Environmental
Management
Nevada Program

DOE/NV--1594

Post-Closure Report for Closed Resource Conservation and Recovery Act Corrective Action Units, Nevada National Security Site, Nevada

For Calendar Year 2017

Controlled Copy No.: _____
Revision No.: 0

May 2018

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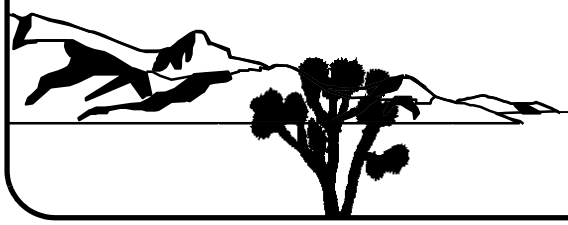

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POST-CLOSURE REPORT FOR CLOSED RESOURCE CONSERVATION AND RECOVERY ACT CORRECTIVE ACTION UNITS, NEVADA NATIONAL SECURITY SITE, NEVADA

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Las Vegas, Nevada

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FOR CALENDAR YEAR 2017

Approved by: /s/ Tiffany A. Gamero Date: 05/30/2018

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Approved by: /s/ Wilhelm R. Wilborn Date: 05/30/2018

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

agl	Above ground level
Am	Americium
^{o}C	Degrees Celsius
CAU	Corrective action unit
CY	Calendar year
DoD	U.S. Department of Defense
^{o}F	Degrees Fahrenheit
ft	Foot
ft^3	Cubic feet
in.	Inch
km	Kilometer
kPa	Kilopascal
m	Meter
m^3	Cubic meter
MDC	Minimum detectable concentration
mi	Mile
mm	Millimeter
mph	Miles per hour
mR/day	Milliroentgens per day
m/s	Meters per second
NAD	North American Datum
NDEP	Nevada Division of Environmental Protection
NNSS	Nevada National Security Site
pCi/m^3	Picocuries per cubic meter
$pCi/m^3/s$	Picocuries per cubic meter per second
PPT	Precipitation

List of Acronyms and Abbreviations *(Continued)*

Pu	Plutonium
RCRA	*Resource Conservation and Recovery Act*
RWMC	Radioactive Waste Management Complex
RWMS	Radioactive Waste Management Site
TDR	Time-domain reflectometry
TLD	Thermoluminescent dosimeter
UR	Use restriction
UTM	Universal Transverse Mercator
VWC	Volumetric water content

Executive Summary

This report serves as the combined annual report for post-closure activities for the following closed corrective action units (CAUs):

- CAU 90, Area 2 Bitcutter Containment
- CAU 91, Area 3 U-3fi Injection Well
- CAU 92, Area 6 Decon Pond Facility
- CAU 110, Area 3 WMD U-3ax/bl Crater
- CAU 111, Area 5 WMD Retired Mixed Waste Pits
- CAU 112, Area 23 Hazardous Waste Trenches

The locations of the sites are shown in Figure ES-1. This report covers calender year 2017. The post-closure requirements for these sites are described in *Resource Conservation and Recovery Act* Permit Number NEV HW0101 and are summarized in each CAU-specific section of this report. The results of the inspections, a summary of maintenance activities, and an evaluation of monitoring data are presented in this report.

Site inspections are conducted annually at CAUs 90, 91, and 112; semiannually at CAUs 92 and 110; and quarterly at CAU 111. Additional inspections are conducted at CAU 92 if precipitation occurs in excess of 1.0 inches in a 24-hour period and at CAU 111 if precipitation occurs in excess of 1.0 inch in a 24-hour period. Inspections include an evaluation of the condition of the units, including covers, fences, signs, gates, and locks.

At CAU 110, soil moisture monitoring, vegetation evaluations, and subsidence surveys are conducted in addition to the visual inspections. At CAU 111, soil moisture monitoring, vegetation evaluations, subsidence surveys, direct radiation monitoring, air monitoring, radon flux monitoring, and groundwater monitoring are conducted. This report will address all monitoring items notes above except groundwater monitoring. Groundwater monitoring is documented in the *Nevada National Security Site Data Report: Groundwater Monitoring Program Area 5 Radioactive Waste Management Site*.

All required inspections, maintenance, and monitoring were conducted in accordance with the post-closure requirements of the permit. Revision 4 of Permit NEV HW0101 was issued effective December 10, 2015, and remains in effect until December 10, 2020.

