



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

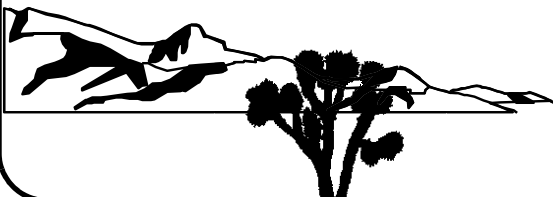
## For Calendar Year 2017

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**POST-CLOSURE INSPECTION REPORT  
FOR THE TONOPAH TEST RANGE, NEVADA  
FOR CALENDAR YEAR 2017**

U.S. Department of Energy, Environmental Management Nevada Program  
Las Vegas, Nevada

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**POST-CLOSURE INSPECTION REPORT  
FOR THE TONOPAH TEST RANGE, NEVADA  
FOR CALENDAR YEAR 2017**

Approved by: /s/ Tiffany Lantow

Date: 05/01/2018

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Industrial Sites Activity Lead  
EM Nevada Program

Approved by: /s/ Robert F. Boehlecke

Date: 05/01/2018

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for Bill R. Wilborn  
Deputy Program Manager, Operations  
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## ***List of Acronyms and Abbreviations***

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BMP	Best management practice
CADD	Corrective action decision document
CAS	Corrective action site
CAU	Corrective action unit
CR	Closure report
DOE	U.S. Department of Energy
NDEP	Nevada Division of Environmental Protection
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
NTTR	Nevada Test and Training Range
ROTC	Record of Technical Change
TTR	Tonopah Test Range
UXO	Unexploded ordnance

## ***Executive Summary***

This report provides the results of the annual post-closure inspections conducted at the closed corrective action units (CAUs) located on the Tonopah Test Range (TTR) and the Nevada Test and Training Range (NTTR). This report covers calendar year 2017 and includes visual inspection and repair activities completed at the following CAUs:

- CAU 400: Bomblet Pit and Five Points Landfill (TTR)
- CAU 407: Roller Coaster RadSafe Area (TTR)
- CAU 424: Area 3 Landfill Complexes (TTR)
- CAU 453: Area 9 UXO Landfill (TTR)
- CAU 487: Thunderwell Site (TTR)

Site figures are included in [Appendix A](#). The Post-Closure Inspection Plans and subsequent correspondence modifying the requirements for each CAU are included in [Appendix B](#).

The Post-Closure Inspection Checklists are included in [Appendix C](#). Field Notes are included in [Appendix D](#). Inspection Photographs are presented in [Appendix E](#). [Appendix F](#), Post-Closure Vegetation Monitoring Report, does not include any data because vegetation monitoring was not conducted at any CAU in 2017.

Visual inspections were conducted according to the post-closure plans in the approved closure reports and subsequent correspondence with the Nevada Division of Environmental Protection. The annual post-closure inspections were conducted on May 23, 2017. No maintenance or repair issues were noted at CAU 400 and CAU 487. Maintenance items and subsequent repairs include the following:

- **CAU 407:** A large animal burrow was observed in the southeast corner of the cover during the inspection. Two additional animal burrows were discovered during repair actions. All cover defects were repaired on January 9, 2018.
- **CAU 424:** CAS 03-08-002-A304 (Landfill Cell A3-4): A new monument was installed and the subsidence area was repaired on January 9, 2018.
- **CAU 424:** CAS 03-08-002-A308 (Landfill Cell A3-8): Lava rock, used to mark the two eastern monument locations, was noted as missing during the inspection. The lava rock was replaced on January 9, 2018.
- **CAU 453:** Five large animal burrows, located near the east-central portion of cover, was noted during the inspection. Eight additional animal burrows were discovered during repair actions. All cover defects were repaired on January 9, 2018.



## **1.0 Introduction**

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### **1.1 Scope and Objectives**

This report includes inspection results, maintenance and repair activities, and recommendations for calendar year 2017 for closed corrective action units (CAUs) on the Tonopah Test Range (TTR) and the Nevada Test and Training Range (NTTR). The TTR is part of and is located on the NTTR.

The locations of the CAUs are shown in [Figure A-1](#) of [Appendix A](#).

The following CAUs and corrective action sites (CASs) are included in this report:

- **CAU 400: Bomblet Pit and Five Points Landfill (TTR)**
  - CAS TA-19-001-05PT: Ordnance Disposal Pit
- **CAU 407: Roller Coaster RadSafe Area (TTR)**
  - CAS TA-23-001-TARC: Roller Coaster RadSafe Area
- **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 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

Site Figures are included in [Appendix A](#). Post-Closure Inspection Plans (a history of inspection requirements at each CAU) are included in [Appendix B](#). Post-Closure Inspection Checklists are included in [Appendix C](#). Field Notes are included in [Appendix D](#). [Appendix E](#) presents inspection

Photographs. [Appendix F](#), Post-Closure Vegetation Monitoring Report, does not include any data because vegetation monitoring was not conducted at any CAU in 2017.

Inspections consist of the following activities to evaluate and document the condition of the units:

- Photographs to document current conditions and note variances from previous inspections
- Inspection of fencing, signs, monuments, and/or markers to determine whether repairs and/or maintenance are needed
- Inspection of soil covers for indications of subsidence, erosion, or unauthorized use
- Vegetation survey to quantify the condition of vegetative covers (as needed)

## **2.0 Inspection Results**

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Inspections were conducted on May 23, 2017. The post-closure inspection plans were published in the applicable closure report (CR) for each CAU. Subsequent correspondence with the Nevada Division of Environmental Protection (NDEP) has on occasion modified the requirements (noted in [Appendix B](#)).

### **2.1 CAU 400: Bomblet Pit and Five Points Landfill (TTR)**

The Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit) was vegetated in 1997 under the *Tonopah Test Range Closure Sites Revegetation Plan* (DOE/NV, 1997). Fencing was required for a minimum of five years and is still present. In correspondence dated March 20, 2014, NDEP approved the recommendation to conduct vegetation monitoring only on an as-needed basis if significant changes or concerns are noted during annual visual inspections (MacDougall, 2014). The site is shown in [Figure A-2 of Appendix A](#).

A best management practice (BMP) visual inspection was conducted on May 23, 2017, at the Five Points Landfill. No problems were identified. There were no significant changes in vegetation at the site. Notes were recorded on the Field Activity Daily Log presented in [Appendix D](#). Annual visual BMP inspections should continue as scheduled.

### **2.2 CAU 407: Roller Coaster RadSafe Area (TTR)**

Inspections are conducted according to the post-closure requirements for CAU 407, Roller Coaster RadSafe Area (TTR), CAS TA-23-001-TARC, Roller Coaster RadSafe Area, as described in the CR (NNSA/NV, 2001a) and subsequent correspondence. In correspondence dated March 20, 2014, NDEP approved the recommendation to conduct vegetation monitoring only on an as-needed basis if significant changes or concerns are noted during annual visual inspections (MacDougall, 2014). The site is shown in [Figure A-3 of Appendix A](#).

The annual visual inspection was conducted on May 23, 2017. The cover near the northeast corner and along the south facing slope was disturbed by animal burrowing activities. The cover was repaired on January 9, 2018. It was noted that two additional animal burrows were identified during

cover repair activities. The additional animal burrows were filled in. Vegetation status appeared to be similar to the vegetation status in the surrounding area. Annual visual inspections should continue as scheduled.

### **2.3 CAU 424: Area 3 Landfill Complexes (TTR)**

Visual inspections are conducted according to the post-closure requirements for 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; and CAS 03-08-002-A308, Landfill Cell A3-8, as described in the CR (DOE/NV, 1999a) and subsequent correspondence. The landfill locations are shown in [Figure A-4](#) of [Appendix A](#). The annual inspection was conducted on May 23, 2017.

**Landfill Cell A3-1 (CAS 03-08-001-A301):** No problems were identified, and no maintenance or repairs were required. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-2 (CAS 03-08-002-A302):** No problems were identified, and no maintenance or repairs were required. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-3 (CAS 03-08-002-A303):** No problems were identified, and no maintenance or repairs were required. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-4 (CAS 03-08-002-A304):** A permanent northeast corner monument was noted as missing in the Calendar Year 2015 Post-Closure Inspection Report [NNSA/NFO, 2016] and a temporary marker was noted in the Calendar Year 2016 Post-Closure Inspection Report [NNSA/NFO, 2017]. Also noted in the Calendar Year 2016 Post-Closure Inspection Report [NNSA/NFO, 2017] was a corrective action to place a permanent concrete monument. During the May 23, 2017 inspection the northeast temporary monument was observed. The temporary northeast corner monument was removed and a permanent monument was installed on January 9, 2018. During the monument installation, an area of subsidence was noted and the subsided area was backfilled to grade with site borrow material on January 9, 2018. No additional problems were identified. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-5 (CAS 03-08-002-A305):** No problems were identified, and no maintenance or repairs were required. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-6 (CAS 03-08-002-A306):** No problems were identified, and no maintenance or repairs were required. Annual visual inspections should continue as scheduled.

**Landfill Cell A3-8 (CAS 03-08-002-A308):** During the 2017 inspection, it was identified that the northeast and southeast monument protective lava rock layer was missing. Lava rock was replaced on January 9, 2018. No other issues or maintenance repairs were noted. Annual visual inspections should continue as scheduled.

#### **2.4 CAU 453: Area 9 UXO Landfill (TTR)**

Visual inspections are conducted according to the post-closure requirements for CAU 453, Area 9 UXO Landfill (TTR), CAS 09-55-001-0952, Area 9 Landfill, as described in the CR (DOE/NV, 1999b) and subsequent correspondence. The site is shown in [Figure A-6 of Appendix A](#). The annual inspection was conducted on May 23, 2017. The cover was found disturbed by animal burrowing activities. Five burrows were found in the east-central portion of the cover. The cover was repaired on January 9, 2018. During the repair action, eight additional animal burrows were identified and filled in. No other issues or concerns were identified, and no additional maintenance or repairs were required. Annual visual inspections should continue as scheduled.

#### **2.5 CAU 487: Thunderwell Site (TTR)**

Inspections are conducted according to the post-closure requirements for CAU 487, Thunderwell Site (TTR), CAS RG-26-001-RGRV, Thunderwell Site, as described in the Corrective Action Decision Document (CADD)/CR (NNSA/NV, 2001b), Record of Technical Change (ROTC) No. 2 (NNSA/NSO, 2004), and subsequent correspondence. The site is shown in [Figure A-7 of Appendix A](#). The annual inspection was conducted on May 23, 2017. No problems were identified, and no maintenance or repairs were required. The burrowing owl's nest that was observed during the 2016 inspection appears to be abandoned. Annual visual inspections should continue as scheduled.

