

## 3. Waste Unit cover.

YES

NO

EXPLANATION

a. Is there evidence of settling?

X

b. Is there evidence of animal burrowing?

X

c. Have the site markers been disturbed by man or natural processes?

X

d. Other?

X

## 4. Photo Documentation

a. Has a photo log been prepared?

X

c. Number of photos exposed ( 3 )

## D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

X

Person/Agency to whom report made:

2. Are more frequent inspections required?

X

3. Are existing maintenance/repair actions satisfactory?

X

4. Is other maintenance/repair necessary?

X

5. Is current status/condition of vegetative cover satisfactory?

BR

N/A

6. Rationale for field conclusions:

The aboveground monuments are erect and in good condition. The signage is in good condition.

## E. CERTIFICATION

I have conducted an inspection of the Area 9 UXO Landfill, CAU 453, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:

Printed Name:

Glenn Richardson

Title:

Task Manager

Date:

11/15/08

**ATTACHMENT D.**  
**FIELD NOTES**

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May 9, 2006

PERSONNEL - TM - GLENN RICHARDSON  
TL - SHAUGHAN BURNISON

VISITORS - KEVIN CABLE (ANSA TM) } AFTER  
TED ZAFRATOS (NDEP) } 12:00  
NOON

NOTE: PATROL 5-8285  
CALL BEFORE GOING  
TO CACTUS SPRINGS

EQUIPMENT - DIGITAL  
CAMERA, 4-WD PICKUP

WEATHER - CLEAR, WARM 70s & 80s, SLIGHT BREEZE

TAILGATE - SLIPS/TRIPS, BIOTA, RANGE ACCESS ISSUES, NO PARTICULAR PPE,  
DRIVING SAFETY, MEDICAL, CPR/FIRST AID, EMER PROC., CHAIRS.

SCOPE - POST-CLOSURE MONITORING INSPECTIONS OF 7 ~~SITES~~ CAUS, 15 CAS.

(2 CAUS & 3 CAS OFFLIMITS DUE TO EXERCISES - TO INSPECTED AT LATER  
DATE)

ACTIVITIES - 9:00-9:30 PICKUP PHOTO PASS FROM BLDG 100, RETRIEVE CAMERA FROM GATE

PROCEED TO CAU 487 (ANOMALY A-8) TWO PHOTOS LOOKING WEST TAKEN OF MONUMENTS.  
MANY HORSES IN NEAR VICINITY, BUT ALL 4 MONUMENTS UPRIGHT SIGNS ON & IN  
GOOD CONDITION,

10:10  
CAU 487 (ANOMALY A-17) 2 PHOTOS TAKEN LOOKING WEST. ALL MONUMENTS UPRIGHT.  
SIGNS ATTACHED & IN GOOD CONDITION (NOTED ONE SIGN SAYS ANOMALY A-8)

10:30-10:40  
CAU 423 (03-02-002-0308) 2 PHOTOS TAKEN LOOKING EAST, ONE OF MONUMENT. SIGN IN  
GOOD CONDITION.

5/9/06

# TITLE

Work continued from Page 136

PROJECT NO.

BOOK NO.

137

ACTIVITIES CONT'D - STOP IN OFFICE; PHONE CALLS & BUSPN PREP.

11:30 - 13:00 LUNCH - CLIENTS ARRIVE AT NOON FOR LUNCH.

PHOTO LOG 5/9/06

CAN	CAS	PHOTOS	
487	ANOMALY A-8	LOOKING WEST x 2	CAS RG-26-001-RGRV 1, 2, 3
487	ANOMALY A-17	LOOKING WEST x 2	
423	03-02-002-0308	LOOKING EAST x 2 + ONE OF AT-GRADE MONUMENT	6, 7, 8
427			9-15
424	03-08-001 - A301	LOOKING NE x 2	16, 17
"	A302	" N x 2	<del>18, 19</del> 20, 21
"	A305	" SE x 2	<del>22, 23</del> 22, 23
"	A303	" N x 2	<del>24, 25</del> 24, 25
"	A303	" E x 2	<del>26, 27</del> 26, 27
"	A304	" E x 2	28-29
"	A308	" W x 2	30-31
"	A308	" W x 2	32, 33
"	A306	" NW x 2	34 25
426	RG-08-001-RGCS	" N x 2 S x 1	36, 37, 38
407	TA-23-001-TARC	" SW x 1 E x 1	39, 40, 41
404	TA-03-001-TARC	"	—
"	TA-21-001-TARC	" E x 1	407 42

ACTIVITIES CONTINUED - 13:00 - 15:00 WALKING INSPECTIONS & PHOTOS OF

CAN 424 (7 CAS, 7 LOCATIONS) NO ISSUES... MONUMENTS IN GOOD CONDITION,

ALTHO 1 or 2 SHOW SOME WEATHERING EFFECTS. SIGNS IN EXCELLENT CONDITION

NO INDICATION OF SUBSIDENCE. SUITABLE VEGETATION.



ACTIVITIES CONTINUED - 13:00-15:00. CAU 427 - VIEWED SITE WITH TM. CLIENTS.

GOOD COMMENTS - ACCEPTANCE OF REWORKED MONUMENTS. NO OTHER ISSUES. CAU 423 - CLIENT DISCUSSION RE REMOVAL OF DRAIN PIPE ASSOCIATED W/ THIS CAB. RISK OF UTIL LINE BREACH.

4/26 1530-1545

2 P.A. -  
products

LOCKING fence gate

CAU 487 - VIEWED W/ CLIENT. NO ISSUES WITH SITE (EITHER ~~ONE~~)

15:00-17:30 CAU 424 - FENCE & SIGNS OKAY. SOME ANIMAL BURROWS NOTED, BUT NOT SIGNIFICANT. VEGETATION & GATE OKAY. NO ISSUES OR CONCERNS.

CAU 407 - FENCE IN GOOD CONDITION EXCEPT SE CORNER POSTS NEED REINFORCING & STRANDS TIGHTENED. RAD POSTINGS ARE FADED BADLY. CLARIFICATION NEEDED FROM RADCON RE POSTING REQ'TS. ONLY ONE CONTROLLED AREA SIGN IS POSTED AT THE ENTRANCE. THERE IS A QUESTION WHETHER THERE SHOULD BE (OR COULD BE) <sup>SIGNS</sup> ~~SIGNS~~ POSTED ON THE THREE OTHER SIDES AS THIS IS A WMA WITH SIGNIFICANT BURIED CONTAMINATION. COULD UR SIGNS BE PLACED AS A BEST MGMT PRACTICE? ANIMAL BURROWING IN THE COVER WAS NOTED AS A CONCERN. BIOLOGIST NEEDS TO BE INFORMED - POSSIBLE TRAP & RELEASE MAY BE ADVISABLE DURING VEGETATION MONITORING LATER THIS MONTH. ~~16 BURROWS~~ 16 BURROWS WERE COUNTED ALONG SOUTH EDGE OF COVER. HOGGING HOLDING SIGN ON S. FENCE HAD COME OFF. SIGN NEEDS REMOUNT.

CAU 426 - CACTUS SPRINGS: ARRIVED & PARKED AT THE GATE. A SIZEABLE HERD OF HORSES WERE GATHERED NEAR THE SPRING. OTHER INDIVIDUALS WERE IN THE GENERAL AREA. GATE WAS LOCKED. NO ENTRANCE WAS MADE. WALKED THE FENCE LINE, VIEWED THE HEALTHY VEGETATION WITHIN. ON SECTION

Work continued to Page 139

## TITLE

PROJECT NO.

139

Work continued from Page 138

BOOK NO.

ADJACENT TO GATE APPEARED TO HAVE BEEN LEANED AGAINST BY A HORSE,  
BOWING IT INWARD. FENCE REMAINED INTACT BUT PULLING THE WIRE  
TIGHT AT A FUTURE DATE IS ADVISABLE. SOME BURROWS (SMALL RODENT)  
WERE NOTED OUTSIDE THE SOUTH FENCELINE. SIGNS ARE UP, LEGIBLE,  
& ATTACHED. OVERALL EXCELLENT CONDITION. NO SIGNIFICANT ISSUES  
OF CONCERN.

CAN 404 - ROLLER COASTER LAGOONS: NO ENTRY MADE. FENCELINE WALKED.  
GATE, FENCE, SIGNAGE & VEGETATION IN EXCELLENT CONDITION. CLIENT  
NOTED THAT IT MAY BE TIME TO FORMALLY PROPOSE REMOVAL OF THE  
FENCE AS VEGETATION WITHIN AREA & ON COURSE MATCHES  
POPULATION OUTSIDE FENCELINE AND HAS EXHIBITED STABILITY.  
TWO LARGE BURROWS/DENS WERE NOTED OUTSIDE SOUTHERN  
FENCE LINE. CLIENT EXPRESSED INTEREST IN DETERMINING WHICH  
ANIMAL WAS USING THESE BURROWS - THIS IS AN ACTION ITEM FOR  
BIOLOGIST DURING UPCOMING VEGETATION SURVEYS OF THIS & OTHER  
TTR UNITS. OVERALL EXCELLENT CONDITION. NO SIGNIFICANT  
ISSUES OF CONCERN.

CAN 400 - BOMBLEY PIT &amp; S-PTS LANDFILL

CAN 453 - AREA 9 LKO LANDFILL

NO INSPECTIONS OF THESE  
SITES ON THIS DATE.