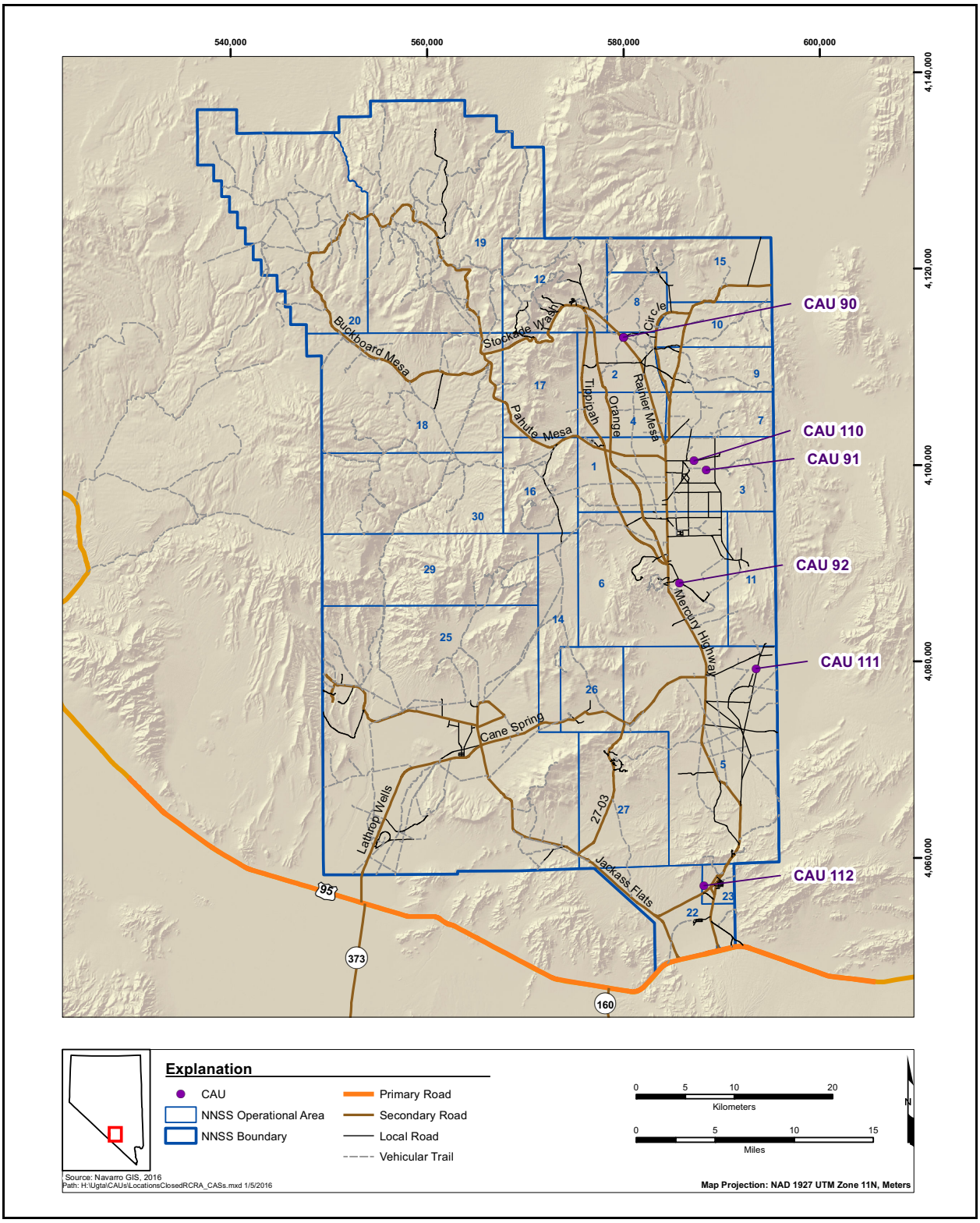


Figure ES-1
Locations of Closed *Resource Conservation and Recovery Act* CAUs

1.0 CAU 90, Area 2 Bitcutter Containment

1.1 Summary of Inspections, Repairs, and Maintenance

1.1.1 Post-Closure Requirements

An annual inspection is required to evaluate the condition of the unit. Photographs are taken, and the results of the inspections are documented on a checklist. Deficiencies other than general housekeeping issues are reported to the Nevada Division of Environmental Protection (NDEP) and remedied within 60 days of discovery.

1.1.2 Inspection, Repair, and Maintenance Activities

The annual inspection was performed on December 5, 2017. All permit controls were in place, and no maintenance or repairs were required.

2.0 CAU 91, Area 3 U-3fi Injection Well

2.1 Summary of Inspections, Repairs, and Maintenance

2.1.1 Post-Closure Requirements

An annual inspection is required to evaluate the condition of the unit. The results of the inspections are documented on a checklist. The permit does not specify a time limit for repairs at Corrective Action Unit (CAU) 91.

2.1.2 Inspection, Repair, and Maintenance Activities

The annual inspection was performed on June 7, 2017. Two use restriction (UR) signs had fading black lettering, and weeds were observed within the compound. All other permit controls were in place.

Weeds were removed and herbicide was applied on September 5, 2017, and the UR signs were replaced on September 6, 2017.

3.0 CAU 92, Area 6 Decon Pond Facility

3.1 Summary of Inspections, Repairs, and Maintenance

3.1.1 Post-Closure Requirements

Inspections are required semiannually and when precipitation occurs in excess of 1.0 inches (in.) in a 24-hour period. The results of the inspection are documented on a checklist. The checklist documents the reason for the inspection (i.e., semiannual or excess precipitation) and any changes in the condition of the cover or fenced area including, but not limited to, trash or debris within the fenced area, erosion of the cover, vegetation growing on the cover, and animal burrows or nesting activity. The conditions of the fence, warning signs, gate, and lock are documented. Small cracks or settling imperfections (less than 2 in. deep) are documented, and repairs are scheduled on an annual basis. Larger disruptions are immediately reported to NDEP and remedied within 60 days of discovery.

3.1.2 Inspection, Repair, and Maintenance Activities

The first semiannual inspection was performed on June 7, 2017. Two UR signs were illegible. No other issues were noted. The faded signs were replaced on September 6, 2017.

The second semiannual inspection was performed on December 5, 2017. All permit controls were in place, and no maintenance or repairs were required.

There was no precipitation in excess of 1.0 in. in a 24-hour period between January 1 and December 31, 2017. Therefore, no precipitation inspections were conducted at CAU 92 during calendar year (CY) 2017.

4.0 CAU 110, Area 3 WMD U-3ax/bl Crater

4.1 Summary of Inspections, Repairs, and Maintenance

4.1.1 Post-Closure Requirements

Semiannual inspections are required to evaluate the condition of the cover. Photographs may be taken and the results of the inspections documented on a checklist. The conditions of the fence, UR warning signs, entrance gate, and lock are documented. The seven subsidence markers are also inspected, and any changes in the condition of the cover—including, but not limited to, trash or debris within the fenced area, erosion of the cover, and animal burrows or nesting activity—are documented. Non-critical cracks or settling imperfections (equal to or less than 6 in. deep) on the cover are documented, and repairs are scheduled on an annual basis. Cracks or settling imperfections greater than 6 in. deep that extend 3 feet (ft) or more are reported to NDEP and repaired within 60 days of discovery.

4.1.2 Inspection, Repair, and Maintenance Activities

Faded signs noted during the December 2016 inspection were replaced on September 6, 2017.

The first semiannual inspection was performed on June 7, 2017. Five UR signs had faded lettering. The right gate hinge was out of adjustment. Weeds inhibited the view of some of the UR signs. All other permit controls were in place. The signs were replaced on September 6, 2017. The weeds were removed and the gate was repaired on November 27, 2017.

The second semiannual inspection was performed on December 4, 2017. There are two areas of subsidence next to each other in the eastern portion of the cover. There is one area of subsidence and one large animal burrow near the southeast portion of the cap. All UR signs were legible. All other permit controls were in place. The animal burrow and areas of subsidence were repaired on January 24, 2018.

4.2 Other Required Monitoring

4.2.1 Subsidence Survey

Seven survey markers are installed on the cover of CAU 110. The baseline survey was conducted on December 14, 2000. Subsidence surveys are performed once every other year (biennially). No subsidence survey was performed in 2017; therefore, no CAU 110 subsidence evaluation is presented in this report. The next subsidence survey will be conducted in 2018.