## **3.0 Summary**

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No outstanding issues are present at the time of this reports submittal.

### **3.1 CAU 400: Bomblet Pit and Five Points Landfill (TTR)**

No problems were identified, and no maintenance or repairs were required. Annual BMP inspections at the Five Points Landfill should continue as scheduled.

### **3.2 CAU 407: Roller Coaster RadSafe Area (TTR)**

An animal burrow requiring repair was identified during the May 23, 2017, inspection. At the time of repair (January 9, 2018), two additional animal burrows were identified and filled in. Annual visual inspections should continue as scheduled.

### **3.3 CAU 424: Area 3 Landfill Complexes (TTR)**

During the May 23, 2017 annual visual inspections the following observations were made:

The temporary northeast corner monument in Landfill Cell A3-4 (CAS 03-08-002-A304) was observed; and a very small amount of lava rock cover for the northeast and southeast monuments at Landfill Cell A3-8 (CAS 03-08-002-A308) was observed. Repairs to the site were made on January 9, 2018 and included: Installation of a permanent northeast corner monument at Landfill Cell A3-4 (CAS 03-08-002-A304); and the placement of additional lava rock on the northeast and southeast monuments of Landfill Cell A3-8 (CAS 03-08-002-A308). During the installation of the monument, an area of subsidence was identified and backfilled in Landfill Cell A3-4 (CAS 03-08-002-A304). Annual visual inspections should continue as scheduled.

### **3.4 CAU 453: Area 9 UXO Landfill (TTR)**

Five animal burrows requiring repair were identified during the May 23, 2017, inspection. At the time of repair (January 9, 2018), eight additional animal burrows were identified and filled in. Annual visual inspections should continue as scheduled.

### **3.5 CAU 487: Thunderwell Site (TTR)**

No problems were identified, and no maintenance or repairs were required. The burrowing owl's nest, noted during the 2016 inspection, appears to be abandoned. Annual visual inspections should continue as scheduled.

## 4.0 References

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

MacDougall, J., Nevada Department of Environmental Protection. 2014. Letter to R.F. Boehlecke (NNSA/NFO) titled “Acceptance of the Post-Closure Inspection Report for 2013, Tonopah Test Range, Nevada, Federal Facility Agreement and Consent Order,” 20 March. Las Vegas, NV.

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

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

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

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*, Rev. 0. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office. 2001a. *Closure Report for Corrective Action Unit 407: Roller Coaster RADSAFE Area, Tonopah Test Range, Nevada*, DOE/NV--694-Rev 1. Las Vegas, NV.

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

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.

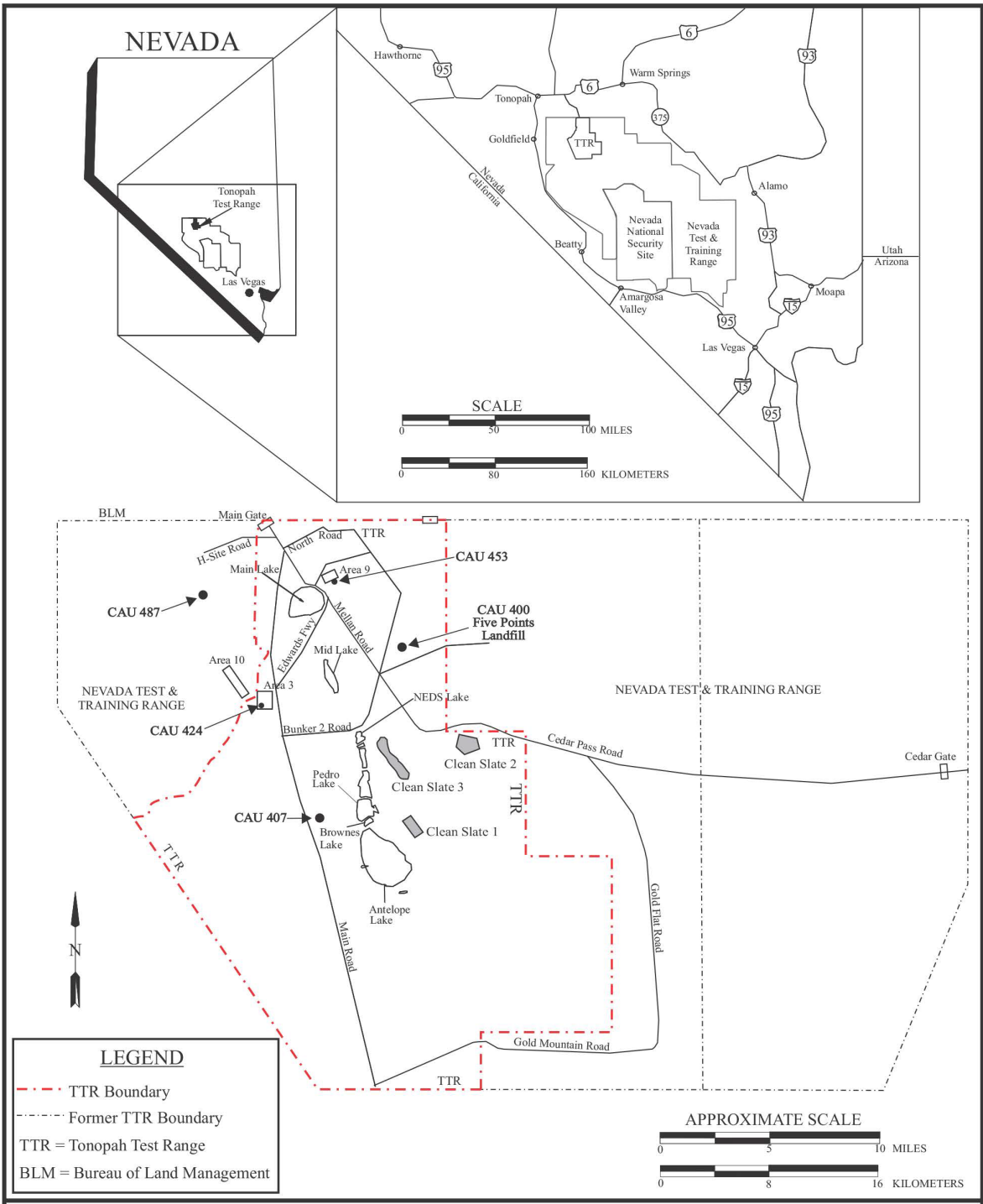
U.S. Department of Energy, Nevada Operations Office. 1999a. *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada*, DOE/NV/11718--283. Las Vegas, NV.