THE ABOVE TWO SITES WERE OFF-LIMITS DUE TO AN EXERCISE ON THE  
BASE. THEY WILL BE INSPECTED BEFORE THE END OF THE MONTH.  
WITH THIS EXCEPTION —

TTR PCM INSPECTIONS COMPLETE

SB

May 31, 2006 TTR Post Closure Inspections for CAU 453 and CAU 400

Purpose: Inspections could not be performed on May 9 with other TTR sites because areas for CAU 453 and CAU 400 were restricted due to classified site exercises.

Personnel: Glenn Richardson  
Reed Poderis

Equipment: Digital Camera

Weather: Warm, 90's

Tailgate: Be aware of biological hazards (snakes, scorpions, bees, etc.)  
Slips/Trips/Falls Medical/CPR First Aid Heat stress conditions  
Communications - TTR Radio Security is on ASI net.

PPE: Standard Level D (Safety Shoes, Glasses, and Hard hat (if necessary))

Scope: Perform semi-annual inspections for CAU 453: <sup>Area 9</sup> UXO Landfill,  
CAU 400: Bomblet Pit Site, and CAU 400 S Ptr. Landfill site.

Arrived at TTR gate at approx. 10:30 AM. Picked up camera permit  
at approx. 11:05 AM.

CAU 453- Arrived at Area 9 UXO Landfill site at 11:15 AM. Performed tailgate  
safety briefing and began site inspection at 11:22 AM.

Used combination code <sup>099</sup> lock to access gate. Performed walkdown  
of the internal fenced area. We noticed large animal burrows  
on the northeast corner of the A9-1 Trench and along the northern  
fence perimeter. We also noticed miscellaneous scrap on the ground  
surface. A walkdown was also performed around the external fenced  
area. The aboveground monuments are in good condition and vegetation  
growth appears normal. Inspection photos were taken of the site and animal burrows.

Left CAU 453 Area 9 UXO Landfill at 12:02 PM. Adjourned to Lunch.

Lunch Hours ~~ended~~ at 12:30 PM

- CAU 400 - 5 Points Landfill

Arrived at site at 1:20 PM. Performed walkdown around fence perimeter. Inspection photos<sup>(1)</sup> were taken of the site area. Fencing appeared to be in good condition. Small animal burrows were noticed inside and outside of the fence within <sup>the</sup> northeast corner. No significant issues were noticed at the site. Vegetation appeared normal, but will be inspected by plant specialist on June 13-14, 2006. Left the 5 Points Landfill at 1:45 PM.

- CAU 400 - Bomblet Pit Site

Arrived at site at 2:50 PM. Performed walkdown around fence perimeter. Inspection photos<sup>(1)</sup> were taken of the site area. T-posts and barb wire fencing are in good condition, however; the chicken wire fencing on the west and east ~~side~~ <sup>side</sup> of fencing needs repair. Vegetation appeared normal, but will be inspected by plant specialist on June 13-14, 2006. Found bomblet with suspected fuse. Westinghouse (Jerry) will be contacted. Bomblet was marked with orange Area flagging before departing the site. Left the Bomblet Pit Site at ~~3:10~~ <sup>4:20</sup> PM. 3:20

- CAUs for TTR Inspections are complete. Heading back to BN Office trailer and subsequently heading back to Mercury.

*Eden Richardson*

## TTR Post Closure Monitoring Inspection (Semi-Annual)

Personnel: Kevin Cable - NNSA, Pete Sanders - NNSA  
Glenn Richardson - NSTec ER Task Manager  
Shaughn Burnison - NSTec ER Field Technical Lead <sup>GR</sup>  
Reed Paderis - NSTec ER Technical Manager

Equipment: Camera

Weather: Sunny, Cool, Breezy

Scope: Perform Semi-Annual TTR Post Closure Inspections

Tailgate Safety Briefing: Cold Stress, Slips, Trips, Falls,  
Range Access Issues, Medical, First Aid

8:05 AM - Arrived at CAU 487. Performed site inspection of monuments and took photo documentation. There were no issues at the A-8 or A-17 sites. All monuments are erect and signage is in good condition. Departed from CAU 487 at 8:25 AM.

8:44 AM - Arrived at CAU 453. Performed site inspection with photo documentation. The aboveground monuments are in good condition. There was some small animal burrowing noticed, but it was not viewed as significant enough to warrant a follow-up action. Departed from CAU 453 at 9:05 AM.

9:16 AM - Arrived at CAU 400 - S Pts. Landfill. Performed site inspection and noticed that the vegetation was all dead due to flooding in the area. NSTec took an action to discuss this issue the NSTec plant & eco-services org to get a recommendation if re-planting is necessary, monitoring for new vegetation in the spring, or evaluating other alternatives.

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

11/15/06

The site conditions were confirmed with photo documentation.

After photos were taken, we left 5PH at 9:30.

9:39 AM - Arrived at CAU 400 Bumble Pit.

There are no site issues at the Bumble Pit. Previous fence repair was maintained and signage is in good condition. Photos were taken and departed the site at 9:50 AM.

10:03 AM - Arrived at CAU 404. Performed the site inspection with photo documentation. Observed the vegetative cover to find it in good condition. The fencing and signage ~~appeared~~ was without damage. No animal burrows were on the site. Departed ~~404~~ at 10:15 AM.

10:18 AM - Arrived at CAU 407. Inspected the site to find the fencing, cover, and signage in a good condition. There were no animal burrows at this site. Photo documentation was completed and left the site at 10:25 AM.

10:40 AM - Arrived at CAU 426. Inspected the Cactus Springs site and found no issues. The signage and fencing are in good condition. Photos were taken. Also, noticed some small burrowing outside of the fenced site boundary. Departed the site at 10:52 AM, in route back to Area 3 Man-Camp for lunch.

1:30 PM Returned to ER Trailer after lunch.

13:15PM - Arrived at CAU 427. Inspected each site use-restriction boundary marker, to make sure the red rock cover was visible enough to delineate the site. The signage is in good condition. There was photo documentation taken, but no issues were at this site.

13:30PM - Arrived at CAU 423. The inspection was performed at the use-restriction area and photo documentation was taken. Signage is in good condition. Left CAU 423 heading to the sites at CAU 424.

13:35PM - Arrived at CAU 424. Performed inspection of all sites. The aboveground and at-grade monuments are not damaged and in good condition. Photo documentation was taken. No issues. Departed the last CAU 424 site at 14:15PM. NNSA headed back to North LV.

Photo Log - TTR PCM Sites - 11/15/06

TTR Site	# of Photos	TTR Site	# of Photos
487	A-8 → 5 A-17 → 3	424	A3-3 → <del>2</del> <sup>dr</sup> 3
453	3	"	A3-8 → <del>2</del> <sup>dr</sup> 1
400 5 Pts.	3	"	A3-4 → 2
400 Bomblet Pit	3	"	A3-5 → 2
404	1	"	A3-1 → 2
407	6	"	A3-2 → 2
426	4	"	A3-6 → 2
427	3		
423	1		

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## **ATTACHMENT E**

### **PHOTOGRAPHS**

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## PHOTOGRAPH LOG

PHOTOGRAPH	DATE	DESCRIPTION
1	05/31/2006	CAU 400 Bomblet Pit, looking west
2	11/15/2006	CAU 400 Bomblet Pit, looking south
3	05/31/2006	CAU 400 Bomblet Pit, looking north
4	11/15/2006	CAU 400 Bomblet Pit, looking north
5	05/31/2006	CAU 400 Five Points Landfill, looking east
6	11/15/2006	CAU 400 Five Points Landfill, looking east
7	05/31/2006	CAU 400 Five Points Landfill, looking west
8	11/15/2006	CAU 400 Five Points Landfill, looking west
9	05/09/2006	CAU 404, looking east
10	11/15/2006	CAU 404, looking east
11	05/09/2006	CAU 407, looking east
12	11/15/2006	CAU 407, looking east
13	05/09/2006	CAU 407, looking southwest
14	11/15/2006	CAU 407, looking northeast
15	05/09/2006	CAU 423, looking east
16	11/15/2006	CAU 423, looking east
17	05/09/2006	CAU 424, Landfill Cell A3-1, looking south
18	11/15/2006	CAU 424, Landfill Cell A3-1, looking north
19	05/09/2006	CAU 424, Landfill Cell A3-2, looking north
20	11/15/2006	CAU 424, Landfill Cell A3-2, looking north
21	05/09/2006	CAU 424, Landfill Cell A3-3, looking east
22	11/15/2006	CAU 424, Landfill Cell A3-3, looking west
23	05/09/2006	CAU 424, Landfill Cell A3-3, looking north
24	11/15/2006	CAU 424, Landfill Cell A3-3, looking north
25	05/09/2006	CAU 424, Landfill Cell A3-4, looking northeast
26	11/15/2006	CAU 424, Landfill Cell A3-4, looking north
27	05/09/2006	CAU 424, Landfill Cell A3-5, looking southeast
28	11/15/2006	CAU 424, Landfill Cell A3-5, looking southeast
29	05/09/2006	CAU 424, Landfill Cell A3-6, looking northwest
30	11/15/2006	CAU 424, Landfill Cell A3-6, looking northwest
31	05/09/2006	CAU 424, Landfill Cell A3-8, looking west
32	11/15/2006	CAU 424, Landfill Cell A3-8, looking west