4.2.2 Soil Moisture Monitoring Results

The CAU 110 cover is designed to prevent water (i.e., rain) infiltration into the disposal unit. The cover performance is monitored using time-domain reflectometry (TDR) soil volumetric water content (VWC) sensors buried within the waste cover. The TDR probes are buried at depths of 1 to 8 ft below ground surface at 1-ft intervals. The TDR probes are installed at a distance of 165 ft from the edge of the cover. Arrays of eight probes are positioned at four locations across the cover. Figure 4-1 illustrates the locations of TDR probes on the cover. Moisture content, or VWC, data from the TDR probes are downloaded daily using a radio-to-intranet connection.

Precipitation data were collected from the Area 3 Meteorological Station, located approximately 100 ft northwest of CAU 110. The precipitation data are presented in Figure 4-2. Graphs of the TDR-derived soil VWC profiles, combined with the daily volumetric water content (VWC) values, are presented in Figures 4-3 through 4-6.

Soil VWC results obtained to date indicate that the CAU 110 cover is functioning as designed. Shallow soil VWC is variable and dependent on precipitation events and the ability of shallow root systems and evapotranspiration to remove moisture from the soil. The ability of these systems to remove moisture can be locally inhibited if animal burrowing and grazing on plants affects the root systems; therefore, animal burrows are routinely backfilled, and small mammals are occasionally trapped and relocated from the cover to limit this damage.

Soil VWC for the TDR nests at depth is generally between 7 and 17 percent VWC, depending on the location of the nest. Some locations show greater annual variability in VWC; however, each location appears to have equilibrated to a consistent state for that location.