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

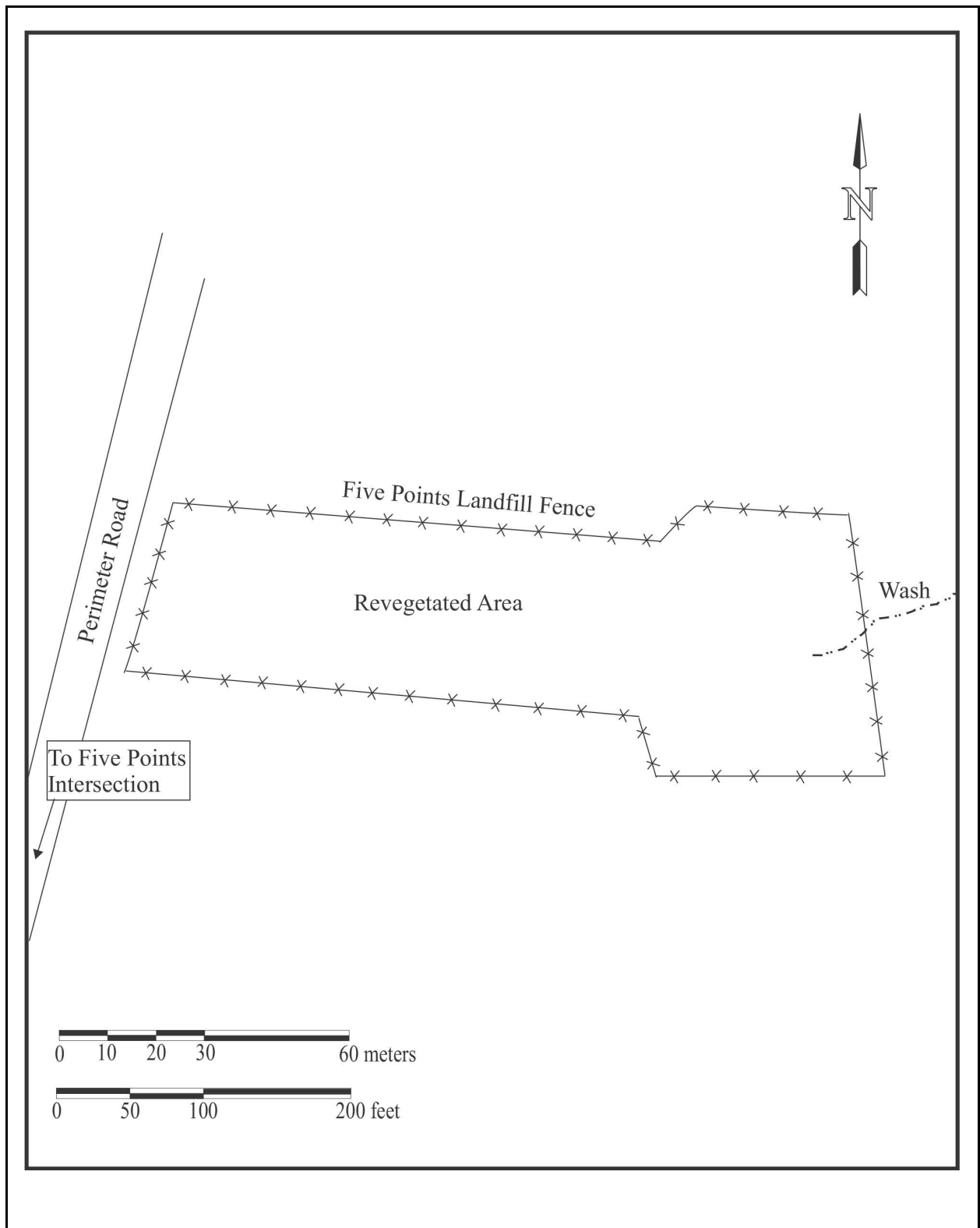


# **Appendix A**

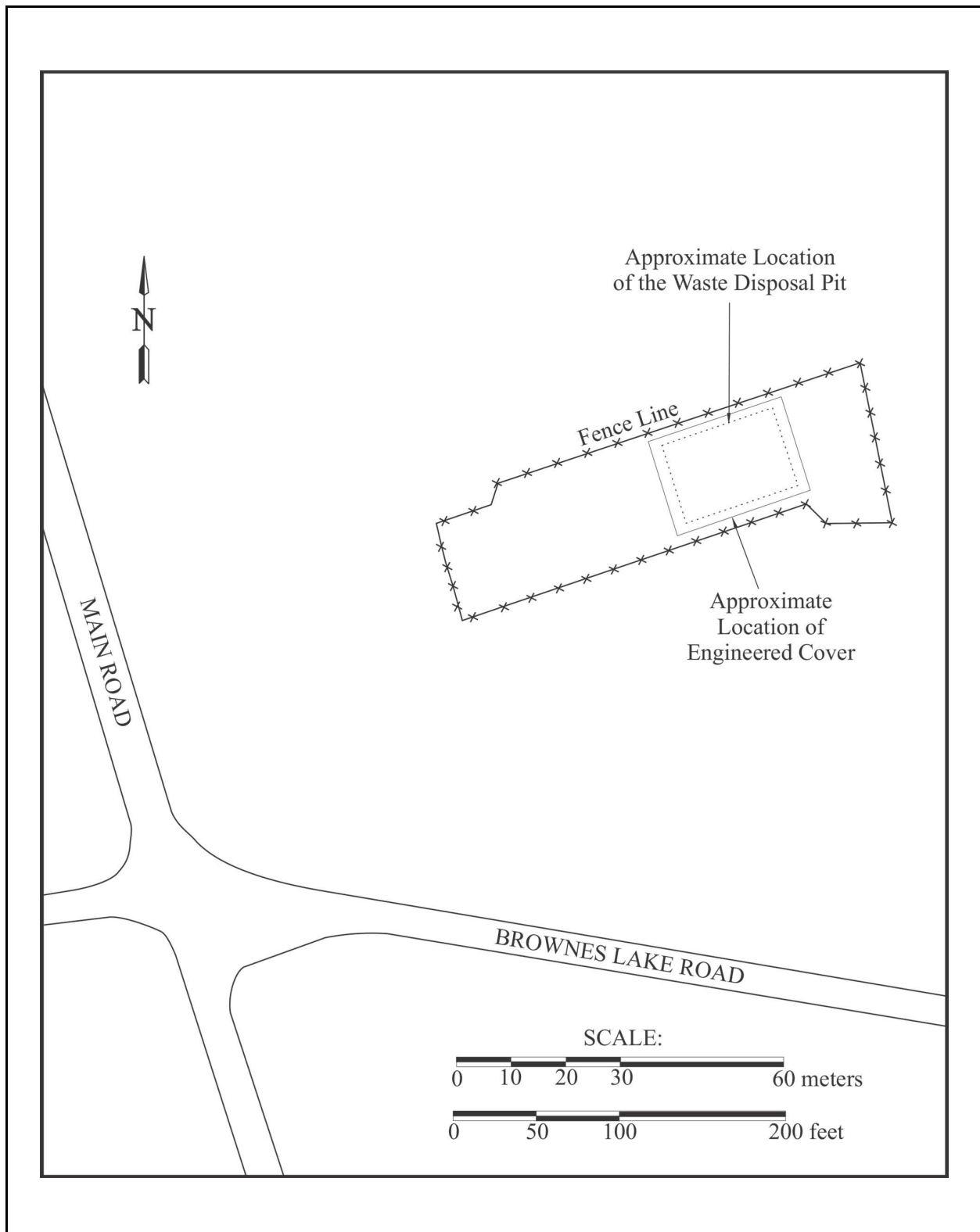
## **Site Figures**



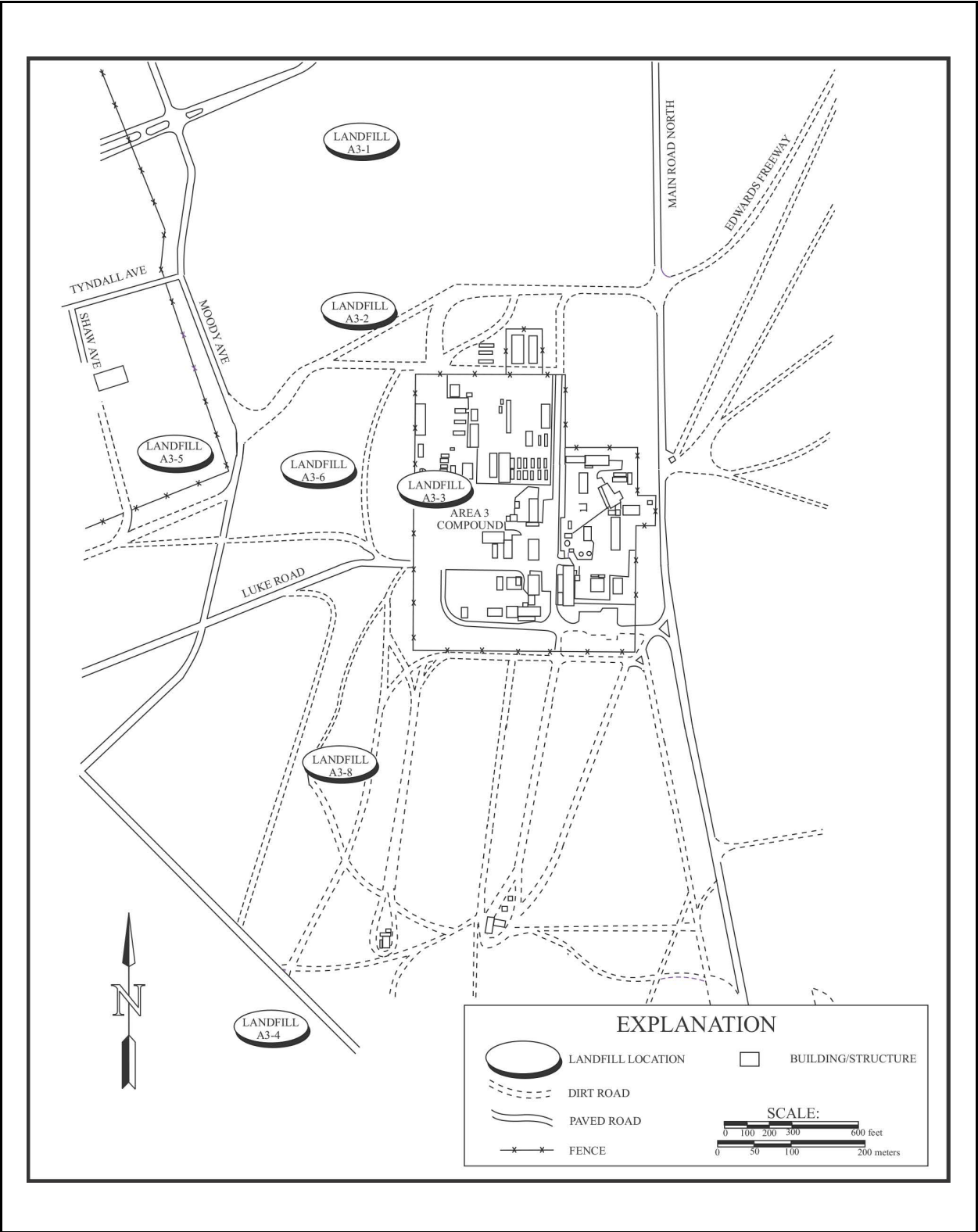
**Figure A-1**  
**Tonopah Test Range Post-Closure Monitoring Sites Location Map**



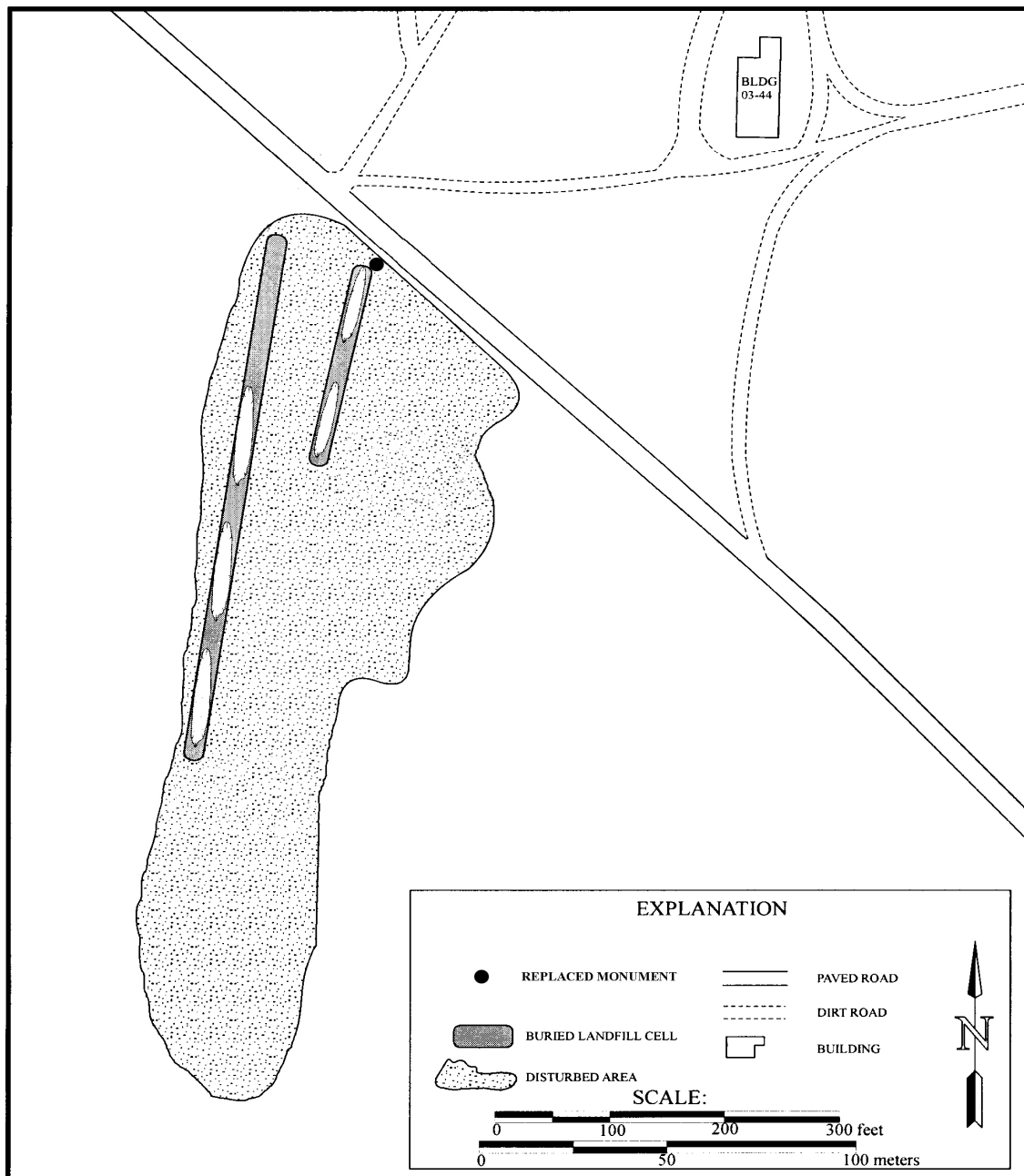
**Figure A-2**  
**CAU 400 Five Points Landfill Location Map**