PHOTOGRAPH	DATE	DESCRIPTION
33	05/09/2006	CAU 426, looking north
34	11/15/2006	CAU 426, looking north
35	06/02/2006	CAU 427, looking north
36	11/15/2006	CAU 427, looking northwest
37	05/09/2006	CAU 427, looking south
38	11/15/2006	CAU 427, looking south
39	05/31/2006	CAU 453, looking west
40	11/15/2006	CAU 453, looking west
41	05/09/2006	CAU 487, A-8 anomaly, looking west
42	11/15/2006	CAU 487, A-8 anomaly, looking southwest
43	05/09/2006	CAU 487, A-17 anomaly, looking west
44	11/15/2006	CAU 487, A-17 anomaly, looking southwest



Photograph 1: CAU 400 Bomblet Pit, looking west, 05/31/2006



Photograph 2: CAU 400 Bomblet Pit, looking south, 11/15/2006





Photograph 3: CAU 400 Bomblet Pit, looking north, 05/31/2006



Photograph 4: CAU 400 Bomblet Pit, looking north, 11/15/2006





Photograph 5: CAU 400 Five Points Landfill, looking east, 05/31/2006



Photograph 6: CAU 400 Five Points Landfill, looking east, 11/15/2006





Photograph 7: CAU 400 Five Points Landfill, looking west, 05/31/2006



Photograph 8: CAU 400 Five Points Landfill, looking west, 11/15/2006





Photograph 9: CAU 404, looking east, 05/09/2006



Photograph 10: CAU 404, looking east, 11/15/2006



Photograph 11: CAU 407, looking east, 05/09/2006



Photograph 12: CAU 407, looking east, 11/15/2006





Photograph 13: CAU 407, looking southwest, 05/09/2006



Photograph 14: CAU 407, looking northeast, 11/15/2006





Photograph 15: CAU 423, looking east, 05/09/2006



Photograph 16: CAU 423, looking east, 11/15/2006



Photograph 17: CAU 424, Landfill Cell A3-1, looking south, 05/09/2006



Photograph 18: CAU 424, Landfill Cell A3-1, looking north, 11/15/2006





Photograph 19: CAU 424, Landfill Cell A3-2, looking north, 05/09/2006



Photograph 20: CAU 424, Landfill Cell A3-2, looking north, 11/15/2006



Photograph 21: CAU 424, Landfill Cell A3-3, looking east, 05/09/2006



Photograph 22: CAU 424, Landfill Cell A3-3, looking west, 11/15/2006





Photograph 23: CAU 424, Landfill Cell A3-3, looking north, 05/09/2006



Photograph 24: CAU 424, Landfill Cell A3-3, looking north, 11/15/2006





Photograph 25: CAU 424, Landfill Cell A3-4, looking northeast, 05/09/2006



Photograph 26: CAU 424, Landfill Cell A3-4, looking north, 11/15/2006



Photograph 27: CAU 424, Landfill Cell A3-5, looking southeast, 05/09/2006



Photograph 28: CAU 424, Landfill Cell A3-5, looking southeast, 11/15/2006





Photograph 29: CAU 424, Landfill Cell A3-6, looking northwest, 05/09/2006



Photograph 30: CAU 424, Landfill Cell A3-6, looking northwest, 11/15/2006



Photograph 31: CAU 424, Landfill Cell A3-8, looking west, 05/09/2006



Photograph 32: CAU 424, Landfill Cell A3-8, looking west, 11/15/2006





Photograph 33: CAU 426, looking north, 05/09/2006



Photograph 34: CAU 426, looking north, 11/15/2006





Photograph 35: CAU 427, looking north, 05/09/2006



Photograph 36: CAU 427, looking northwest, 11/15/2006



Photograph 37: CAU 427, looking south, 05/09/2006



Photograph 38: CAU 427, looking south, 11/15/2006





Photograph 39: CAU 453, looking west, 05/31/2006



Photograph 40: CAU 453, looking west, 11/15/2006





Photograph 41: CAU 487, A-8 anomaly, looking west 05/09/2006



Photograph 42: CAU 487, A-8 anomaly, looking southwest 11/15/2006



Photograph 43: CAU 487, A-17 anomaly, looking west 05/09/2006



Photograph 44: CAU 487, A-17 anomaly, looking southwest, 11/16/2005

**ATTACHMENT F**  
**POST-CLOSURE VEGETATION**  
**MONITORING REPORT**

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**POST-CLOSURE VEGETATION MONITORING REPORT  
FOR CORRECTIVE ACTION UNITS:**

**400, FIVE POINTS LANDFILL (TTR)**

**400, BOMBLET PIT (TTR)**

**404, ROLLER COASTER LAGOONS AND TRENCH (TTR)**

**407, ROLLER COASTER RADSAFE AREA (TTR)**

**426, CACTUS SPRING WASTE TRENCHES (TTR)**

**Field Work Completed on  
June 13 – 14, 2006**

**Report Prepared  
by  
Dave Anderson  
Ecological Services**

**September 2006**

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## **1.0 INTRODUCTION**

In the fall of 1997, Corrective Action Units (CAUs) 400 (Bomblet Pit and Five Points Landfill), 404 (Roller Coaster Lagoons and Trench), and 426 (Cactus Spring Waste Trenches) were seeded with a mix of seeds of native shrubs and grasses. Each site was mulched with straw, and the straw was crimped into the soil. The sites have been protected from grazing animals (e.g., horses and rabbits) since that time with a 4-foot high perimeter barbed wire fence with 2-foot high chicken wire along the base of the fence. In the fall of 2000, the cover at CAU 407 (Roller Coaster RadSafe Area) was revegetated using similar revegetation techniques.

Remedial revegetation has occurred at two of the sites. A flash flood swept through the center of the CAU 400 Five Points Landfill site in the summer of 2003. The perimeter fence was damaged, and much of the vegetation through the center of the site was lost. The fence was repaired, and the site was reseeded in the fall of 2004. After CAU 407 was revegetated in 2000, cover repairs resulted in the loss of the vegetation that had become established. In the fall of 2004, erosion channels on the cover were repaired, and the site was reseeded. An erosion blanket was used to minimize erosion.

Each site has been monitored periodically since revegetation occurred to document the success of reclamation efforts and identify any problems. The first year of monitoring was designed to determine if germination of seeded plant species had occurred and included plant density estimates and photographic documentation. Monitoring in subsequent years evaluated plant establishment and long-term vegetation survival, and compared plant cover and density with adjacent reference areas (undisturbed sites).

## **2.0 OBJECTIVES**

This report documents the methodology and results of monitoring conducted in June 2006 at CAU 400, CAU 404, CAU 407, and CAU 426, which are located on the Tonopah Test Range in central Nevada. The status of the vegetation is described and compared with adjacent undisturbed areas. Concerns and issues are identified, and remedial actions are recommended to ensure that a viable vegetative cover is maintained at each site.

## **3.0 METHODS**

Ecological Services staff scientists inspected the sites on June 13 and 14, 2006. Plant cover and density estimates were made, wildlife usage was noted, and soil erosion conditions were evaluated. Plant cover was estimated using an optical point projection device or cover scope. Cover sample points were taken at given intervals along a permanently placed linear transect. Plant density was estimated using one meter square quadrats, which are located at given intervals along each transect. The total number of individual plants located within the boundaries of each quadrat was recorded. The data were averaged over all quadrats to obtain average plant densities (plants per square meter [ $m^2$ ]). Wildlife usage was determined by noting any wildlife or wildlife sign (i.e., burrows) observed during sampling. The erosion condition of the soil was determined using a modified Bureau of Land Management erosion condition classification (Appendix F-2). Reference areas were similarly sampled, and respective data were used as standards to evaluate revegetation success.

Revegetation is typically considered successful when a predetermined percentage of the perennial plant cover and density on adjacent, undisturbed plant communities is achieved. A percentage was not established for these sites; however, a typical percentage used to determine reclamation success is 70 percent and is usually achieved, at the earliest, 5 years after revegetation is completed and more typically in the tenth year following revegetation. 2006 is the ninth year since revegetation occurred at CAUs 400, 404, and 426. Undisturbed plant communities (i.e., reference sites) are sampled annually at each site. Revegetation of CAU 407 originally occurred in 2000; however, the site was later disturbed and re-seeded in the fall of 2004. In addition, sections of the CAU 400 Five Points Landfill site were reseeded in the fall of 2004 to repair damage that had occurred from a flash flood.

## 4.0 RESULTS

The results of the 2006 monitoring are reported below. The plant density and cover estimate data collected was summarized and compared to data collected from reference areas. Based on perennial plant density and perennial plant cover, the sites were considered successfully reclaimed if 70 percent of the density and cover on the respective reference areas was attained.

### 4.1 CAU 400, Five Points Landfill, Results

Five transects were sampled in the fenced area at the Five Points Landfill. Plant cover, density, and diversity were averaged over the five transects and are presented in Tables 1, 2, and 3.

#### 4.1.1 Plant Cover

Total plant cover decreased in 2006. There was a decrease in shrub cover from 2005 to 2006; however, in 2005, shrub cover was only averaged over two transects located in non-flooded areas. In 2006, cover estimates included the two transects in the non-flooded areas and an additional three transects located on the flooded area that was reseeded in the fall of 2004. Although the amount of shrub cover decreased from 2005 to 2006, grass cover more than doubled. Grass cover was relatively high the first few years after seeding, but due to below normal precipitation in 2003 and 2004 and a flash flood in 2003, grasses have contributed less to overall plant cover since 2004. Forbs fluctuate from year to year depending on precipitation. The amount of forb cover declined from 9 percent in 2005 to 6 percent in 2006. The changes in shrub and grass cover are better indicators of overall vigor and stability of the vegetative community than are changes in forb cover.