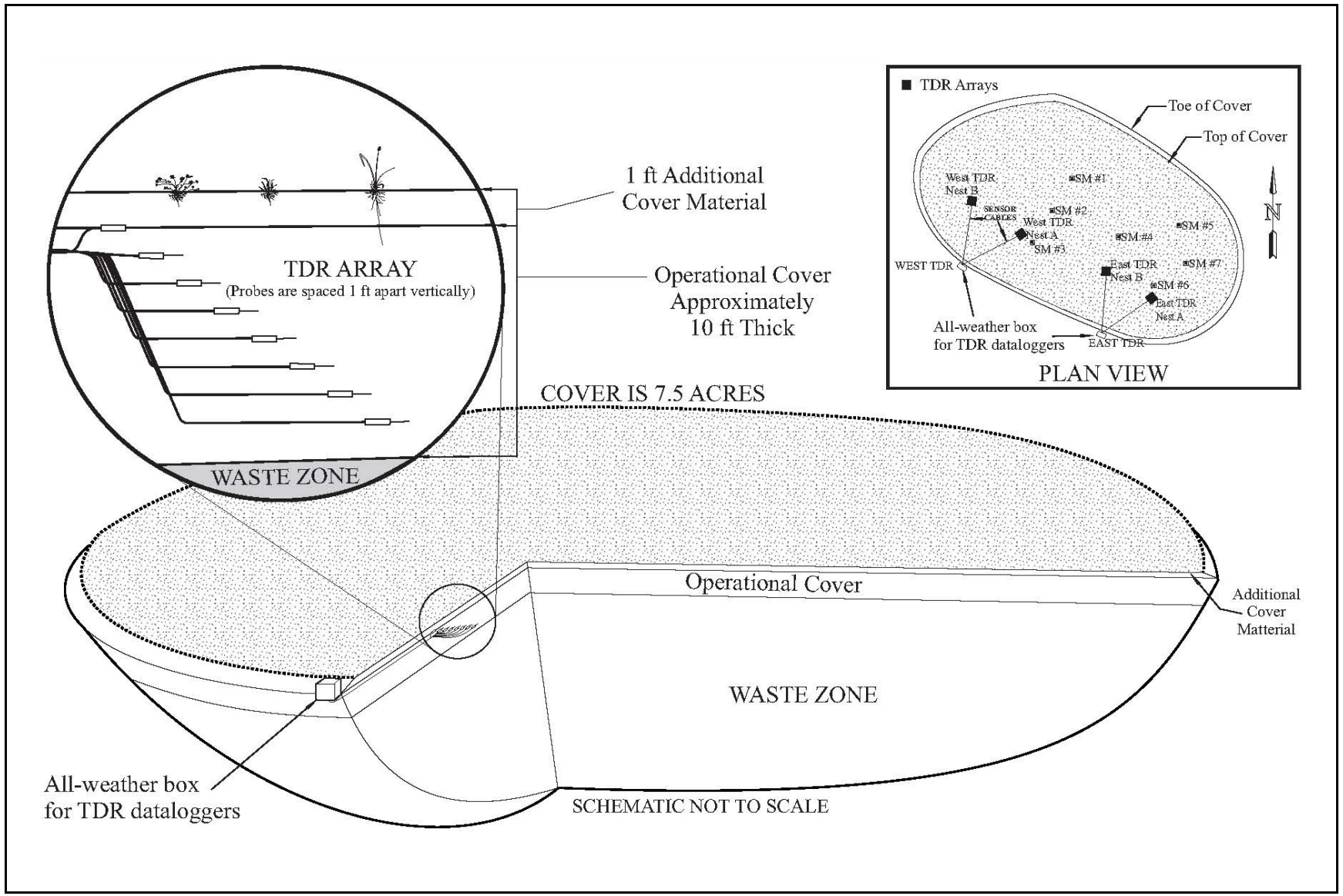


Figure 4-1
CAU 110 Time-Domain Reflectometry Locations

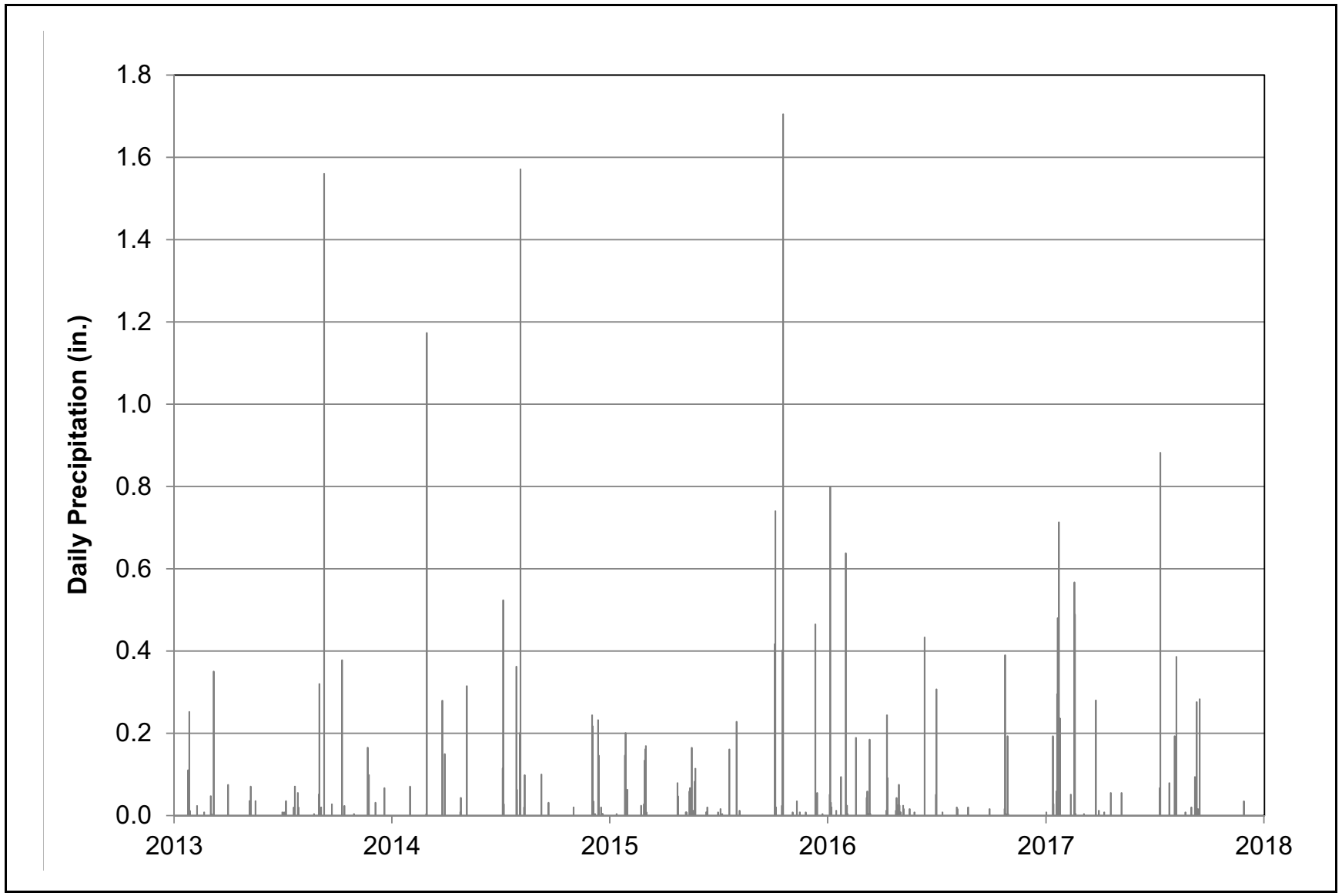


Figure 4-2
Precipitation Data for the Area 3 Meteorological Station

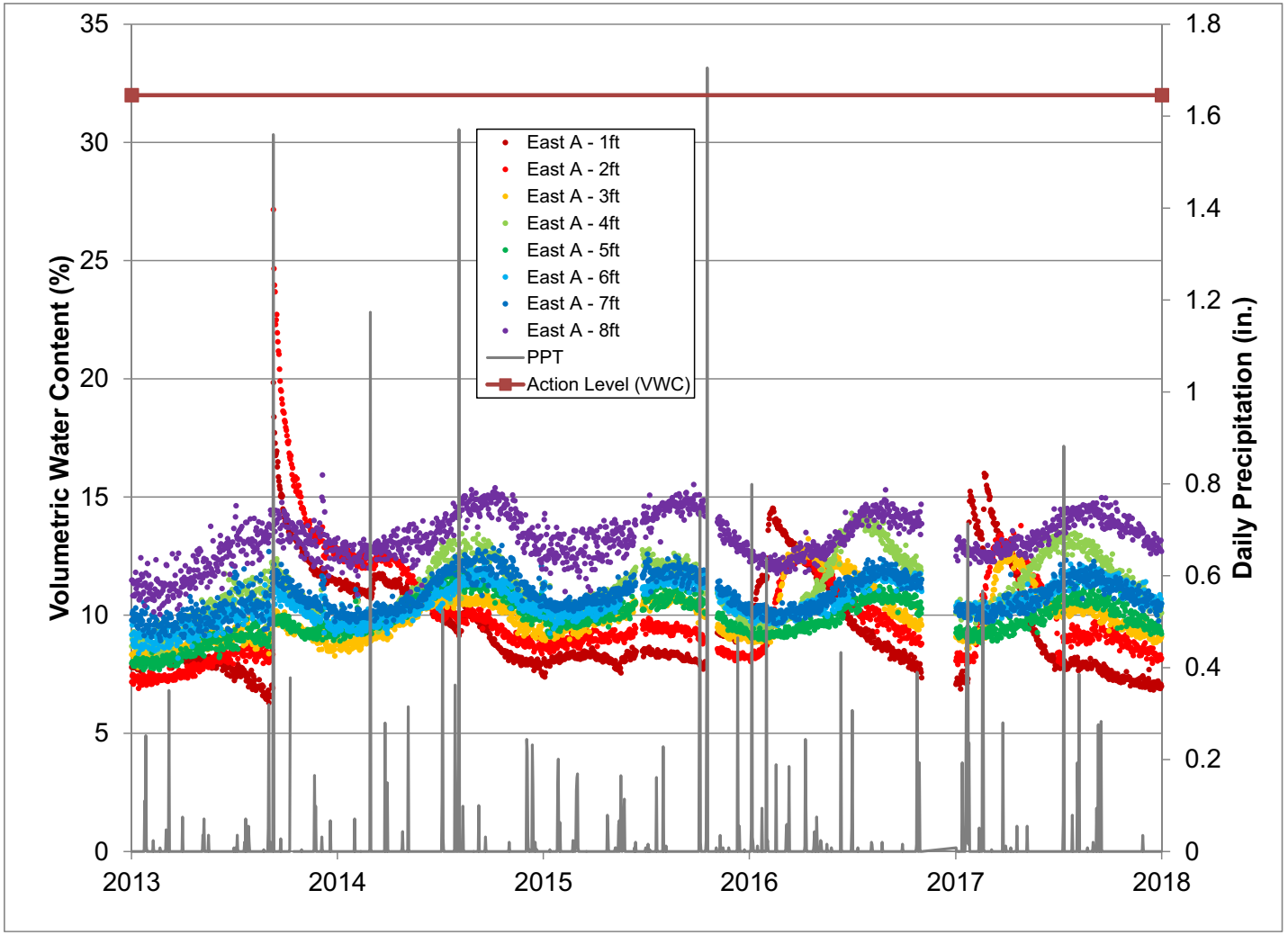


Figure 4-3
East TDR Nest A Soil VWC Profile

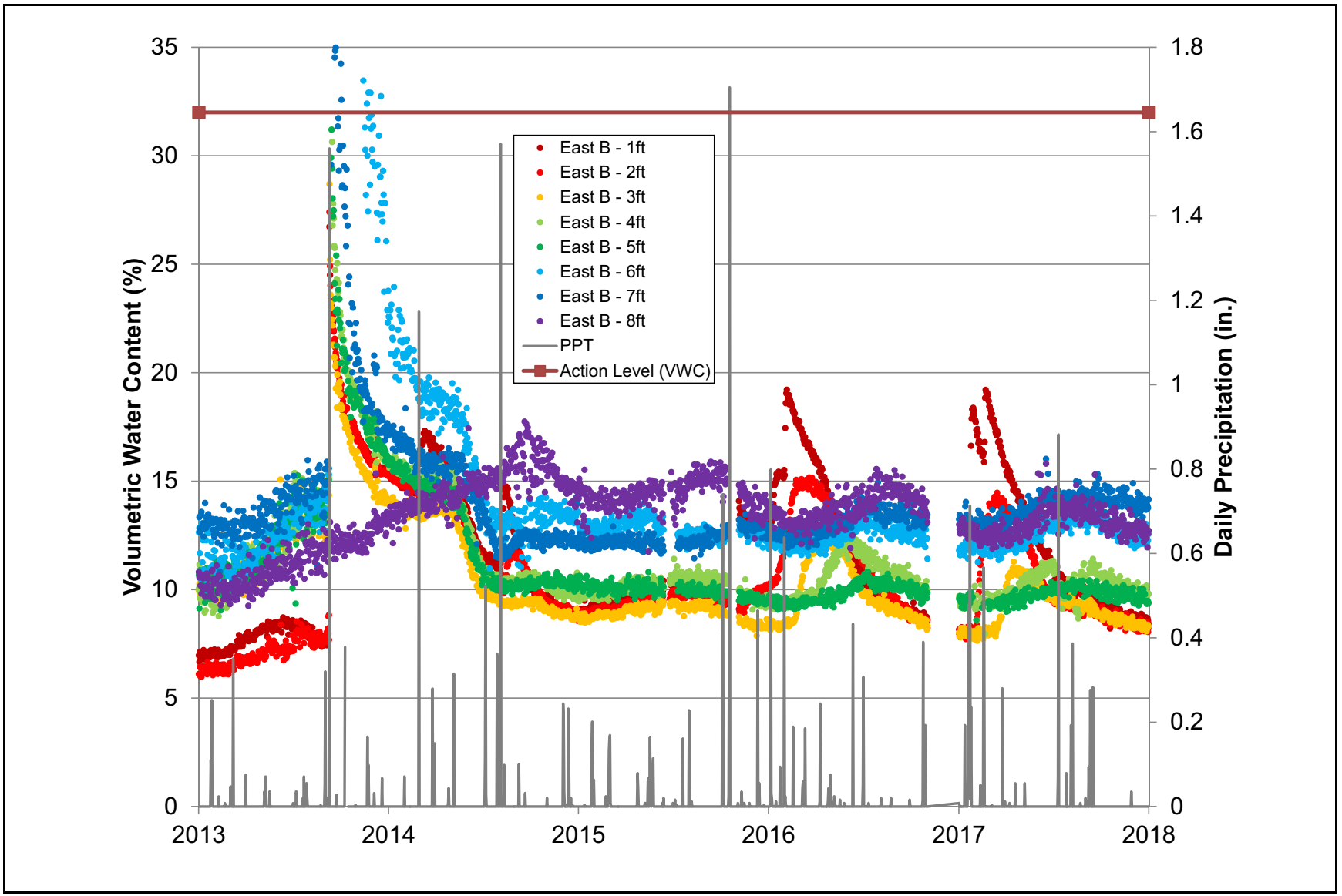


Figure 4-4
East TDR Nest B Soil VWC Profile

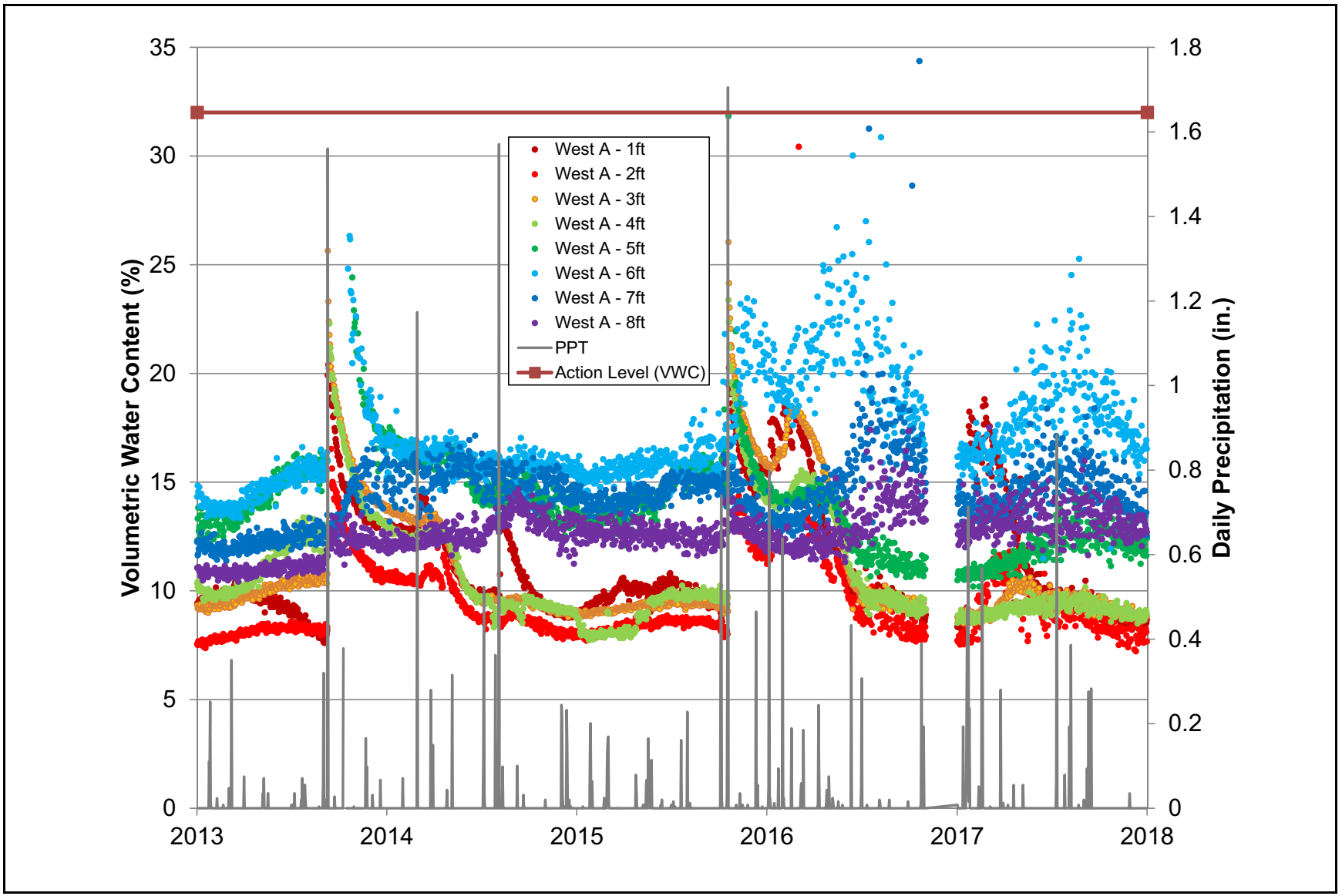