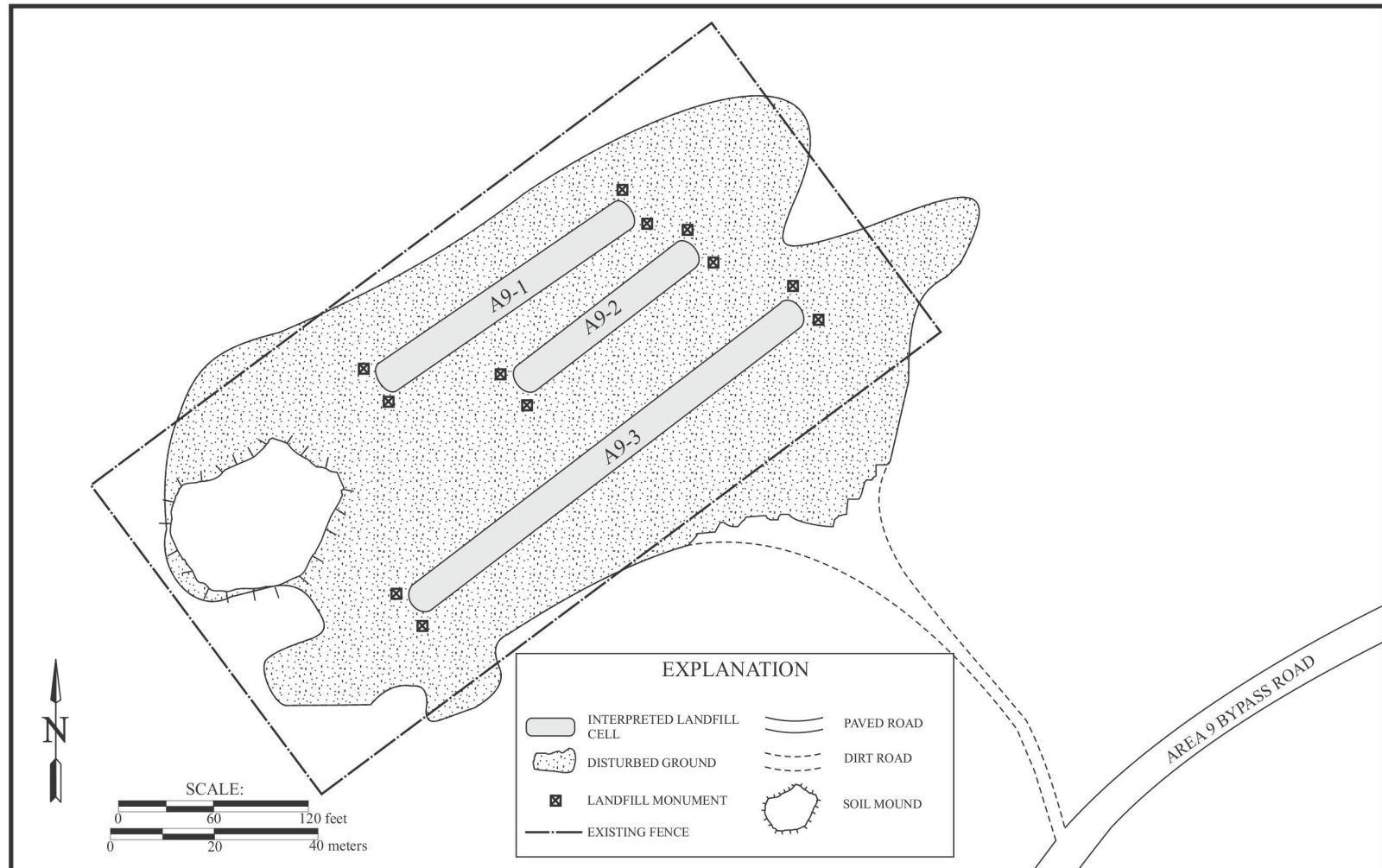
**Figure A-3**  
**CAU 407 Roller Coaster RadSafe Area Location Map**



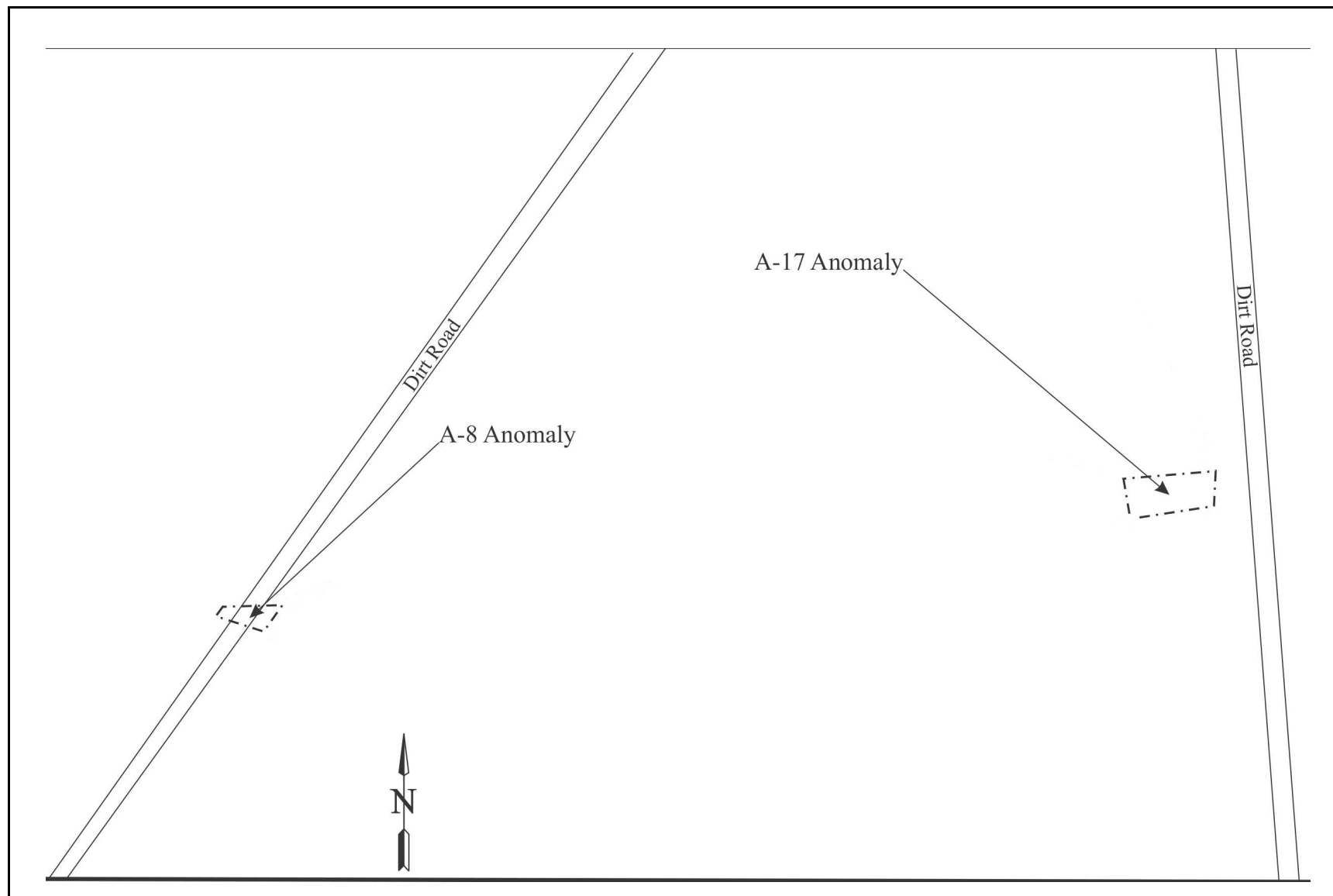
**Figure A-4**  
**CAU 424 Area 3 Landfill Complexes Location Map**



**Figure A-5**  
**CAU 424 Location of Replaced Monument at Landfill A3-4**



**Figure A-6**  
**CAU 453 Area 9 UXO Landfill Location Map**



**Figure A-7**  
**CAU 487 Thunderwell Site Location Map**



**Appendix B**

**Post-Closure Inspection Plans**

## ***B.1.0 CAU 400: Bomblet Pit and Five Points Landfill (TTR) Post-Closure Inspection Plan***

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CAS TA-55-001-TAB2, Ordnance Disposal Pit (aka Bomblet Pit), and CAS TA-19-001-05PT, Ordnance Disposal Pit (aka Five Points Landfill) were clean closed in 1996 as described in the *Closure Report for CAU No. 400: Bomblet Pit and Five Points Landfill, Tonopah Test Range, Nevada* (DOE/NV, 1996a) that was approved in 1997. There are no use restrictions at either CAS.

Restoration and revegetation were required at the site as described in the 1996 *Streamlined Approach for Environmental Restoration Plan, CAU No. 400: Bomblet Pit and Five Points Landfill, Tonopah Test Range, Nevada* (DOE/NV, 1996b), Section 3.7: “Efforts will be made to revegetate the Five Points Landfill. A site survey has been conducted to assess the potential for revegetation, topsoil replacement, and seeding with native plant species.”

The revegetation plan is described in the 1997 *Tonopah Test Range Closure Sites Revegetation Plan* (DOE/NV, 1997). This report states that fences should remain in place for a minimum of five years.

In the letter “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487” dated November 28, 2006, the DOE, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) noted that CAU 400 was being inspected semi-annually as a BMP to document vegetation growth and inspect the integrity of site fencing (Jones, 2006). NNSA/NSO requested that the inspection frequency be reduced to annual. This request was approved by NDEP in the December 5, 2006, letter “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada” (Murphy, 2006).

In the 2014 *Post-Closure Inspection Report for the Tonopah Test Range, Nevada for Calendar Year 2013* (NNSA/NFO, 2014), the NNSA/NFO requested a reduction in vegetation monitoring at the site from annual to an as-needed basis. This change was approved in the March 20, 2014, letter “Acceptance of the Post-Closure Inspection Report for 2013, Tonopah Test Range, Nevada, Federal Facility Agreement and Consent Order” (MacDougall, 2014). The last annual vegetation monitoring was conducted in 2013. Future vegetation monitoring will be conducted “when significant changes are noted during the annual visual inspections.”