**TABLE 1. PLANT COVER (%) ON CAU 400, FIVE POINTS LANDFILL**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	2.5	8.3	9.2	8.1	9.0	8.5	8.3	5.8
Grasses	10.0	22.5	10.0	3.7	1.3	3.3	5.8	4.1
Forbs/Annuals	3.3	1.7	0.0	2.2	9.0	6.0	0.0	0.0
<b>Total Plant Cover</b>	<b>15.8</b>	<b>32.5</b>	<b>19.2</b>	<b>14.0</b>	<b>19.3</b>	<b>17.8</b>	<b>14.1</b>	<b>9.9</b>

#### 4.1.2 Plant Density

Fourwing saltbush has been the most dominant shrub since seeding occurred. In 2006, the density of fourwing saltbush decreased, and for the first time winterfat was found. The decrease in the number of shrubs was accompanied by an increase in the density of grasses, mainly on the newly seeded area, where numerous squirreltail and Indian ricegrass were found. Even though the number of grasses doubled from 2005 to 2006, overall grass density is still below that experienced from 2002 to 2004. The density of annual forbs is higher than in years prior to 2005, although it decreased by approximately 75 percent from 2005 to 2006.

Wildlife use of the site has been evident since revegetation was completed. Small mammal burrows are located throughout the site and are most abundant in the southeastern section of the site, out of the path of flooding.

There was no evidence of erosion until the low-lying areas were flooded in 2003. Standing water was present for several months, resulting in the loss of all vegetation. After the flooded area was reseeded in 2004, there has again been some standing water in the low-lying areas, but the check dams upstream are in place and there were no signs of flooding. There is a small layer of silts/sands in the bottom areas, suggesting some overland erosion, but no erosion gullies were observed, and there does not appear to be any damage to the vegetation.

**TABLE 2. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 400, FIVE POINTS LANDFILL**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Bud Sagebrush	0.0	0.1	0.1	0.0	0.0	0.0	0.0	--
	Fourwing Saltbush	0.7	1.0	1.4	1.1	1.4	0.5	0.1	--
	Greene's Rabbitbrush	0.0	0.0	0.0	0.0	0.0	0.0	0.4	--
	Winterfat	0.0	0.0	0.0	0.0	0.0	0.2	0.0	--
<b>Total Shrubs</b>		<b>0.7</b>	<b>1.1</b>	<b>1.5</b>	<b>1.1</b>	<b>1.4</b>	<b>0.7</b>	<b>0.5</b>	<b>0.4</b>
Grasses	Squirreltail	2.2	0.3	0.8	0.4	0.1	0.6	0.1	--
	Galleta	0.0	0.0	0.0	0.1	0.0	0.0	0.0	--
	Indian Ricegrass	4.8	3.2	2.1	1.0	0.4	0.3	1.7	--
<b>Total Grasses</b>		<b>7.0</b>	<b>3.5</b>	<b>2.9</b>	<b>1.5</b>	<b>0.5</b>	<b>0.9</b>	<b>1.8</b>	<b>1.4</b>
<b>Total Forbs/Annuals</b>		<b>10.2</b>	<b>0.4</b>	<b>1.3</b>	<b>13.5</b>	<b>56.4</b>	<b>14.6</b>	<b>3.4</b>	<b>2.4</b>
<b>Total Plant Density</b>		<b>17.9</b>	<b>5.0</b>	<b>5.7</b>	<b>16.1</b>	<b>58.3</b>	<b>16.2</b>	<b>5.7</b>	<b>4.2</b>
<b>Wildlife Use</b>		--	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	--	--
<b>Erosion Classification</b>		--	Stable	Stable	Critical	Critical	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.1.3 Plant Diversity

Diversity, which is a measurement of the number of different plant species, is used as a measure of plant community vigor. The number of perennial plant species increased to 1.9 species in 2006, from 1.2 species in 2004 and 2005, and close to the overall high of 2.2 species in 2000. The number of shrub and grass species increased, with the number of grasses doubling yet less than the high of 1.8 species in 2000. Shrub diversity in 2006 was the highest ever estimated on the site. Both shrub and grass diversity is higher on the revegetated area than on the reference area.

**TABLE 3. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 400, FIVE POINTS LANDFILL**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	0.4	0.5	0.6	0.6	0.7	0.9	0.5
Grasses	1.8	1.2	1.4	0.6	0.5	1.0	0.9
Number of Perennial Species per Square Meter	2.2	1.7	2.0	1.2	1.2	1.9	1.4

#### 4.1.4 Summary

Shrub and grass cover at the Five Points Landfill site increased from 10.3 percent in 2005 to 11.8 percent in 2006. The total shrub and grass cover in 2006 exceeds the success standard of 9.9 percent; however, when considering shrub cover and grass cover separately, only shrub cover exceeds the standard. The 3.3 percent grass cover is below the amount of grass cover in 2002 and 2003 as well as below the success standard of 4.1 percent.

Perennial plants found in the low-lying areas that were flooded and reseeded in 2004 have only experienced two growing seasons and are not as well established as the shrubs and grasses in the non-flooded areas. It would benefit these newly established plants to keep the perimeter fence, at least until revegetation success standards are met for 2 to 3 consecutive years.

## **CAU 400, FIVE POINTS LANDFILL, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



**JUNE 2002**



**SEPTEMBER 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.2 CAU 400, Bomblet Pit, Results

### 4.2.1 Plant Cover

The first few years after revegetation at the Bomblet Pit site, plant cover ranged from 16 to 19 percent and was always higher than on the adjacent undisturbed reference area. In 2003, cover decreased to 10 percent and continued to decrease below 10 percent for the next 2 years. These declines in plant cover were during a period of below average rainfall. The composition of the cover also changed. The first few years consisted of a mix of shrubs and grasses. But the grasses were unable to survive the drought years and have not reestablished on the site since then. Shrubs make up the total 17.5 percent of plant cover recorded in 2006, which is the highest it has been since 2002. There were a number of annual forbs found on the site in 2005, comprising approximately 3.8 percent of the total cover. Forbs were not encountered in 2006.

**TABLE 4. PLANT COVER (%) ON CAU 400, BOMBLET PIT**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	15.8	18.8	10.0	7.5	8.8	17.5	10.0	7.0
Grasses	2.6	0.0	0.0	0.0	0.0	0.0	1.3	0.9
Forbs/Annuals	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0
<b>Total Plant Cover</b>	<b>18.4</b>	<b>18.8</b>	<b>10.0</b>	<b>7.5</b>	<b>12.6</b>	<b>17.5</b>	<b>11.3</b>	<b>7.9</b>
Bare Ground	63.2	61.3	73.8	78.8	72.5	62.5	58.8	--
Litter	18.4	20.0	16.3	13.8	15.0	20.0	30.0	--

### 4.2.2 Plant Density

The density of perennial shrubs and grasses has not changed significantly since 2004. In 2006, there was an increase in the number of shrubs, and for the first time since 2003, Indian ricegrass was found on the site. Shadscale is still the most abundant shrub on the site, but there was an increase in the number of bud sagebrush in 2006. Winterfat, once present at the site, has been absent since 2003. Bud sagebrush, shadscale, and winterfat are the primary shrub species on the reference area. There were no annual forbs encountered in 2006.

The Bomblet Pit site has never shown signs of erosion. Small mammal burrows are present around the periphery of the site.

**TABLE 5. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 400, BOMBLET PIT**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Bud Sagebrush	3.8	2.5	2.6	0.8	0.9	1.7	2.4	--
	Fourwing Saltbush	0.5	0.3	0.2	0.2	0.1	0.0	0.0	--
	Greene's Rabbitbrush	6.8	6.5	6.4	5.3	4.7	4.8	1.2	--
	Winterfat	0.3	0.0	0.1	0.0	0.0	0.0	0.3	--
<b>Total Shrubs</b>		<b>11.4</b>	<b>9.3</b>	<b>9.3</b>	<b>6.3</b>	<b>5.7</b>	<b>6.5</b>	<b>3.9</b>	<b>2.6</b>
Grasses	Squirreltail	3.1	0.0	0.0	0.0	0.0	0.0	0.0	--
	Galleta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
	Indian Ricegrass	2.5	0.2	0.4	0.0	0.0	0.1	0.1	--
<b>Total Grasses</b>		<b>5.6</b>	<b>0.2</b>	<b>0.4</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>
<b>Total Forbs/Annuals</b>		<b>5.4</b>	<b>0.3</b>	<b>0.1</b>	<b>1.1</b>	<b>56.0</b>	<b>0.0</b>	<b>0.5</b>	<b>0.3</b>
<b>Total Plant Density</b>		<b>22.4</b>	<b>9.8</b>	<b>9.8</b>	<b>7.4</b>	<b>61.7</b>	<b>6.6</b>	<b>4.5</b>	<b>2.9</b>
<b>Wildlife Use</b>		Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	--	--
<b>Erosion Classification</b>		--	Stable	Stable	Stable	Stable	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.2.3 Plant Diversity

Shrub and grass diversity has not fluctuated significantly since 2003. Shrub diversity remains within at approximately 1.5 species. Indian ricegrass was present in 2006 for the first time since 2003.