Figure 4-5
West TDR Nest A Soil VWC Profile

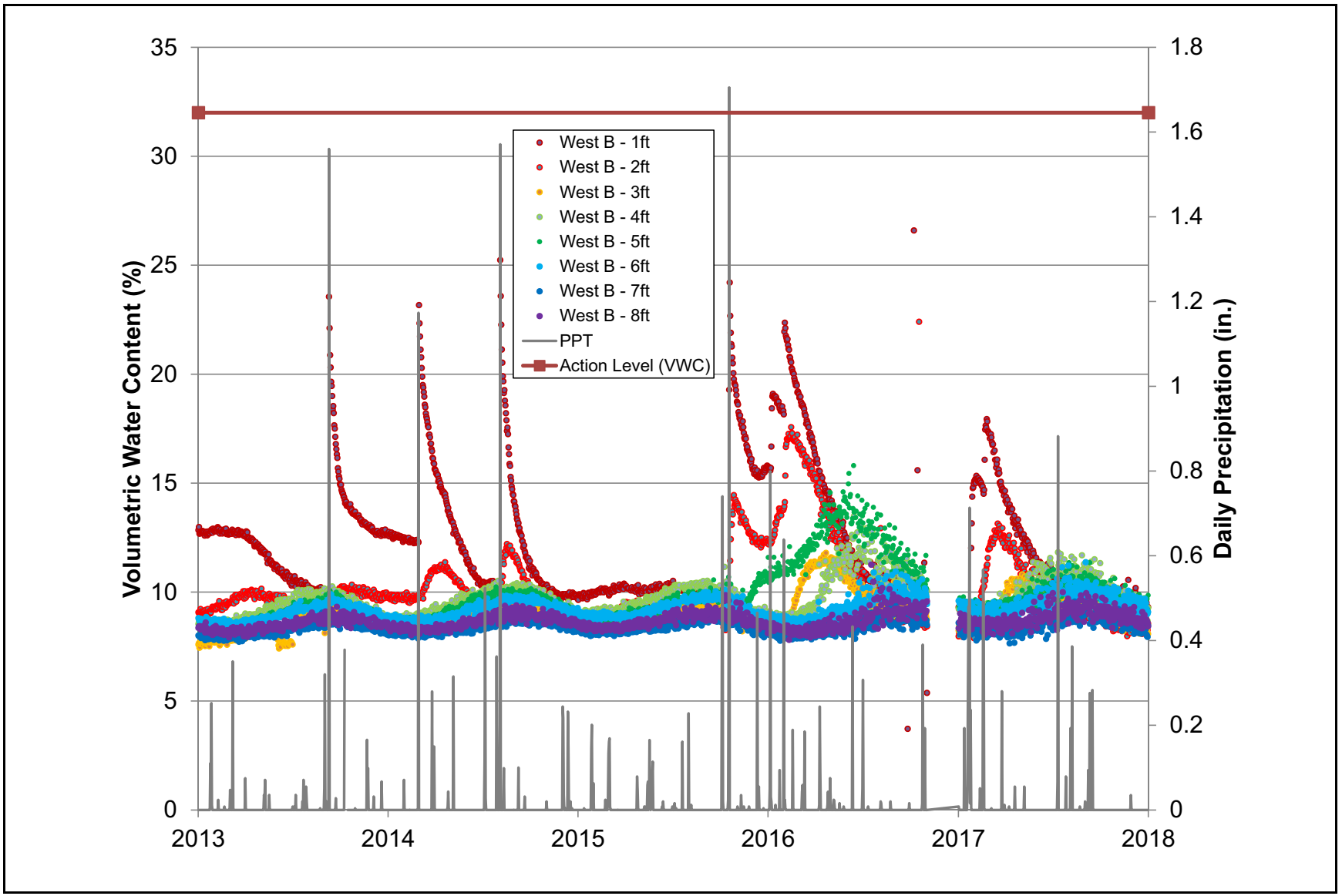


Figure 4-6
West TDR Nest B Soil VWC Profile

In the post-closure report for FY 2009, the following compliance criterion was proposed and accepted by NDEP:

- The averaged water content of the three deepest TDR probes (6, 7, and 8 ft) is greater than 32 percent VWC for a continuous six-month period.

Using conservative assumptions for the soil properties, 32 percent VWC equates to 80 percent saturation of the soil. If the average VWC of the three deepest TDR probes (6, 7, and 8 ft) exceeds 32 percent for a continuous 6-month period, the compliance criterion has been exceeded. If this occurs, NDEP will be notified, and a path forward will be proposed.

The action level is illustrated in Figures 4-3 through 4-6. The action level was not exceeded.