In Appendix F of the 2017 *Post-Closure Inspection Report for the Tonopah Test Range, Nevada for Calendar Year 2016* (NNSA/NFO, 2017), the summary of findings included an end to the vegetation monitoring and noted that the fence could be removed at the Bomblet Pit.

Currently, annual visual inspections are conducted at CAS TA-19-001-05PT, Ordnance Disposal Pit, Five Points Landfill as a BMP to determine whether there have been significant changes to the condition of the vegetation prompting the need for vegetation monitoring.

## ***B.2.0 CAU 407: Roller Coaster RadSafe Area (TTR) Post-Closure Inspection Plan***

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The *Closure Report for Corrective Action Unit 407: Roller Coaster RADSAFE Area, Tonopah Test Range, Nevada* (NNSA/NV, 2001a) was approved in 2002 and required quarterly inspections the first six months after the construction of a cover followed by two years of semi-annual inspections. Following these inspections, the inspection frequency would be determined by NDEP based on the results of these inspections.

In the letter “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487” dated November 28, 2006, NNSA/NSO noted that CAU 407 was being inspected semi-annually and requested that the inspection frequency be reduced to annual (Jones, 2006). This request was approved by NDEP in the December 5, 2006, letter “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada” (Murphy, 2006).

In the 2014 *Post-Closure Inspection Report for the Tonopah Test Range, Nevada for Calendar Year 2013* (NNSA/NFO, 2014), NNSA/NFO requested a reduction in vegetation monitoring at the site from annual to an as-needed basis. This change was approved in the March 20, 2014, letter “Acceptance of the Post-Closure Inspection Report for 2013, Tonopah Test Range, Nevada, Federal Facility Agreement and Consent Order” (MacDougall, 2014). The last annual vegetation monitoring was conducted in 2014. Future vegetation monitoring will be conducted “when significant changes are noted during the annual visual inspections.”

Currently, annual visual inspections are conducted at CAU 407 to document the condition of the cover, fencing, and postings; and to determine whether there have been significant changes to the condition of the vegetation prompting the need for a vegetation monitoring. Any identified maintenance and repair requirements are remedied within 90 working days of discovery.

### ***B.3.0 CAU 424: Area 3 Landfill Complexes (TTR) Post-Closure Inspection Plan***

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The *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada* (DOE/NV, 1999a) was approved in 1999; required semi-annual inspections; and noted that additional nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds.

In the letter “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487” dated November 28, 2006, NNSA/NSO noted that CAU 424 was being inspected semi-annually and requested that the inspection frequency be reduced to annual (Jones, 2006). This request was approved by NDEP in the December 5, 2006, letter “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada” (Murphy, 2006).

Currently, annual visual inspections are conducted at CAU 424 to document the condition of the landfill covers, monuments, and postings. Any identified maintenance and repair requirements are remedied within 90 working days of discovery.

## ***B.4.0 CAU 453: Area 9 UXO Landfill (TTR) Post-Closure Inspection Plan***

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The *Closure Report for Corrective Action Unit 453: Area 9 UXO Landfill, Tonopah Test Range, Nevada* (DOE/NV, 1999b) was approved in 1999; required semi-annual inspections; and noted that additional nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds.

In the letter “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487” dated November 28, 2006, NNSA/NSO noted that CAU 453 was being inspected semi-annually and requested that the inspection frequency be reduced to annual (Jones, 2006). This request was approved by NDEP in the December 5, 2006, letter “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada” (Murphy, 2006).

Currently, annual visual inspections are conducted at CAU 453 to document the condition of the landfill cover, fencing, monuments, and postings. Any identified maintenance and repair requirements are remedied within 90 working days of discovery.

## ***B.5.0 CAU 487: Thunderwell Site (TTR) Post-Closure Inspection Plan***

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The ROTC No. 2 (NNSA/NSO, 2004) for the final *Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada* (NNSA/NV, 2001b) required semi-annual inspections.

In the letter “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487” dated November 28, 2006, NNSA/NSO noted that CAU 487 was being inspected semi-annually and requested that the inspection frequency be reduced to annual (Jones, 2006). This request was approved by NDEP in the December 5, 2006, letter “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada” (Murphy, 2006).

Currently, annual visual inspections are conducted at CAU 487 to document the condition of the monuments and postings, and to look for indications of ground disturbance.

## **B.6.0 References**

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

Jones, J.B., U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2006. Letter to T. Murphy (NDEP) titled “Request to Reduce Frequency of Tonopah Test Range (TTR) Post-Closure Monitoring Inspections from Semi-Annual to Annual Site Inspections for the Following CAUs: 400, 404, 407, 423, 424, 426, 427, 453, 487,” 28 November. Las Vegas, NV.

MacDougall, J., Nevada Department of Environmental Protection. 2014. Letter to R.F. Boehlecke (NNSA/NFO) titled “Acceptance of the Post-Closure Inspection Report for 2013, Tonopah Test Range, Nevada, Federal Facility Agreement and Consent Order,” 20 March. Las Vegas, NV.

Murphy, T.H., Nevada Department of Environmental Protection. 2006. Letter to J.B. Jones (NNSA/NSO) titled “NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at Tonopah Test Range (TTR), Nevada,” 5 December. Las Vegas, NV.

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

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

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

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2014. *Post-Closure Inspection Report for the Tonopah Test Range, Nevada for Calendar Year 2013*, Rev. 0, DOE/NV--1517. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2017. *Post-Closure Inspection Report for the Tonopah Test Range, Nevada, for Calendar Year 2016*, DOE/NV--1561. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office. 2001a. *Closure Report for Corrective Action Unit 407: Roller Coaster RADSAFE Area, Tonopah Test Range, Nevada*, DOE/NV--694-Rev 1. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office. 2001b. *Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada*, DOE/NV--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*, Rev. 0. Las Vegas, NV.
- U.S. Department of Energy, Nevada Operations Office. 1996a. *Closure Report for CAU No. 400: Bomblet Pit and Five Points Landfill, Tonopah Test Range*, Rev. 0, DOE/NV--459. Las Vegas, NV.
- U.S. Department of Energy, Nevada Operations Office. 1996b. *Streamlined Approach for Environmental Restoration Plan, CAU No. 400: Bomblet Pit and Five Points Landfill, Tonopah Test Range*. Rev. 1, DOE/NV--424. Las Vegas, NV.
- 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. 1999a. *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada*, DOE/NV/11718--283. Las Vegas, NV.
- U.S. Department of Energy, Nevada Operations Office. 1999b. *Closure Report for Corrective Action Unit 453: Area 9 UXO Landfill, Tonopah Test Range, Nevada*, DOE/NV/11718--284. Las Vegas, NV.

## **Attachment B-1**

### **Letters**

(7 Pages)



Department of Energy  
National Nuclear Security Administration  
Nevada Site Office  
P.O. Box 98518  
Las Vegas, NV 89193-8518



**NOV 28 2006**

Tim Murphy, Chief  
Bureau of Federal Facilities  
Division of Environmental Protection  
1771 E. Flamingo Road, Suite 121-A  
Las Vegas, NV 89119

**REQUEST TO REDUCE FREQUENCY OF TONOPAH TEST RANGE (TTR) POST CLOSURE MONITORING INSPECTIONS FROM SEMI-ANNUAL TO ANNUAL SITE INSPECTIONS FOR THE FOLLOWING CAUS: 400, 404, 407, 423, 424, 426, 427, 453, 487.**

The Nevada Nuclear Security Administration Nevada Site Office (NNSA/NSO) has been performing post closure site inspections twice per calendar year at the TTR to identify any significant changes to the site units that would require a corrective action. All inspections were conducted according to the post-closure plans in the approved TTR Closure Reports (CR). For those corrective action units that did not require post closure monitoring, inspections were conducted to document vegetation growth and inspect the integrity of site fencing as a best management practice.

Based upon our analyses and summary results from the semi-annual inspections, as documented in the past Post Closure Inspection Reports, NNSA/NSO is requesting a reduction in the frequency of TTR site inspections from semi-annual to annual. An annual inspection and reporting period will continue to provide information on any change in site condition that warrants a corrective action. In addition, standard maintenance and repairs on fencing, signs, monuments, and soil covers will continue to be performed within ninety (90) days of discovery in order to remain compliant with the applicable post closure requirements.

Please direct comments and questions to Peter A. Sanders, of my staff, at (702) 295-1037.

/s/ Kevin Cabbie

John B. Jones  
Acting Federal Project Director  
Environmental Restoration Project

ERP:2605.PAS

cc:

D. R. Elle, NDEP, Las Vegas, NV  
Ted Zaferatos, NDEP, Las Vegas, NV  
D. C. Loewer, DTRA/CXT1, M/S 645, Mercury, NV  
T. A. Lantow, DTRA/CXT1, M/S 645, Mercury, NV  
W. R. Griffin, SNJV/DTRA, M/S 645, Mercury, NV  
Glenn Richardson, NSTec, NTS306, Mercury, NV  
J. L. Smith, NSTec, Las Vegas, NV  
R. F. Boehlecke, SNJV, Las Vegas, NV  
K. A. Hoar, AD/AMSP, NNSA/NSO, Las Vegas, NV  
FFACO Group, PSG, NNSA/NSO, Las Vegas, NV  
E. F. Di Sanza, WMP, NNSA/NSO, Las Vegas, NV  
K. J. Cabble, ERP, NNSA/NSO, Las Vegas, NV



Department of Energy  
National Nuclear Security Administration  
Nevada Site Office  
P.O. Box 98518  
Las Vegas, NV 89193-8518



ERD.061128.0002

NOV 28 2006

Tim Murphy, Chief  
Bureau of Federal Facilities  
Division of Environmental Protection  
1771 E. Flamingo Road, Suite 121-A  
Las Vegas, NV 89119

REQUEST TO REDUCE FREQUENCY OF TONOPAH TEST RANGE (TTR) POST CLOSURE MONITORING INSPECTIONS FROM SEMI-ANNUAL TO ANNUAL SITE INSPECTIONS FOR THE FOLLOWING CAUS: 400, 404, 407, 423, 424, 426, 427, 453, 487.

The Nevada Nuclear Security Administration Nevada Site Office (NNSA/NSO) has been performing post closure site inspections twice per calendar year at the TTR to identify any significant changes to the site units that would require a corrective action. All inspections were conducted according to the post-closure plans in the approved TTR Closure Reports (CR). For those corrective action units that did not require post closure monitoring, inspections were conducted to document vegetation growth and inspect the integrity of site fencing as a best management practice.