**TABLE 6. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 400, BOMBLET PIT**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	2.5	2.1	1.9	1.7	1.7	1.6	1.8
Grasses	1.6	0.1	0.2	0.0	0.0	0.1	0.1
Forbs/Annuals	1.3	0.2	0.1	0.5	1.5	0.0	0.4
Average Number of Species per Square Meter	5.4	2.4	2.2	2.1	3.1	1.7	2.2

#### 4.2.4 Summary

Overall plant cover exceeded the standard for revegetation success and has met those standards for the last several years. Shrub cover in 2006 is more than double the standard. Grass cover

remained at 0 percent, which does not meet the standard. Perennial plant density remains approximately 6 plants per m<sup>2</sup>, which is higher than the density on the reference area and approximately two times the standard of 2.9 plants per m<sup>2</sup>. Both shrub and grass densities exceed the standard for reclamation success. No forbs were encountered in 2006; however, forb densities fluctuate widely, making it a less reliable means of measuring reclamation success. Halogeton, a noxious weed that dominated the area prior to closure at a maximum density of 27.4 plants per m<sup>2</sup> in 1999, declined to 0.1 plants per m<sup>2</sup> from 2002 to 2004 and has not been found on the site since 2004.

The only concern at this site is the lack of grasses. After revegetation there was an abundance of grasses. Since then grasses have gradually declined. The reappearance of Indian ricegrass this year is encouraging. With favorable growing conditions in the future, native grasses like Indian ricegrass may become established and contribute more to overall plant cover and density. Shrubs have become well established as indicated by higher cover values and densities than shrubs on the reference area. The fence has protected the shrubs and grasses from the impacts of grazing animals. Removal of the fence may decrease the potential for the grasses to establish on the site. In the event the fence is removed, it would be beneficial to evaluate the site periodically to document the effect, if any, of removing the fence.



## **CAU 400, BOMBLET PIT, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



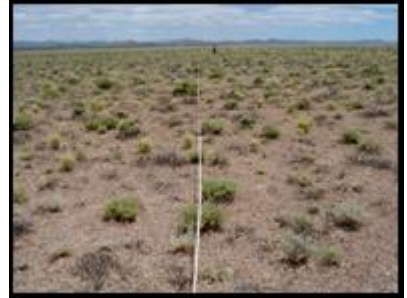
**JUNE 2002**



**JUNE 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.3 CAU 404, Staging Area, Results

### 4.3.1 Plant Cover

Overall plant cover on the staging area of CAU 404 decreased from 2005 to 2006, mainly as a result of a decrease in annual forb cover. There was no significant change in shrub cover, which remains at its high. Grass cover doubled from 2005 to 2006 and, like shrub cover, is the highest it has been since 2000. Annual forb cover decreased by approximately 70 percent from 2005 to 2006. 2005 was the first year forbs contributed to overall plant cover.

**TABLE 7. PLANT COVER (%) ON CAU 404, STAGING AREA**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	9.0	18.5	13.6	17.0	19.5	19.4	11.1	7.8
Grasses	3.5	0.5	0.5	0.0	0.5	1.1	2.8	1.9
Forbs/Annuals	0.0	0.0	0.0	0.0	3.5	1.1	3.3	2.3
<b>Total Plant Cover</b>	<b>12.5</b>	<b>19.0</b>	<b>14.1</b>	<b>17.0</b>	<b>23.5</b>	<b>21.6</b>	<b>17.2</b>	<b>12.0</b>
Bare Ground	56.5	53.0	69.3	61.5	69.0	56.2	55.0	--
Litter	31.0	28.0	16.6	21.5	7.5	22.2	27.8	--

### 4.3.2 Plant Density

Total plant density decreased from its high of 31.8 plants per m<sup>2</sup> in 2005 to 8.1 plants per m<sup>2</sup> in 2006. The density of just perennials (shrubs and grasses) increased from 6.5 plants per m<sup>2</sup> in 2005 to 7.3 plants per m<sup>2</sup> in 2006. There was a slight decrease in the density of grasses, but shrubs increased from 6.2 plants per m<sup>2</sup> in 2005 to 7.1 plants per m<sup>2</sup> in 2006, which is the first increase in shrub density since the site was revegetated. Bud sagebrush increased from 0.6 plants per m<sup>2</sup> in 2005 to 1.6 plants per m<sup>2</sup> in 2006. This is encouraging because bud sagebrush has decreased since 2000. Bud sagebrush is a major constituent of the native vegetation surrounding the site. Although grass density decreased in 2006, Indian ricegrass was encountered, which had decreased dramatically from 2000 to 2003. The density of annual forbs has fluctuated from 0.7 to 25 plants per m<sup>2</sup> since 2000.

There are several small mammal burrows scattered over the site. There is no indication that rabbits are heavily browsing the plants on the site. The only indication of erosion is around the main gate. There was some overland water flow several years ago, but there are no recent signs of erosion.

**TABLE 8. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 404, STAGING AREA**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Bud Sagebrush	1.7	1.2	0.8	0.6	0.6	1.6	2.6	--
	Fourwing Saltbush	0.3	0.2	0.1	0.1	0.1	0.0	0.0	--
	Shadscale	10.0	6.9	5.5	5.4	5.4	5.3	0.8	--
	Winterfat	0.0	0.1	0.1	0.1	0.1	0.1	0.1	--
<b>Total Shrubs</b>		<b>12.0</b>	<b>8.4</b>	<b>6.5</b>	<b>6.2</b>	<b>6.2</b>	<b>7.0</b>	<b>3.5</b>	<b>2.4</b>
Grasses	Low Woollygrass	0.0	0.0	0.0	0.0	0.0	0.0	0.3	--
	Squirreltail	6.2	0.1	0.0	0.0	0.0	0.0	0.0	--
	Galleta	0.8	0.3	0.2	0.1	0.2	0.1	0.8	--
	Indian Ricegrass	2.5	0.5	0.0	0.1	0.0	0.1	0.3	--
<b>Total Grasses</b>		<b>9.5</b>	<b>0.9</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>1.4</b>	<b>1.0</b>
<b>Total Forbs/Annuals</b>		<b>3.5</b>	<b>0.7</b>	<b>0.7</b>	<b>1.9</b>	<b>25.3</b>	<b>0.8</b>	<b>3.3</b>	<b>2.3</b>
<b>Total Plant Density</b>		<b>25.0</b>	<b>10.0</b>	<b>7.4</b>	<b>8.3</b>	<b>31.7</b>	<b>8.0</b>	<b>8.2</b>	<b>5.7</b>
<b>Wildlife Use</b>		Burrows	Burrows	Burrows	Burrows	Burrows	Burrows	--	--
<b>Erosion Classification</b>		Stable	Slight	Slight	Stable	Stable	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.3.3 Plant Diversity

Shrub diversity increased in 2006 but is not significantly different than previous years. A similar pattern has occurred for grasses. There was a decline from 2002 to 2003, but it has been steady since 2003. The diversity of annual forbs ranged from 0.2 species in 2003 to a high of 1.3 species in 2005. Overall plant diversity is stable and has not shown significant changes since 2002.

**TABLE 9. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 404, STAGING AREA**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	2.0	1.7	1.6	1.5	1.4	1.8	1.7
Grasses	2.2	0.6	0.2	0.1	0.1	0.1	0.5
Forbs/Annuals	0.6	0.4	0.2	0.6	1.3	0.4	1.2
Average Number of Species per Square Meter	4.8	2.7	2.0	2.2	2.8	2.3	3.4

#### 4.3.4 Summary

Halogeton, a noxious weed, has been found on the staging area as well as in the native plant community. The density of halogeton was 3.0 plants per m<sup>2</sup> the first year after revegetation, decreased to 0.5 plants per m<sup>2</sup> the following year, showed a slight increase over the next 3 years to a high of 1.6 plants per m<sup>2</sup> in 2004, decreased to 0.1 plants per m<sup>2</sup> in 2005, and was not encountered in 2006. The establishment of both perennial and annual native plants has been the best control measure for this noxious weed.

Overall plant cover and plant diversity on the staging area at CAU 404 exceeds the standards used to determine revegetation success. However, when considering individual life-forms, grasses do not meet success standards. Shrub cover and density is more than two times the standards established for shrubs. Grass cover on the staging area is approximately 60 percent of the standard. The density of grasses is 20 percent of the standard. Shrub cover and density have been consistently higher than the reference area for the last several years, indicating that they have successfully established on the site. The increase in bud sagebrush this year is very encouraging. This species is an important component of the native vegetation and had declined in density over the last few years. This is the first year density of bud sagebrush has increased.

Plant cover and density are higher on the revegetated area than on the adjacent undisturbed reference area. However, grasses have not met revegetation standards for either cover or density. Removal of the fence at this time may put stress on the grasses because they would be exposed to grazing animals, and the vigor and abundance of grasses may decline to a point where they may not meet standards set to determine revegetation success.

## **CAU 404, ROLLER COASTER LAGOONS AND TRENCH, STAGING AREA, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



**JUNE 2002**



**SEPTEMBER 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.4 CAU 404, Cover, Results

### 4.4.1 Plant Cover

Total plant cover on this site decreased from 36.3 percent in 2005 to 25.6 percent in 2006. Shrub cover and annual forb cover both decreased in 2006; however, grass cover increased. Although shrub cover decreased to 13.4 percent, this is the second highest amount of shrub cover since the site was revegetated. Grass cover has steadily increased from the low of 3.8 percent in 2004. Forbs have only contributed to overall cover for two of the 6 years on monitoring.