4.2.3 Vegetation Survey

The installation of an evapotranspiration cover on the CAU 110 U-3ax/bl closure site, located in Area 3 of the Nevada National Security Site (NNSS), was completed in the fall of 2000. Once the evapotranspiration cover was in place, action was taken to establish a cover of native vegetation. Revegetation activities were completed in December 2000. The plant community on the closure cover has been monitored annually since the spring of 2001 to document the vigor of the plant community that has established on the cover and to identify any remedial actions that may be necessary to ensure that it persists. Quantitative data on plant cover and density were collected from 2001 to 2013. Beginning in 2014 and continuing every five years, a qualitative evaluation of the plant community on the closure cover was or will be made. The evaluation includes a visual assessment of plant vigor; overall status of the plant community; notation of any signs of stress with individual plants species; and an estimate of signs of wildlife activity, primarily the presence of small mammal burrows.

Precipitation in the vicinity of CAU 110 U3-ax/bl was above normal for the period December 2016 to April 2017. There was fairly good precipitation in December, January, and February and then very little in March and April.

4.2.3.1 Status of Plant Community

A qualitative assessment of the vegetation on CAU 110 U3-ax/bl closure cover was made on July 12, 2017. A meandering transect covering the entire cap was walked. The vigor of perennial plant species

was assessed based on current year's growth, whether plants were flowering, and whether any plants showed signs of stress (i.e., dead stems or leaves).

Shadscale (*Atriplex confertifolia*) continues to be the most abundant shrub species on the closure cover (Figure 4-7). None of the plants observed showed signs of stress; however, several dead shadscale saltbush plants were noted. Flowering plants were uncommon because of the time of sampling. Current annual growth, evidenced by new leaves and stems, was good. Nevada jointfir (*Ephedra nevadensis*), the second most common perennial species, was also not in flower but showed good growth. The other shrubs occasionally encountered on the closure cover were winterfat (*Krascheninnikovia lanata*) and fourwing saltbush (*Atriplex canescens*), which like the other two shrubs did show signs of significant annual growth and were not flowering. No perennial plant seedlings were seen.

No perennial grasses have been found on the closure cover for several years, and none were found again this year. Surprisingly, with the above-average precipitation, annual plant cover was quite low.

4.2.3.2 Wildlife Usage

During the vegetation surveys, small mammal activity on the CAU 110 U-3ax/bl closure cover was evaluated. Several burrow complexes were noted but not counted. There was activity around some of the burrow entrances, and some were not active. The number of burrows on the cover cap is far less than in the native undisturbed areas in Yucca Flat. The small mammal activity on the closure cover appeared to be about the same as last year. Trapping of small mammals is not recommended at this time. In addition, four black-tailed jackrabbits were observed on the cover cap, and evidence of browsing was noted on a couple of the fourwing saltbush plants. Browsing was not excessive or noted on other plant species.

Several ants were observed around the cover cap but do not appear to be an issue. In fact, they provide a food source for lizards and other animals. A leopard lizard was observed on the cover in May 2017, which is a good sign because it is a predator that eats other lizards. This suggests a functioning ecosystem on the cover cap. Side-blotched lizards were also noted on the cover in May 2017.

Figure 4-7
Overview of Plant Community That Has Established on CAU 110 over the Last 17 Years
Note: Shadscale saltbush and Nevada jointfir are the two most dominant plants found on the closure cover.

4.2.3.3 Summary

The vegetative cover on the CAU 110 U-3ax/bl cover cap appears to be stable and in very good condition. The plants on the cap showed good growth this year because of the increase in precipitation. There were signs of flowering and setting of seed this year by shadscale saltbush and winterfat, and the majority of the plants appeared healthy. Several dead shadscale saltbush plants were observed, but this is to be expected as the plant community matures and due to the drought a few years ago. No perennial plant seedlings were observed, which might be an issue. Quantitative monitoring is suggested for next year to track this better. The annual forb component of the plant community was surprisingly low this year considering the above-normal precipitation. The area

surrounding the cover that was not seeded continues to be covered with noxious weeds (Figure 4-8), which highlights the importance of seeding to establish a perennial plant community.

Figure 4-8
Unseeded Area That Is Occupied by Noxious Weeds (foreground)
Note: Cover cap is in the upper right of photo.

5.0 CAU 111, Area 5 WMD Retired Mixed Waste Pits

5.1 Summary of Inspections, Repairs, and Maintenance

5.1.1 Post-Closure Requirements

Quarterly inspections are required to verify that the UR warning signs are in place and readable, and that the UR has been maintained. The results of the inspections are documented on a checklist. The covers are inspected for cracks, animal burrows, or other evidence of subsidence or erosion. In addition, non-scheduled inspections are conducted if precipitation occurs in excess of 1.0 in. in a 24-hour period to verify the continued integrity of the covers and document any ponding or erosion. Maintenance or repair requirements are reported to NDEP and completed within 60 days of discovery.

5.1.2 Inspection, Repair, and Maintenance Activities

Subsidence areas that were observed in December 2016 were repaired on January 26, 2017.

The first quarterly inspection was performed on March 8, 2017. The site was visually inspected, and findings were recorded via checklists and photographs. Vegetation eradication, along the north cover, by herbicide was successful. There was visual evidence of subsidence and cracking on the north–north cover, the west cover, and the south cover. Specifically, the following evidence was noted:

- Subsidence cracks near the south central edge of the south cover
- Many cracks and holes along the north–south center line of the west cover

All signs and monuments were in good condition. All other permit controls were in place. The subsidence and cracking were repaired on May 2, 2017. All maintenance and restoration actions were made in accordance with the permit.

The second quarterly inspection was performed on June 7, 2017. The site was visually inspected, and findings were recorded via checklists and photographs. There was visual evidence of subsidence and

cracking on the north–north cover, the west cover, and the south cover. Specifically, the following evidence was noted:

- A long crack in the northeastern portion of the north–north cover
- Many cracks along and to the west of the north–south center line of the west cover

All other permit controls were in place. The impacted areas were repaired on August 1, 2017. All maintenance and restoration actions were made in accordance with the permit.