Based upon our analyses and summary results from the semi-annual inspections, as documented in the past Post Closure Inspection Reports, NNSA/NSO is requesting a reduction in the frequency of TTR site inspections from semi-annual to annual. An annual inspection and reporting period will continue to provide information on any change in site condition that warrants a corrective action. In addition, standard maintenance and repairs on fencing, signs, monuments, and soil covers will continue to be performed within ninety (90) days of discovery in order to remain compliant with the applicable post closure requirements.

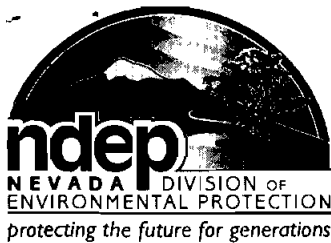
Please direct comments and questions to Peter A. Sanders, of my staff, at (702) 295-1037.

Original Signed by:  
Kevin Cabbie

for  
John B. Jones  
Acting Federal Project Director  
Environmental Restoration Project

ERP:2605.PAS

CONCUR
EM 5-0789
ERP
Sanders PAS
11/27/06
ERP
Cabbie KC
11/27/06
ERP
Jones JB
11/27/06
EM 5-0789



# STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Kenny C. Guinn, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

ERD.061208.0001

December 5, 2006

John B. Jones, Acting Federal Project Director  
Environmental Restoration Project  
National Nuclear Security Administration  
Nevada Site Office (NNSA/NSO)  
P.O. Box 98518  
Las Vegas, NV 89193-8518

Subject: NNSA/NSO Request to Reduce the Frequency of Post-Closure Monitoring of  
Corrective Action Units (CAU) 400, 404, 407, 423, 424, 426, 427, 453, and 487 at  
Tonopah Test Range (TTR), Nevada

Dear Mr. Jones:

The Nevada Division of Environmental Protection, Bureau of Federal Facilities staff (NDEP) has received and reviewed the referenced request, dated November 28, 2006. The sites have been monitored for various lengths of time beginning in 1997 for CAU 400, 1998 for CAUs 404 and 426, 1999 for CAUs 423, 424, 427, and 453, 2001 for CAU 487, and 2002 for CAU 407. Some of the sites have not been required to conduct post-closure monitoring or have only been required to conduct inspections for a short period of time but all sites have continued to be monitored as a best management practice. Past monitoring has demonstrated that a once per year inspection would be sufficient for soil cover, fencing, monuments and signs at these sites.

NDEP concurs with the NNSA/NSO request to reduce the frequency of the post-closure monitoring inspections of the subject CAUs to an annual frequency. Maintenance and repair requirements must continue to be made within ninety (90) days of discovery and documented in writing at the time of repair. Annual reports to NDEP must also continue.

Address any questions regarding this matter to either Ted Zaferatos at (702) 486-2850, ext. 234, Don Elle at (702) 486-2850, ext. 229, or me at (702) 486-2850, ext. 231.

Sincerely,

/s/ Tim H. Murphy

T.H. Murphy  
Chief  
Bureau of Federal Facilities

ACTION  
INFO  
NSO/MGR  
AMEM  
AMNS  
AMSO  
AMSP  
AMSS

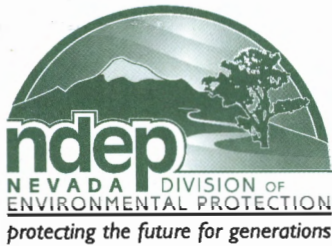
ERP  
wmp AMSP  
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L  
L  
L



John B. Jones, Acting Federal Project Director  
Page 2  
December 5, 2006

DRE/TZ

cc: K.J. Cabble, ERP, NNSA/NSO  
E.F. Di Sanza, WMP, NNSA/NSO  
K.A. Hoar, Director, AD/AMSP, NNSA/NSO  
D.C. Loewer, DTRA/CXT1, M/S 645, Mercury, NV  
T.A. Lantow, DTRA/CXT1, M/S 645, Mercury, NV  
W.R. Griffin, SNJV/DTRA, M/S 645, Mercury, NV  
Glenn Richardson, NSTec, NTS 306, Mercury, NV  
J.L. Smith, NSTec, Las Vegas, NV  
R.F. Boehlecke, SNJV, Las Vegas, NV  
Pete Sanders, ERP, NNSA/NSO  
Sabine Curtis, ERP, NNSA/NSO  
FFACO Group, PSG, NNSA/NSO, Las Vegas, NV  
Eloise Hopper, Nellis AFB  
Vern Gabbard, SNL/TTR  
98 RANW/CC, 3770 Duffer Drive, Las Vegas, NV 89191  
98 RANW/XPL, 3770 Duffer Drive, Las Vegas, NV 89191



# STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Administrator

ERD.140324.0001

March 20, 2014

Robert F. Boehlecke, Manager  
Environmental Management Operations  
National Nuclear Security Administration  
Nevada Field Office (NNSA/NFO)  
P.O. Box 98518  
Las Vegas, NV 89193-8518

Subject: Acceptance of the Post Closure Inspection Report for 2013  
Tonopah Test Range, Nevada  
Federal Facility Agreement and Consent Order

Dear Mr. Boehlecke:

The Nevada Division of Environmental Protection, Bureau of Federal Facilities staff (NDEP) has received and reviewed the referenced report on the post-closure monitoring activities conducted at the Tonopah Test Range, Nevada during calendar year 2013. The annual report was prepared in accordance with the Federal Facility Agreement and Consent Order (FFACO) and the Closure Reports (CRs) for Corrective Action Units (CAUs) 400, 407, 424, 453, and 487. NDEP accepts this document including the recommendations for continuation of annual visual inspections and the recommendation for additional vegetation monitoring and corrective actions when significant changes are noted during the annual visual inspections.

Address any questions regarding this matter to either Ted Zaferatos at (702) 486-2850, ext. 234, or to me at (702) 486-2850, ext. 233.

Sincerely,

/s/ Jeff MacDougall

Jeff MacDougall, Ph.D., C.P.M.  
Supervisor  
Bureau of Federal Facilities

JJM/TZ: tz





Robert F. Boehlecke, Manager, EMO

Page 2

March 20, 2014

cc: D.C. Stockdale, USAF  
Northern Range Commander  
USAF Liaison Officer  
USAF/98<sup>th</sup> Range Wing  
J. Fraher, DTRA/CXTS, Kirkland, AFB, NM  
NSTec Correspondence Control, MS NLV008  
N-1 Central Files, MS NSF 156 (1 electronic copy, 1 hard copy)  
R.C Sherwood, SNL/TTR  
T.A. Lantow, NFO  
FFACO Group, NFO

**Appendix C**

**Post-Closure Inspection Checklists**

(11 Pages)

**POST-CLOSURE INSPECTION CHECKLIST****CAU 407, ROLLER COASTER RADSAFE AREA (TTR) –  
CAS TA-23-001-TARC, ROLLER COASTER RADSAFE AREA**

Inspection Date: <u>5/23/17</u>	Reason for Inspection: <u>Annual</u>
Date of Last Post-Closure Inspection: <u>5/11/16</u>	Reason for Last Post-Closure Inspection: <u>Annual</u>
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Pat Matthews, Environmental Restoration Manager, Navarro	
Chief Inspector: <u>Juan Alvarado</u>	Title: <u>Task Lead</u>
Assistant Inspector: <u>Dan Henry</u>	Title: <u>Site Supervisor</u>

**A. GENERAL INSTRUCTIONS**

- The site inspection is an inspection of the entire perimeter to visually inspect all features specifically described in this checklist and observe whether there is an indication that the use restriction may have been compromised. Entry into the fenced area is not required for the inspection.
- All documentation must be legible and clear. Complete all checklist items.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

<b>B. PREPARATION</b> (To be completed prior to the site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Were anomalies or trends detected on previous inspections?	<input checked="" type="checkbox"/>		① OR sign posting (phone #) question. ② Badger holes N and E slopes
2. Were maintenance or repairs performed since the last inspection?		<input checked="" type="checkbox"/>	Repair crew was on site 6/30/16 no burrows were observed. Posting is OK.
a. If yes, has repair resulted in a change from as-built conditions?			NA <input checked="" type="checkbox"/>
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA <input checked="" type="checkbox"/>

**C. SITE INSPECTION** (To be completed during the site visit)

1. Adjacent Offsite Features:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		<input checked="" type="checkbox"/>	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to or a break in the fencing or fenceposts?		<input checked="" type="checkbox"/>	
b. Are all use restriction signs legible? <u>OK leave as is</u>	<input checked="" type="checkbox"/>		
c. How many damaged or missing use restriction signs need to be replaced?		<input checked="" type="checkbox"/>	
d. How many use restriction signs are down or loose and need to be re-hung?		<input checked="" type="checkbox"/>	
e. Do any Underground Radioactive Material Area signs need to be replaced or re-hung?		<input checked="" type="checkbox"/>	
3. Waste Unit Cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		<input checked="" type="checkbox"/>	
b. Is there evidence of erosion (wind or water)?		<input checked="" type="checkbox"/>	
c. Is there evidence of ponding on the cover?		<input checked="" type="checkbox"/>	
d. Is organic mulch adequate to prevent erosion?	<input checked="" type="checkbox"/>		
e. Is there evidence of human or large animal intrusion onto the site?		<input checked="" type="checkbox"/>	
f. Are animal burrows present?	<input checked="" type="checkbox"/>		SE corner (5 feet from rd)

**POST-CLOSURE INSPECTION CHECKLIST****CAU 407, ROLLER COASTER RADSAFE AREA (TTR) –  
CAS TA-23-001-TARC, ROLLER COASTER RADSAFE AREA**

g. Are weedy plants present?

X

h. Is there evidence of plant mortality?

X

i. Is there trash or debris within the fenced area?

X

j. Are there any other issues not specifically described in this checklist?

X

## Photograph Instructions:

- A standard set of photographs is needed for the post-closure report. Photos are required to be taken from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).
- Photographs should also be taken to document maintenance/repair needs, anomalous features, or new features (such as changes in adjacent area land use). These will be used to plan maintenance/repair activities and are not intended for use in the annual post-closure report.
- Photographs will be filed electronically.

## 4. Photograph Documentation:

YES

NO

EXPLANATION (required if shaded box is checked)

a. Have the required photographs of the site been taken?

X

**D. FIELD CONCLUSIONS**

YES

NO

EXPLANATION (required if shaded box is checked)

1. Is there an imminent hazard to the integrity of the landfill cover?

X

## 2. Field Conclusions and Repair or Maintenance Recommendations:

5/23/17

~~Bordering animal hole SE corner of mound.~~ No other issues.