**TABLE 10. PLANT COVER (%) ON CAU 404, COVER**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	6.3	10.0	12.5	10.0	18.8	13.4	11.1	7.8
Grasses	12.5	16.3	10.0	3.8	10.0	12.2	2.8	1.9
Forbs/Annuals	0.0	0.0	0.0	1.3	7.5	0.0	3.3	2.3
<b>Total Plant Cover</b>	<b>18.8</b>	<b>26.3</b>	<b>22.5</b>	<b>15.1</b>	<b>36.3</b>	<b>25.6</b>	<b>17.2</b>	<b>12.0</b>
Bare Ground	73.7	64.9	71.2	77.4	57.4	66.0	55.0	--
Litter	7.5	8.8	6.3	7.5	6.3	8.4	27.8	--

### 4.4.2 Plant Density

There has been a gradual decline in the density of shrubs and grasses since the site was revegetated. There was an increase in shrub density in 2005, but the 6.3 shrubs per m<sup>2</sup> recorded for 2006 is the lowest shrub density recorded to date. A similar trend has occurred for grasses. The decrease in plant density from 2005 to 2006 has been a result of decrease in the density of fourwing saltbush, shadscale, and galleta grass.

As noted in previous years, there continues to be a number of small mammal burrows around the periphery of the cover berm. The presence of the burrows indicates use of the site by native wildlife species. Increased erosion due to the burrowing activity was not seen in 2006, nor has it been an issue in previous years. There was some overland flooding along the southern edge of the berm, but no channeling or furrowing has been observed.

**TABLE 11. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 404, COVER**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Bud Sagebrush	2.1	1.7	1.2	1.0	0.9	0.8	2.6	--
	Fourwing Saltbush	0.9	0.6	0.3	0.5	0.6	0.3	0.0	--
	Shadscale	10.9	7.0	7.0	5.9	6.6	5.1	0.8	--
	Winterfat	0.3	0.1	0.0	0.0	0.0	0.1	0.1	--
<b>Total Shrubs</b>		<b>14.2</b>	<b>9.4</b>	<b>8.5</b>	<b>7.4</b>	<b>8.1</b>	<b>6.3</b>	<b>3.5</b>	<b>2.4</b>
Grasses	Low Woollygrass	0.0	0.0	0.0	0.0	0.0	0.0	0.3	--
	Squirreltail	10.8	1.6	0.1	0.0	0.1	0.0	0.0	--
	Galleta	8.6	4.7	4.9	5.2	5.1	4.4	0.8	--
	Indian Ricegrass	3.8	2.8	1.1	0.6	0.2	0.3	0.3	--
<b>Total Grasses</b>		<b>23.2</b>	<b>9.1</b>	<b>6.1</b>	<b>5.8</b>	<b>5.4</b>	<b>4.7</b>	<b>1.4</b>	<b>1.0</b>
<b>Total Forbs/Annuals</b>		<b>0.5</b>	<b>0.3</b>	<b>0.2</b>	<b>1.9</b>	<b>31.5</b>	<b>0.5</b>	<b>3.3</b>	<b>2.3</b>
<b>Total Plant Density</b>		<b>37.9</b>	<b>18.8</b>	<b>14.8</b>	<b>15.1</b>	<b>45.0</b>	<b>11.5</b>	<b>8.2</b>	<b>5.7</b>
<b>Wildlife Use</b>		Burrows	Burrows	Burrows	Burrows	Burrows	Burrows	--	--
<b>Erosion Classification</b>		Stable	Slight	Slight	Stable	Stable	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.4.3 Plant Diversity

The diversity of shrubs on the cover has been approximately unchanged since 2002. The diversity of grasses has shown a gradual decline since revegetation occurred and appears to have stabilized at approximately 1.3 species per m<sup>2</sup>. With the lack of annual forbs in 2006, overall plant diversity decreased to the lowest value since the site was revegetated.

**TABLE 12. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 404, COVER**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	2.5	2.1	1.8	2.0	2.0	1.8	1.7
Grasses	3.0	2.7	1.8	1.4	1.3	1.3	0.5
Forbs/Annuals	0.4	0.3	0.2	0.6	1.7	0.2	1.2
Average Number of Species per Square Meter	5.9	5.1	3.7	4.0	5.0	3.2	3.4

#### **4.4.4 Summary**

Revegetation standards established for the cover of CAU 404 have been met. Both shrub cover and grass cover exceed the standards. Shrub cover is nearly twice the standard, and grass cover is more than six times the standard. Shrub and grass densities also exceed revegetation standards. Shrub density is more than two and a half times the standard. Grass density is nearly five times the standard.

Removal of the fence at this site may not have as detrimental effect on the cover as on the staging area because of the excellent mix of native shrubs and grasses that have established on the cover. Plant density and vigor may decline with unrestricted access for both horses and antelope.



## **CAU 404, ROLLER COASTER LAGOONS AND TRENCH, COVER, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



**JUNE 2002**



**JUNE 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.5 CAU 407 Results

### 4.5.1 Plant Cover

2006 is the second year the vegetation has been sampled at this site. Plant density was recorded in 2005, and plant cover and density were recorded in 2006. Total plant cover was 25.8 percent in 2006, which is higher than the reference area. This is to be expected on newly revegetated sites, where there is an abundance of young plants, many from seedlings from 2005 and some from seeds that germinated in 2006. The majority of the cover is from young shrubs and grasses. Unlike in 2005 when there was an abundance of annual forbs, the shrubs and grasses now dominate the site. Over 60 percent of the total plant cover is from young shrubs, and 36 percent of the total plant cover is from grasses. Bare ground accounts for 0 percent of the site. Straw netting, which accounts for litter on the site, was placed on the site to reduce the flow of water and soil erosion, and promote seed germination by retaining soil moisture.

**TABLE 13. PLANT COVER (%) ON CAU 407**

	2006	Reference
Shrubs	15.8	11.1
Grasses	9.2	2.8
Forbs/Annuals	0.8	3.3
<b>Total Plant Cover</b>	<b>25.8</b>	<b>17.2</b>
Bare Ground	0.0	55.0
Litter	74.2	27.8

### 4.5.2 Plant Density

Plant density on the site remains high in comparison to the density of plants in the native vegetation on the reference area. Plant density, including annual forbs, increased from 84 plants per m<sup>2</sup> in 2005 to 86 plants per m<sup>2</sup> in 2006. These high plant densities are not expected to be maintained. As the young plants begin to grow and mature and the demand for water and nutrients increases, there will be a natural thinning of the plants, and only the most hardy and vigorous will survive. Fourwing saltbush and shadscale are still the most dominant species on the site. There was a decrease in the number bud sagebrush seedlings, and the density of winterfat doubled. The density of Indian ricegrass declined significantly from 2005 to 2006, but squirreltail grass increased by about 24 percent. All shrubs and grasses were young seedlings and very few, if any, will flower and set seed.

There are numerous small mammal burrows along the southern and western sides of the site (Figure 1). No burrows were seen on the top of the cover. The surface soils on the site are compacted and may not have been penetrable by the small mammals. Based on the color of the soils that had been brought to the surface at burrow entrances, it appears that the animals are only penetrating the fill material used in cover construction.

Eliminating burrowing activity on the site would be difficult. To do so would require surrounding the site with an exclusion fence, consisting of a metal flashing or small hardware mesh 36 inches high and buried 6 to 10 inches deep. Once the fence is in place, trapping would

be required to remove the animals that are inside the fence. Another option would be to cover areas where burrowing activity is occurring (the side slopes) with a hardware mesh or geotextile fabric. Another option would be to monitor the burrows and the soil that is being brought to the surface. Currently, the soil being moved to the surface is the fill material, indicating the animals are not moving into the native soil. During monitoring, if native soil is being moved to the surface, action should be taken. Another option would be to conduct regular sampling of the biota and soil to determine if either is contaminated. If either is found to be contaminated, then appropriate action should be taken.

**TABLE 14. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 407**

		2005	2006	Reference
Shrubs	Bud Sagebrush	2.9	1.3	2.6
	Fourwing Saltbush	2.3	3.2	0.0
	Shadscale	17.5	17.9	0.8
	Rubber Rabbitbrush	0.0	0.3	--
	Winterfat	0.7	2.0	0.1
<b>Total Shrubs</b>		<b>23.4</b>	<b>24.7</b>	<b>3.5</b>
Grasses	Squirreltail	42.9	53.3	0.0
	Galleta	0.0	0.0	0.8
	Indian Ricegrass	16.4	1.1	0.3
<b>Total Grasses</b>		<b>59.3</b>	<b>54.4</b>	<b>1.1</b>
<b>Total Forbs/Annuals</b>		<b>1.4</b>	<b>7.3</b>	<b>3.3</b>
<b>Total Plant Density</b>		<b>84.1</b>	<b>86.4</b>	<b>7.9</b>
<b>Wildlife Use</b>		Small Mammal Burrows	Small Mammal Burrows	--
<b>Erosion Classification</b>		Stable	Stable	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.5.3 Plant Diversity

Plant diversity was recorded in 2006 to document that there is a good mix of species establishing on the site. Diversity is high and, like plant density, will decline to levels similar to those on the reference area.

**TABLE 15. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 407**

	2005	2006	Reference
Shrubs	2.5	3.4	1.7
Grasses	1.1	1.6	0.5
Forbs	0.8	0.4	1.2
Average Number of Species per Square Meter	4.4	5.4	3.4

#### 4.5.4 Summary

There is an abundance of old, dead stalks of halogeton (Figure 2) from the abundant rainfall in 2005. Halogeton is very common along roadsides and almost any place that has been disturbed, and is characterized by succulent, fleshy leaves and a central reddish stem. The number of plants has decreased by approximately 50 percent from 2005 to 2006. A similar trend has been observed at other revegetated sites, where halogeton becomes less abundant as native plants become established.



Figure 1. Small mammal burrows along the edge of the cover at CAU 407



Figure 2. Halogeton (*Halogeton glomeratus*)

## **CAU 407, ROLLER COASTER RADSAFE AREA, PHOTOGRAPHIC REFERENCE**



**JUNE 2002**



**SEPTEMBER 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.6 CAU 426, Staging Area, Results

### 4.6.1 Plant Cover

Combined shrub and grass cover continues to be high on the staging area at CAU 426. The amount of shrub cover in 2006 was approximately equal to 2005, which was the highest value since the site was revegetated. The amount of grass cover also continues to be high, but it decreased from 17.1 percent in 2005 to 10.8 percent in 2006. In 2005, grasses responded to high levels of precipitation. There was no grass cover on the reference area in 2006, and in previous years, grass cover on the reference area has ranged between 1 and 2 percent. The lack of grasses on the reference area may be due to wild horses and other potential herbivores in the area. Forb cover decreased from the record high of 10.3 percent in 2005 to 1.7 percent in 2006, which was equal to the forb cover on the reference area.

**TABLE 16. PLANT COVER (%) ON CAU 426, STAGING AREA**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	0.8	5.0	2.5	3.3	5.1	5.0	10.8	7.6
Grasses	5.8	12.5	6.7	10.8	17.1	10.8	0.0	0.0
Forbs/Annuals	0.0	1.7	5.0	2.5	10.3	1.7	1.7	1.2
<b>Total Plant Cover</b>	<b>6.6</b>	<b>19.2</b>	<b>14.2</b>	<b>16.6</b>	<b>32.5</b>	<b>17.5</b>	<b>12.5</b>	<b>8.8</b>
Bare Ground	50.1	42.5	50.0	59.2	47.0	50.0	75.0	--
Litter	43.3	38.3	35.8	24.2	20.5	32.5	12.5	--

### 4.6.2 Plant Density

The density of shrubs on the staging area has remained steady since 2000. The density of grasses has varied since 2000, but the 3.9 grasses per m<sup>2</sup> was recorded in 2006, which is only slightly less than 2005, when above normal precipitation was received, and 2000, when there was an abundance of young seedlings. The number of annual forbs declined from 2005 to 2006, but is still higher than 2002, 2003 or 2004. The presence of an annual noxious weed, halogeton, is a concern. Of the 7.3 annual plants per m<sup>2</sup> recorded in 2006, only 1.4 plants were halogeton, which is lower than in previous years.

Nevada jointfir is the most common shrub on the staging area. Douglas' rabbitbrush was also encountered, but at lower densities. The presence of shadscale and rubber rabbitbrush has been sporadic over the years, but both were found on the site in 2006. No fourwing saltbush or winterfat were found in 2006.

Squirreltail is the most common grass found on the staging area followed by Indian ricegrass and galleta grass. Plant densities for squirreltail and Indian ricegrass were lower in 2006 than in 2005, but there was an increase in the density of galleta grass.

There are a few small mammal burrows scattered over the staging area. There are no signs of erosion.

**TABLE 17. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 426, STAGING AREA**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Black Sagebrush	0.0	0.1	0.0	0.0	0.0	0.0	0.8	--
	Bud Sagebrush	0.0	0.1	0.0	0.0	0.0	0.0	0.4	--
	Fourwing Saltbush	0.1	0.0	0.0	0.0	0.1	0.0	0.0	--
	Shadscale	0.1	0.0	0.0	0.1	0.0	0.1	0.3	--
	Douglas' Rabbitbrush	0.1	0.1	0.2	0.1	0.2	0.1	0.0	--
	Nevada Jointfir	0.3	0.2	0.3	0.1	0.3	0.4	0.0	--
	Rubber Rabbitbrush	0.1	0.0	0.1	0.1	0.0	0.1	0.0	--
	Winterfat	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--
<b>Total Shrubs</b>		<b>0.7</b>	<b>0.5</b>	<b>0.6</b>	<b>0.4</b>	<b>0.7</b>	<b>0.7</b>	<b>1.5</b>	<b>1.0</b>
Grasses	Squirreltail	5.2	2.9	0.6	1.9	5.1	3.1	0.1	--
	Galleta	0.2	0.1	0.0	0.3	0.0	0.2	3.0	--
	Indian Ricegrass	1.4	0.6	0.7	0.4	1.3	0.6	0.1	--
<b>Total Grasses</b>		<b>6.8</b>	<b>3.6</b>	<b>1.3</b>	<b>2.6</b>	<b>6.4</b>	<b>3.9</b>	<b>3.2</b>	<b>2.7</b>
<b>Total Forbs/Annuals</b>		<b>16.9</b>	<b>1.8</b>	<b>3.9</b>	<b>3.2</b>	<b>16.6</b>	<b>7.3</b>	<b>1.6</b>	<b>1.1</b>
<b>Total Plant Density</b>		<b>24.4</b>	<b>5.9</b>	<b>5.8</b>	<b>6.2</b>	<b>23.7</b>	<b>11.9</b>	<b>6.3</b>	<b>4.8</b>
<b>Wildlife Use</b>		--	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	Small Mammal Burrows	--	--
<b>Erosion Classification</b>		--	Stable	Stable	Stable	Stable	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

#### 4.6.3 Plant Diversity

Plant diversity on the staging area in 2006 is the highest recorded since the site was revegetated. Diversity more than doubled for both shrub and grass species from 2005 to 2006. Forb diversity increased slightly from 2005 to 2006 but has been approximately unchanged since 2003.

**TABLE 18. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 426, STAGING AREA**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	0.6	0.4	0.5	0.4	0.2	0.5	0.9
Grasses	1.2	0.9	0.6	0.9	0.4	1.3	0.7
Forbs/Annuals	0.9	0.4	1.1	1.3	1.1	1.3	0.6
Average Number of Species per Square Meter	2.8	1.7	2.2	2.6	1.8	3.0	2.1

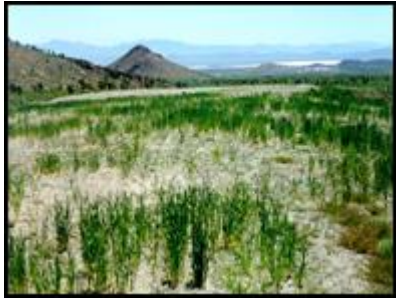
#### **4.6.4**      Summary

The CAU 426 staging area is the only site monitored at the Tonopah Test Range where grass cover and density are higher than for shrubs. Usually shrubs are several times more abundant than grasses, but on the CAU 426 staging area, grass cover is twice shrub cover, and there are more than twice as many grasses per m<sup>2</sup> as shrubs. Grass cover and density exceed the standards for reclamation success. Shrub density exceeds the standard for reclamation success, but shrub cover in 2006 was 5.0 percent compared to the standard of 7.6 percent.

This site was disturbed prior to closure activities, and halogeton, a noxious weed, occupied much of the area. Since revegetation, the density of halogeton has decreased from 15 plants per m<sup>2</sup> in 2000 to 1.4 plants per m<sup>2</sup> in 2006. The abundance of this species is usually kept in check by the presence of native plant species and the absence of new soil disturbances.



## **CAU 426, CACTUS SPRING WASTE TRENCHES, STAGING AREA, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



**JUNE 2002**



**SEPTEMBER 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

## 4.7 CAU 426, Cover, Results

### 4.7.1 Plant Cover

The combined shrub and grass cover of 20 percent recorded in 2006 is the highest value recorded for the cover since the site was revegetated. Shrub cover in 2006 was approximately 11 percent higher than the previous high of 15 percent in 2003. Grass cover has increased from 0 percent in 2005 to 3.3 percent in 2006, but is still lower than 2004. Annual forbs only contributed to overall plant cover in 2005.

**TABLE 19. PLANT COVER (%) ON CAU 426, COVER**

	2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	0.0	6.7	15.0	10.0	10.0	16.7	10.8	7.6
Grasses	3.3	8.3	1.7	6.7	0.0	3.3	0.0	0.0
Forbs/Annuals	0.0	0.0	0.0	0.0	10.0	0.0	1.7	1.2
<b>Total Plant Cover</b>	<b>3.3</b>	<b>15.0</b>	<b>16.7</b>	<b>16.7</b>	<b>20.0</b>	<b>20.0</b>	<b>12.5</b>	<b>8.8</b>
Bare Ground	85.0	78.3	80.0	80.0	75.0	76.7	75.0	--
Litter	11.7	6.7	3.3	3.3	5.0	3.3	12.5	--

### 4.7.2 Plant Density

There was a decline in the density of all plants from 2005 to 2006. The decline in shrub density can be attributed to declines in the density of rubber rabbitbrush and Douglas' rabbitbrush, the two most abundant species on the site, and Nevada jointfir. The density of squirreltail and Indian ricegrass, two common grasses, also declined. There was a slight increase in the number of galleta plants. The high densities recorded in 2005 are a result of high precipitation. The density estimates recorded in 2006 are similar to those made prior to 2005.

There were some signs of rabbit scat on the cover, but there was no evidence of excessive browsing on the shrubs. There were no signs of erosion on the cover.