Animal burrow needs filling. Located SE corner of mound.

South facing side, near top. Vegetation survey not needed.

**E. CERTIFICATION:** I have conducted this inspection in accordance with the post-closure requirements as recorded on this checklist and attachments.

Chief Inspector's Signature: /s/ Juan J. Alvarado

Date: 5/23/17

**F. VERIFICATION:** I have reviewed this checklist and attachments and have verified that they are complete.

Signature: /s/ Steve Felton

Date: 5/24/17

Printed Name: STEVE FELTON



**POST-CLOSURE INSPECTION CHECKLIST**

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, and CAS 03-08-002-A308, Landfill Cell A3-8

Inspection Date: <u>5/23/17</u>	Reason for Inspection: <u>Annual</u>
Date of Last Post-Closure Inspection: <u>5/11/16</u>	Reason for Last Post-Closure Inspection: <u>Annual</u>
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Pat Matthews, Environmental Restoration Project, Navarro	
Chief Inspector: <u>Juan Alvarado</u>	Title: <u>Task Lead</u>
Assistant Inspector: <u>Dan Henry</u>	Title: <u>Site Supervisor</u>

**A. GENERAL INSTRUCTIONS**

- The site inspection is an inspection of the each site including the perimeters and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
- All documentation must be legible and clear. Complete all checklist items.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

<b>B. PREPARATION</b> (To be completed prior to the site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Were anomalies or trends detected on previous inspections?	<input checked="" type="checkbox"/>		① on sign posting (phone #) question. ② monument at A 3-4
2. Were maintenance or repairs performed since the last inspection?		<input checked="" type="checkbox"/>	① Postings are ok. ② Temporary monument at A 3-4
a. If yes, has repair resulted in a change from as-built conditions?			NA <input checked="" type="checkbox"/>
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA <input checked="" type="checkbox"/>

**C. SITE INSPECTION** (To be completed during the site visit)

1. Adjacent Offsite Features (Landfill A3-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		<input checked="" type="checkbox"/>	
2. Site Markers (Landfill A3-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the seven (7) boundary monuments been disturbed or damaged?		<input checked="" type="checkbox"/>	
b. Are all signs legible?			
c. How many damaged or missing signs need to be replaced?		<input checked="" type="checkbox"/>	
d. How many down or loose signs need to be re-hung?		<input checked="" type="checkbox"/>	
3. Waste Unit Cover (Landfill A3-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		<input checked="" type="checkbox"/>	
b. Is there evidence of erosion (wind or water)?		<input checked="" type="checkbox"/>	
c. Is there evidence of human or large animal intrusion onto the site?		<input checked="" type="checkbox"/>	
d. Are animal burrows present?	<input checked="" type="checkbox"/>		small animals, no issues
e. Is there trash or debris within the use restricted area?		<input checked="" type="checkbox"/>	
f. Are there any other issues not specifically described in this checklist?		<input checked="" type="checkbox"/>	

**POST-CLOSURE INSPECTION CHECKLIST**

**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, and CAS 03-08-002-A308, Landfill Cell A3-8**

4. Adjacent Offsite Features (Landfill A3-2):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		X	
5. Site Markers (Landfill A3-2):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the four (4) boundary monuments been disturbed or damaged?		X	
b. Are all signs legible?	X		
c. How many damaged or missing signs need to be replaced?		0	
d. How many down or loose signs need to be re-hung?		0	
6. Waste Unit Cover (Landfill A3-2):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human or large animal intrusion onto the site?		X	
d. Are animal burrows present?		X	
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	
7. Adjacent Offsite Features (Landfill A3-3, western two cells):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		X	
8. Site Markers (Landfill A3-3, western two cells):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the three (3) boundary monuments been disturbed or damaged?		X	
b. Are all three (3) surface markers in good condition and is lava rock sufficient to locate them?	X		
c. Are all signs legible?	X		
d. How many damaged or missing signs need to be replaced?		0	
e. How many down or loose signs need to be re-hung?		0	
9. Waste Unit Cover (Landfill A3-3, western two cells):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human or large animal intrusion onto the site?		X	
d. Are animal burrows present?		X	
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	



**POST-CLOSURE INSPECTION CHECKLIST**

**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, and CAS 03-08-002-A308, Landfill Cell A3-8**

	YES	NO	EXPLANATION (required if shaded box is checked)
10. Adjacent Offsite Features (Landfill A3-3, eastern cell):			
a. Are there any new activities or offsite features that could potentially affect the site?		X	
11. Site Markers (Landfill A3-3, eastern cell):			
a. Are all three (3) surface markers in good condition and is lava rock sufficient to locate them?	X		
12. Waste Unit Cover (Landfill A3-3, eastern cell):			
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human or large animal intrusion onto the site?		X	
d. Are animal burrows present?		X	
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	
13. Adjacent Offsite Features (Landfill A3-4):			
a. Are there any new activities or offsite features that could potentially affect the site?		X	
14. Site Markers (Landfill A3-4):			
a. Have any of the five (5) boundary monuments been disturbed or damaged?		X	note: sixth monument not replaced, wood markers in place.
b. Are all signs legible?	X		
c. How many damaged or missing signs need to be replaced?		0	
d. How many down or loose signs need to be re-hung?		0	
15. Waste Unit Cover (Landfill A3-4):			
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human or large animal intrusion onto the site?		X	
d. Are animal burrows present?		X	
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	
16. Adjacent Offsite Features (Landfill A3-5):			
a. Are there any new activities or offsite features that could potentially affect the site?		X	
17. Site Markers (Landfill A3-5):			
a. Have any of the four (4) boundary monuments been disturbed or damaged?		X	
b. Are all signs legible?	X		

## POST-CLOSURE INSPECTION CHECKLIST

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, and CAS 03-08-002-A308, Landfill Cell A3-8

c. How many damaged or missing signs need to be replaced?	0		
d. How many down or loose signs need to be re-hung?	0		
18. Waste Unit Cover (Landfill A3-5):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human or large animal intrusion onto the site?		X	
d. Are animal burrows present?		X	
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	
19. Adjacent Offsite Features (Landfill A3-6):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		X	
20. Site Markers (Landfill A3-6):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the four (4) boundary monuments been disturbed or damaged?		X	
b. Are all signs legible?	X		
c. How many damaged or missing signs need to be replaced?	0		
d. How many down or loose signs need to be re-hung?	0		
21. Waste Unit Cover (Landfill A3-6):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion or large animal onto the site?		X	
d. Are animal burrows present?	X		small animal, no issue
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	
22. Adjacent Offsite Features (Landfill A3-8):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are there any new activities or offsite features that could potentially affect the site?		X	pallets piled along southern border
23. Site Markers (Landfill A3-8):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all four (4) surface markers in good condition and is lava rock sufficient to locate them?		X	need more lava rock on both eastern locations
b. Are all signs legible?	X		
c. How many damaged or missing signs need to be replaced?	0		
d. How many down or loose signs need to be re-hung?	0		



**POST-CLOSURE INSPECTION CHECKLIST**

**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, and CAS 03-08-002-A308, Landfill Cell A3-8**

24. Waste Unit Cover (Landfill A3-8):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b. Is there evidence of erosion (wind or water)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
c. Is there evidence of human or large animal intrusion onto the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
d. Are animal burrows present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
e. Is there trash or debris within the use restricted area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
f. Are there any other issues not specifically described in this checklist?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**Photograph Instructions:**

- A standard set of photographs is needed for the post-closure report. Photos are required to be taken from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).
- Photographs should also be taken to document maintenance/repair needs, anomalous features, or new features (such as changes in adjacent area land use). These will be used to plan maintenance/repair activities and are not intended for use in the annual post-closure report.
- Photographs will be filed electronically.

25. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have the required photographs of the site been taken?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

<b>D. FIELD CONCLUSIONS</b>	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is there an imminent hazard to the integrity of the landfills?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**2. Field Conclusions and Repair or Maintenance Recommendations:**

5/23/17  
A3-4 monument not replaced. No large animals burrowing. ~~no issues~~ at any of the sites. A3-1, 2, 3, 5 and 6 are in good condition, no issues. A3-8 the 2 eastern monuments (flush monuments) need more "lava" stone placed on them to aid as a visual cue.

**E. CERTIFICATION:** I have conducted this inspection in accordance with the post-closure requirements as recorded on this checklist and attachments.Chief Inspector's Signature: /s/ Juan J. AlvaradoDate: 5/23/17**F. VERIFICATION:** I have reviewed this checklist and attachments and have verified that they are complete.Signature: /s/ Steve FeltonDate: 5/24/17Printed Name: STEVE FELTON

## POST-CLOSURE INSPECTION CHECKLIST

CAU 453, AREA 9 UXO LANDFILL (TTR) – CAS 09-55-001-0952, AREA 9 LANDFILL

Inspection Date: 5/23/17	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/11/16	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Pat Matthews, Environmental Restoration Manager, Navarro	
Chief Inspector: Juan Alvarado	Title: Task Lead
Assistant Inspector: Don Henry	Title: Site Supervisor

## A. GENERAL INSTRUCTIONS

- The site inspection is an inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
- All documentation must be legible and clear. Complete all checklist items.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

B. PREPARATION (To be completed prior to the site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Were anomalies or trends detected on previous inspections?	X		① Badger hole at north trench ② UA sign posting (phone #)
2. Were maintenance or repairs performed since the last inspection?	X		① 6/30/16 Badger hole filled in. ② UA sign's are OK

C. SITE INSPECTION (To be completed during the site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Adjacent Offsite Features:			
a. Are there any new activities or offsite features that could potentially affect the site?		X	
2. Site Markers:			
a. Is there damage to the gate or lock?		X	
b. Is there damage to fencing or fenceposts?		X	
c. Have any boundary monuments been disturbed or damaged?		X	
d. Are all signs legible? <del>    </del> <del>    </del> 1			
e. How many damaged or missing signs need to be replaced?		0	
f. How many down or loose signs need to be re-hung?		0	
3. Use Restricted Area:			
a. Is there evidence of settling or cracking?		X	
b. Is there evidence of erosion (wind or water)?	X		* 5/23/17 west side of north minor erosion raveling < 6"
c. Is there evidence of human or large animal intrusion onto the site?	X		animal burrow
d. Are animal burrows present?	X		5 burrows - 3 between middle + N trench - 1 in middle trench in north trench
e. Is there trash or debris within the use restricted area?		X	
f. Are there any other issues not specifically described in this checklist?		X	



**POST-CLOSURE INSPECTION CHECKLIST****CAU 453, AREA 9 UXO LANDFILL (TTR) – CAS 09-55-001-0952, AREA 9 LANDFILL**

## Photograph Instructions:

- A standard set of photographs is needed for the post-closure report. Photos are required to be taken from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).
- Photographs should also be taken to document maintenance/repair needs, anomalous features, or new features (such as changes in adjacent area land use). These will be used to plan maintenance/repair activities and are not intended for use in the annual post-closure report.
- Photographs will be filed electronically.