**TABLE 20. PLANT DENSITY (PLANTS PER M<sup>2</sup>) ON CAU 426, COVER**

		2000	2002	2003	2004	2005	2006	Reference	Standard
Shrubs	Black Sagebrush	0.0	0.0	0.0	0.0	0.0	0.0	0.8	--
	Bud Sagebrush	0.0	0.0	0.0	0.0	0.0	0.0	0.4	--
	Fourwing Saltbush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
	Shadscale	0.0	0.0	0.0	0.0	0.0	0.0	0.3	--
	Nevada Jointfir	0.1	0.1	0.1	0.1	0.3	0.2	0.0	--
	Douglas' Rabbitbrush	1.0	1.3	1.3	1.5	1.3	1.0	0.0	--
	Rubber Rabbitbrush	0.1	1.1	0.5	0.9	1.5	0.8	0.0	--
	Winterfat	0.1	0.0	0.0	0.0	0.0	0.0	0.0	--
<b>Total Shrubs</b>		<b>1.3</b>	<b>2.5</b>	<b>1.9</b>	<b>2.5</b>	<b>3.1</b>	<b>2.0</b>	<b>1.5</b>	<b>1.0</b>
Grasses	Squirreltail	1.0	0.2	0.3	0.3	1.0	0.7	0.1	--
	Galleta	1.4	0.7	0.4	0.0	0.3	0.4	3.0	--
	Indian Ricegrass	1.3	0.7	0.6	0.7	2.0	1.4	0.1	--
<b>Total Grasses</b>		<b>3.7</b>	<b>1.6</b>	<b>1.3</b>	<b>1.0</b>	<b>3.3</b>	<b>2.5</b>	<b>3.2</b>	<b>2.7</b>
<b>Total Forbs/Annuals</b>		<b>0.1</b>	<b>1.1</b>	<b>0.3</b>	<b>0.0</b>	<b>2.9</b>	<b>0.6</b>	<b>1.6</b>	<b>1.1</b>
<b>Total Plant Density</b>		<b>5.1</b>	<b>5.2</b>	<b>3.5</b>	<b>3.5</b>	<b>9.3</b>	<b>5.1</b>	<b>6.3</b>	<b>4.8</b>
<b>Wildlife Use</b>		--	Burrows	Burrows	Burrows	Burrows	Burrows	--	--
<b>Erosion Classification</b>		--	Stable	Stable	Stable	Stable	Stable	--	--

Note: Scientific names of plants are listed in Appendix F-1.

Note: Erosion Classification Chart included in Appendix F-2.

### 4.7.3 Plant Diversity

There was a slight decrease in the diversity of shrubs and forbs from 2005 to 2006 and a slight increase in the diversity of grasses from 2005 to 2006. Overall diversity has remained approximately stable since 2000.

**TABLE 21. DIVERSITY OF PERENNIAL PLANT SPECIES ON CAU 426, COVER**

	2000	2002	2003	2004	2005	2006	Reference
Shrubs	0.9	1.5	1.1	1.4	1.6	1.4	0.9
Grasses	1.1	0.6	0.5	0.3	0.7	0.8	0.7
Forbs/Annuals	0.1	0.7	0.2	0.0	1.1	0.5	0.6
Average Number of Species per Square Meter	2.1	2.8	1.9	1.7	3.3	2.7	2.1

#### 4.7.4 Summary

Shrub cover and density in 2006 exceed the standards for revegetation success. Shrub cover was more than twice the revegetation standard. Shrub density was also twice the standard. Grass density, however, was slightly below the standard. Overall, the vegetation on the CAU 426 cover is well established. Shrubs are vigorous and healthy. Grass cover and density has varied over the years, but there are still more grasses on the cover than on the surrounding areas.

In the event the fence around this site is removed, there are several issues to consider. The proximity of this site to grazing animals such as horses and antelope is evident due to the area around the site having very few grasses. The grasses on the cover may attract the horses visiting the nearby water source, and the abundance and vigor of the grasses may be impacted. Another issue is halogeton, a noxious weed. If the site becomes a gathering point or trail for grazing animals, the soil may be disturbed and favor the growth and dominance of halogeton, possibly to levels attained before the site was revegetated. In the event the fence is removed, periodic monitoring of the site is recommended to determine the effect of grazing animals. Such information would be valuable for future revegetation efforts in the region.

## **CAU 426, CACTUS SPRING WASTE TRENCHES, COVER, PHOTOGRAPHIC REFERENCE**



**JUNE 1998**



**JUNE 2000**



**JUNE 2002**



**SEPTEMBER 2003**



**JUNE 2004**



**JUNE 2005**



**JUNE 2006**

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## APPENDIX F-1

### Common and scientific names of plant species encountered at TTR or included in original seed mix

	<u>Scientific Name</u>	<u>Common Name</u>
Shrubs	<i>Artemisia nova</i>	Black sagebrush
	<i>Artemisia spinescens</i>	Bud sagebrush
	<i>Atriplex canescens</i>	Fourwing saltbush
	<i>Atriplex confertifolia</i>	Shadscale saltbush
	<i>Chrysothamnus Greenei</i>	Greene's rabbitbrush
	<i>Chrysothamnus viscidiflorus</i>	Low rabbitbrush
	<i>Ephedra nevadensis</i>	Nevada jointfir
	<i>Ericameria nauseosa</i>	Rubber rabbitbrush
	<i>Gutierrezia sarothrae</i>	Broom snakeweed
	<i>Hymenoclea salsola</i>	White burrobrush
	<i>Krascheninnikovia lanata</i>	Winterfat
	<i>Menodora spinescens</i>	Spiny menodora
	<i>Opuntia pulchella</i>	Sand cholla
	<i>Sarcobatus vermiculatus</i>	Black greasewood
Grasses	<i>Achnatherum hymenoides</i>	Indian ricegrass
	<i>Elymus elymoides</i>	Bottlebrush squirreltail
	<i>Bromus tectorum</i>	Cheatgrass
	<i>Dasyochloa pulchella</i>	Low woollygrass
	<i>Pleuraphus jamesii</i>	Galleta grass
	<i>Sporobolus airoides</i>	Alkali sacatoon
	<i>Sporobolus cryptandrus</i>	Sand dropseed
Forbs/Annuals	<i>Ambrosia</i> species	Ragweed
	<i>Astragalus lentiginosa</i> var. <i>fremontii</i>	Fremont's milkvetch
	<i>Astragalus</i> species	Milkvetch
	<i>Camissonia boothii</i>	Booth's suncup
	<i>Camissonia</i> species	Suncup
	<i>Chaneactis xantiana</i>	Xantus pincushion
	<i>Chenactis steviodes</i>	Steve's pincushion
	<i>Chenopodium album</i>	Lambsquarters
	<i>Cryptantha circumscissa</i>	Cushion cryptantha
	<i>Cryptantha micrantha</i>	Red root cyrptantha
	<i>Cryptantha</i> species	Cryptantha
	<i>Cymopterus</i> species	Springparsley
	<i>Descurania pinnata</i>	Pinnate tansymustard
	<i>Eriastrum eremicum</i>	Desert woolstar
	<i>Eriastrum sparsiflorum</i>	Fewflower woolstar
	<i>Eriogonum deflexum</i>	Flatcrown buckwheat
	<i>Eriogonum nidularium</i>	Birdnest buckwheat

	<u>Scientific Name</u>	<u>Common Name</u>
Forbs/Annuals (continued)	<i>Eriogonum</i> species	Buckwheat
	<i>Erodium cicutarium</i>	Filaree
	<i>Gilia nyensis</i>	Nye gilia
	<i>Gilia</i> species	Gilia
	<i>Halogeton glomeratus</i>	Halogeton
	<i>Ipomopsis polycladon</i>	Manybranched gilia
	<i>Lepidium flavum</i>	Yellow pepperweed
	<i>Lepidium lasiocarpum</i>	Shaggyfruit pepperweed
	<i>Lepidium montanum</i>	Mountain pepperweed
	<i>Lepidium</i> species	Pepperweed
	<i>Lupinus</i> species	Lupine
	<i>Macheranthera canescens</i>	Hoary macharanthra
	<i>Mentzelia albomarginatus</i>	White blazingstar
	<i>Mirabilis biglovei</i>	Bigelow's four-o'clock
	<i>Oenothera</i> species	Eveningprimrose
	<i>Phacelia crenulata</i>	Cleftleaf wildheliotrope
	<i>Phacelia</i> species	Phacelia
	<i>Salsola tragus</i>	Prickly Russian thistle
	<i>Sphaeralcea ambigua</i>	Desert globemallow
	<i>Stephanomeria exigua</i>	Small wirelettuce
	<i>Tiquilia plicatas</i>	Fanleaf tiquilia



## APPENDIX F-2

Erosion Condition Classification							
Surface Litter		Pedestalling		Rills <9”		Rills >9”	
1	Accumulating in Place	1	No Visual Evidence	1	No Visual Evidence	1	No Visual Evidence
2	Slight Movement	2	Slight Pedestalling	2	Rills at Intervals >10’	2	Rills at Intervals >10’
3	Moderate Movement	3	Small Rock and Plant Pedestalling	3	Rills at 10’ Intervals	3	Rills at 10’ Intervals
4	Extreme Movement	4	Pedestalling Plants; Roots Exposed	4	Rills at 5 – 10’ Intervals	4	Rills at 5 – 10’ Intervals
5	Very Little Remaining Litter	5	Most Plants and Rocks Pedestalled; Roots Exposed	5	Rills at Intervals <5’	5	Rills at Intervals <5’
Rating: ____		Rating: ____		Rating: ____		Rating: ____	
						Total: ____	

Numerical Rating Total	Erosion Condition Class
0.0 to 4.0	Stable
4.1 to 8.0	Slight
8.1 to 12.0	Moderate
12.1 to 16.0	Critical
16.1 to 20.0	Severe

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