## 4. Photograph Documentation:

YES

NO

EXPLANATION (required if shaded box is checked)

a. Have the required photographs of the site been taken?

X

from west end look E.  
pics of burrows**D. FIELD CONCLUSIONS**

YES

NO

EXPLANATION (required if shaded box is checked)

1. Is there an imminent hazard to the integrity of the landfill cover?

X

## 2. Field Conclusions and Repair or Maintenance Recommendations:

There some shallow runnels on the west side of the raised mound. Runnels do not present an issue at this time. There are 5 animal burrows near the east central portion of the site. 3 holes are oriented in a line between the middle and north trenches. One hole is in the middle trench and 1 hole is in the north trench.

**E. CERTIFICATION:** I have conducted this inspection in accordance with the post-closure requirements as recorded on this checklist and attachments.

Chief Inspector's Signature: /s/ Juan J. Alvarado

Date: 5/23/17 to 5/23/17  
5/24/2017**F. VERIFICATION:** I have reviewed this checklist and attachments and have verified that they are complete.

Signature: /s/ Steve Felton

Date: 5/24/17

Printed Name:

STEVE FELTON

**POST-CLOSURE INSPECTION CHECKLIST****CAU 487, THUNDERWELL SITE (TTR) – CAS RG-26-001-RGRV, THUNDERWELL SITE**

Inspection Date: <u>5/23/17</u>	Reason for Inspection: <u>Annual</u>
Date of Last Post-Closure Inspection: <u>5/11/16</u>	Reason for Last Post-Closure Inspection: <u>Annual</u>
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Pat Matthews, Environmental Restoration Manager, Navarro	
Chief Inspector: <u>Juan Alvarado</u>	Title: <u>Task Lead</u>
Assistant Inspector: <u>Don Henry</u>	Title: <u>Site Supervisor</u>

**A. GENERAL INSTRUCTIONS**

- The site inspection is an inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
- All documentation must be legible and clear. Complete all checklist items.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

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

YES NO EXPLANATION (required if shaded box is checked)

1. Were anomalies or trends detected on previous inspections?

X

On sign posting (phone #) question  
 @ borrowing owl at A-17. No issue.

2. Were maintenance or repairs performed since the last inspection?

X

On sign phone # is OK

**C. SITE INSPECTION** (To be completed during the site visit)

1. Adjacent Offsite Features (A8 Anomaly):

YES

NO

EXPLANATION (required if shaded box is checked)

a. Are there any new activities or offsite features that could potentially affect the site?

X

2. Site Markers (A8 Anomaly):

YES

NO

EXPLANATION (required if shaded box is checked)

a. Have any boundary monuments been disturbed or damaged?

X

b. Are all signs legible?

X

c. How many damaged or missing signs need to be replaced?

0

d. How many down or loose signs need to be re-hung?

0

3. Use Restricted Area (A8 Anomaly):

YES

NO

EXPLANATION (required if shaded box is checked)

a. Is there evidence of human or large animal intrusion onto the site?

X

b. Are animal burrows present?

X

c. Is there trash or debris within the use restricted area?

X

d. Are there any other issues not specifically described in this checklist?

X

4. Adjacent Offsite Features (A17 Anomaly):

YES

NO

EXPLANATION (required if shaded box is checked)

a. Are there any new activities or offsite features that could potentially affect the site?

X

5. Site Markers (A17 Anomaly):

YES

NO

EXPLANATION (required if shaded box is checked)

a. Have any boundary monuments been disturbed or damaged?

X

b. Are all signs legible?

X

c. How many damaged or missing signs need to be replaced?

0



**POST-CLOSURE INSPECTION CHECKLIST****CAU 487, THUNDERWELL SITE (TTR) – CAS RG-26-001-RGRV, THUNDERWELL SITE**

d. How many down or loose signs need to be re-hung?			
6. Use Restricted Area (A17 Anomaly):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of human or large animal intrusion onto the site?		X	
b. Are animal burrows present?	X		minor holes (small animals), no issues
c. Is there trash or debris within the use restricted area?			
d. Are there any other issues not specifically described in this checklist?			
<b>Photograph Instructions:</b> <ul style="list-style-type: none"> <li>A standard set of photographs is needed for the post-closure report. Photos are required to be taken from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).</li> <li>Photographs should also be taken to document maintenance/repair needs, anomalous features, or new features (such as changes in adjacent area land use). These will be used to plan maintenance/repair activities and are not intended for use in the annual post-closure report.</li> <li>Photographs will be filed electronically.</li> </ul>			
7. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have the required photographs of the site been taken?	X		A-8 to west A-17 to north
<b>D. FIELD CONCLUSIONS AND REPAIR OR MAINTENANCE RECOMMENDATIONS:</b>			
All monuments and signs are correct and good condition. Burrowing owl is gone. No issues at A-8 or A-17.			
<b>E. CERTIFICATION:</b> I have conducted this inspection in accordance with the post-closure requirements as recorded on this checklist and attachments.			
Chief Inspector's Signature: /s/ Juan J. Alvarado			Date: 5/23/17
<b>F. VERIFICATION:</b> I have reviewed this checklist and attachments and have verified that they are complete.			
Signature: /s/ Steve Felton			Date: 5/24/17
Printed Name: STEVE FELTON			

## **Appendix D**

### **Field Notes**

(2 Pages)

# FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	5	23	17
	SHEET	1	OF	2

PROJECT NAME: Pre- and Post-Closure Monitoring, TTR/NTTR CAUs WCP# NAV-SM-TTRNTTR-323 Rev. 02		PROJECT NO.: IN15-994
FIELD ACTIVITY SUBJECT: Inspection of TTR Corrective Action Units		
<p>DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:</p> <p>0710 Arrive TTR Juan Alvarado, Tiffany Luntow (NDE), Mark McLean &amp; Justin Costa Rica (NDEP) 0730 Arrive CAU 487 A-8 meet Dan Henry POM + TSD</p> <p>0740 Inspect 487 A-8 no issues</p> <p>0753 arrive 487 A-17</p> <p>0804 Depart to TTR office to get camera</p> <p>0818 @office</p> <p>0832 @CAU 424 A-3 Pic #1 down</p> <p>0845 pick up ice</p> <p>0850 @CAU 424 A-1 Pic #2 down (W) from SW corner</p> <p>0910 @CAU 424 A-2 Pics #3 &amp; 4 W from south side</p> <p>0920 @CAU 424 A-6 PICS #5 &amp; 6 W from south side</p> <p>0930 @CAU 424 A-5 PICS #7 &amp; 8</p> <p>0945 @CAU 424 A-6 PICS #9 &amp; 10</p> <p>0956 @CAU 424 A-8 PICS #11 &amp; 12 2 east manholes</p> <p>1020 @CAU 407 PICS #13, 14 &amp; 15</p>		
<p>VISITORS ON SITE:</p> <p>None</p>	<p>CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.</p> <p>None</p>	
<p>WEATHER CONDITIONS:</p> <p>Sunny 70's 80's</p>	<p>IMPORTANT TELEPHONE CALLS:</p> <p>None</p>	
<p>PERSONNEL ON SITE: Juan Alvarado, Dan Henry, Tiffany Luntow, Mark McLean, Justin Costa Rica</p>		
<p>SIGNATURE</p> <p>/s/ Juan J. Alvarado</p>		<p>DATE: 5/23/17</p>

# FIELD ACTIVITY DAILY LOG

(CONTINUATION SHEET)

DAILY LOG	DATE	5	23	17
	SHEET 2 OF 2			

PROJECT NAME: Post-Closure Monitoring, RCRA Corrective Action Units  
WCP# NAV-SM-TTRNTTR-323 Rev. 02

PROJECT NO.: IN15-994

FIELD ACTIVITY SUBJECT: Inspection of RCRA Corrective Action Units

## DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1115 Arrive CAU 400 NO issues. Need to check pen time frame  
1130 Arrive CAU 453 5 animal looking PICS 16-20  
1210 Arrive CAU Thunderswell to take pic  
1238 Through gate (Don H departed back to Class State II)  
~~retrieve~~ items from NAEM truck  
for 5/23/17  
retrieve  
All parties depart for Las Vegas.



# **Appendix E**

## **Photographs**

**Table E-1**  
**Key to Appendix E Photographs**

CAU	Date	Photo Number	Description
407	05/23/2017	1	Facing East, Overview
424	05/23/2017	2	Landfill Cell A3-1, Facing North
	05/23/2017	3	Landfill Cell A3-2, Facing North
	05/23/2017	4	Landfill Cell A3-3, East Cell, Facing Ground
	05/23/2017	5	Landfill Cell A3-4, Facing South
	05/23/2017	6	Landfill Cell A3-5, Facing North
	05/23/2017	7	Landfill Cell A3-6, Facing North
453	05/23/2017	8	Facing East, Overview
487	05/23/2017	9	A-8 Anomaly, Facing East
	05/23/2017	10	A-17 Anomaly, Facing West



**Figure E-1**  
**Photograph 1: CAU 407, Facing East, Overview (05/23/2017)**





**Figure E-2**  
**Photograph 2: CAU 424, Landfill Cell A3-1, Facing North (05/23/2017)**



**Figure E-3**  
**Photograph 3: CAU 424, Landfill Cell A3-2, Facing North (05/23/2017)**





**Figure E-4**  
**Photograph 4: CAU 424, Landfill Cell A3-3, East Cell, Facing Ground (05/23/2017)**



**Figure E-5**  
**Photograph 5: CAU 424, Landfill Cell A3-4, Facing South (05/23/2017)**





**Figure E-6**  
**Photograph 6: CAU 424, Landfill Cell A3-5, Facing North (05/23/2017)**



**Figure E-7**  
**Photograph 7: CAU 424, Landfill Cell A3-6, Facing North (05/23/2017)**





**Figure E-8**  
**Photograph 8: CAU 453, Facing East, Overview (05/23/2017)**



**Figure E-9**  
**Photograph 9: CAU 487, A-8 Anomaly, Facing East (05/23/2017)**





**Figure E-10**  
**Photograph 10: CAU 487, A-17 Anomaly, Facing West (05/23/2017)**

## **Appendix F**

### **Post-Closure Vegetation Monitoring Report**

Note: Post-closure vegetation was not conducted in 2017.



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