The third quarterly inspection was performed on September 6, 2017. The site was visually inspected, and findings were recorded via checklists and photographs. There was visual evidence of cracking on the west and south covers. Specifically, the following evidence was noted:

- A crack along the south berm near the southeast corner of the north–north cover
- A hole near the central portion of the south–north cover
- Cracks near the central–west portion of the west cover
- Cracks near the southeast portion of the west cover

All other permit controls were in place. The impacted areas were repaired on November 29, 2017, with the exception of the subsidence hole in the south–north cover. The subsidence hole in the south–north cover is within the revegetation trial area. The subsidence hole was repaired on December 6, 2017, by the revegetation contractor. A subsidence hole was found during revegetation efforts on December 7, 2017. The hole was repaired on December 7, 2017.

All maintenance and restoration actions were made in accordance with the permit.

The fourth quarterly inspection was performed on December 4, 2017. The site was visually inspected, and findings were recorded via checklists and photographs. There was visual evidence of cracking on the north–north cover and the west cover. Specifically, the following evidence was noted:

- A crack in the northeast portion of the north–north cover
- Cracks in the east portion of the west cover
- Cracks in the northwest central portion of the west cover

All other permit controls were in place. The impacted areas were repaired on December 21, 2017. All maintenance and restoration actions were made in accordance with the permit.

There was no precipitation in excess of 1.0 in. in a 24-hour period between January 1 and December 31, 2017. Therefore, no precipitation inspections were conducted at CAU 111 during CY 2017.

5.2 Other Required Monitoring

5.2.1 Subsidence Survey

There are 52 subsidence markers at CAU 111. The baseline survey was conducted on January 19, 2012. Subsidence surveys are required annually. A subsidence survey was completed on May 15, 2017. The results are tabulated in Table 5-1. No significant subsidence has been observed.

Table 5-1
CAU 111 Subsidence Survey Results
(Page 1 of 3)

Subsidence Marker	Elevation at Top of Subsidence Marker[a]		Subsidence Since January 2012 Baseline Survey
	Baseline Survey – January 19, 2012	May 15, 2017	
CW1-1	3,197.01	3,196.98	-0.03
CW1-2	3,197.17	3,197.16	-0.01
P01-1	3,191.52	3,191.45	-0.07
P01-2	3,187.86	3,187.75	-0.11
P02-1	3,194.13	3,193.85	-0.28
P02-2	3,191.11	3,190.89	-0.22
P03-1	3,206.56	3,206.44	-0.12
P03-2	3,205.82	3,205.74	-0.08
P04-2	3,194.30	3,194.26	-0.04
P04-3	3,190.20	3,190.11	-0.09
P04-4	3,185.91	3,185.57	-0.34
P05-2	3,191.58	3,191.49	-0.09
P05-3	3,187.91	3,187.87	-0.04
P05-4	3,182.92	3,182.88	-0.04
P06-1	3,195.06	3,195.00	-0.06
P06-2	3,192.78	3,192.74	-0.04

Table 5-1
CAU 111 Subsidence Survey Results
(Page 2 of 3)

Subsidence Marker	Elevation at Top of Subsidence Marker[a]		Subsidence Since January 2012 Baseline Survey
	Baseline Survey – January 19, 2012	May 15, 2017	
P07-1	3,192.37	3,192.20	-0.17
P07-2	3,190.26	3,190.22	-0.04
P09-2	3,194.60	3,194.57	-0.03
P09-3	3,194.49	3,194.47	-0.02
P11-2	3,189.20	3,189.16	-0.04
P11-3	3,186.61	3,186.55	-0.06
P11-4	3,182.18	3,182.15	-0.03
T01-1	3,201.63	3,201.58	-0.05
T01-2	3,201.51	3,201.49	-0.02
T01-3	3,185.80	3,185.75	-0.05
T01-4	3,185.75	3,185.71	-0.04
T02-1	3,201.61	3,201.62	0.01
T02-2	3,201.54	3,201.56	0.02
T02-4	3,191.59	3,191.55	-0.04
T02-5	3,188.02	3,188.04	0.02
T03-1	3,200.69	3,200.64	-0.05
T03-2	3,200.64	3,200.60	-0.04
T03-3	3,192.59	3,192.57	-0.02
T04-2	3,202.74	3,202.70	-0.04
T04-4	3,202.71	3,202.68	-0.03
T04-5	3,202.75	3,202.76	0.01
T04-6	3,191.69	3,191.68	-0.01
T04-7	3,188.07	3,188.07	0.00
T05-1	3,200.57	3,200.60	0.03
T05-2	3,200.65	3,200.71	0.06
T06-1	3,199.49	3,199.51	0.02
T06-2	3,199.55	3,199.58	0.03

Table 5-1
CAU 111 Subsidence Survey Results
(Page 3 of 3)

Subsidence Marker	Elevation at Top of Subsidence Marker[a]		Subsidence Since January 2012 Baseline Survey
	Baseline Survey – January 19, 2012	May 15, 2017	
T06-3	3,191.70	3,191.69	-0.01
T06-4	3,188.24	3,188.26	0.02
T07-2	3,199.40	3,199.38	-0.02
T07-3	3,199.31	3,199.28	-0.03
T07-5	3,191.65	3,191.58	-0.07
T07-6	3,187.82	3,187.82	0.00
T08-1	3,198.06	3,198.02	-0.04
T08-2	3,196.71	3,196.73	0.02
T09-1	3,201.08	3,201.08	0.00

[a]Elevations based on National Geodetic Vertical Datum of 1929 in ft.

5.2.2 Soil Moisture Monitoring Results

5.2.2.1 Area 5 RWMC Time-Domain Reflectometry Results

In 1998, TDR probes were buried 1.2 meters (m) (4 ft) beneath the floor of open Cell 5 at the Area 5 Radioactive Waste Management Complex (RWMC) to monitor VWC of floor soils. The four probes are adjacent to the Pit 5N and Pit 5S monitoring locations. At each monitoring location, one probe is buried near the centerline, and one probe is buried near the eastern edge (Figure 5-1). Approximately 4.4 m (14 ft) of waste and approximately 2.4 m (8 ft) of cover were placed above these probes during disposal. The depth of these probes is now approximately 7.9 m (26 ft). VWC in the floor soils of Cell 5 remained constant at approximately 10 percent during CY 2017. Figure 5-2 shows the VWC in floor soils throughout 2017.

5.2.2.2 Area 5 RWMC Weighing Lysimeter Results

The Area 5 Weighing Lysimeter Facility consists of two precision weighing lysimeters located about 400 m (1,312 ft) southwest of the Area 5 RWMC (Figure 5-1). Each lysimeter is an open-top steel box, measuring 2 m wide by 4 m long by 2 m deep (6.6 ft wide by 13 ft long by 6.6 ft deep), filled

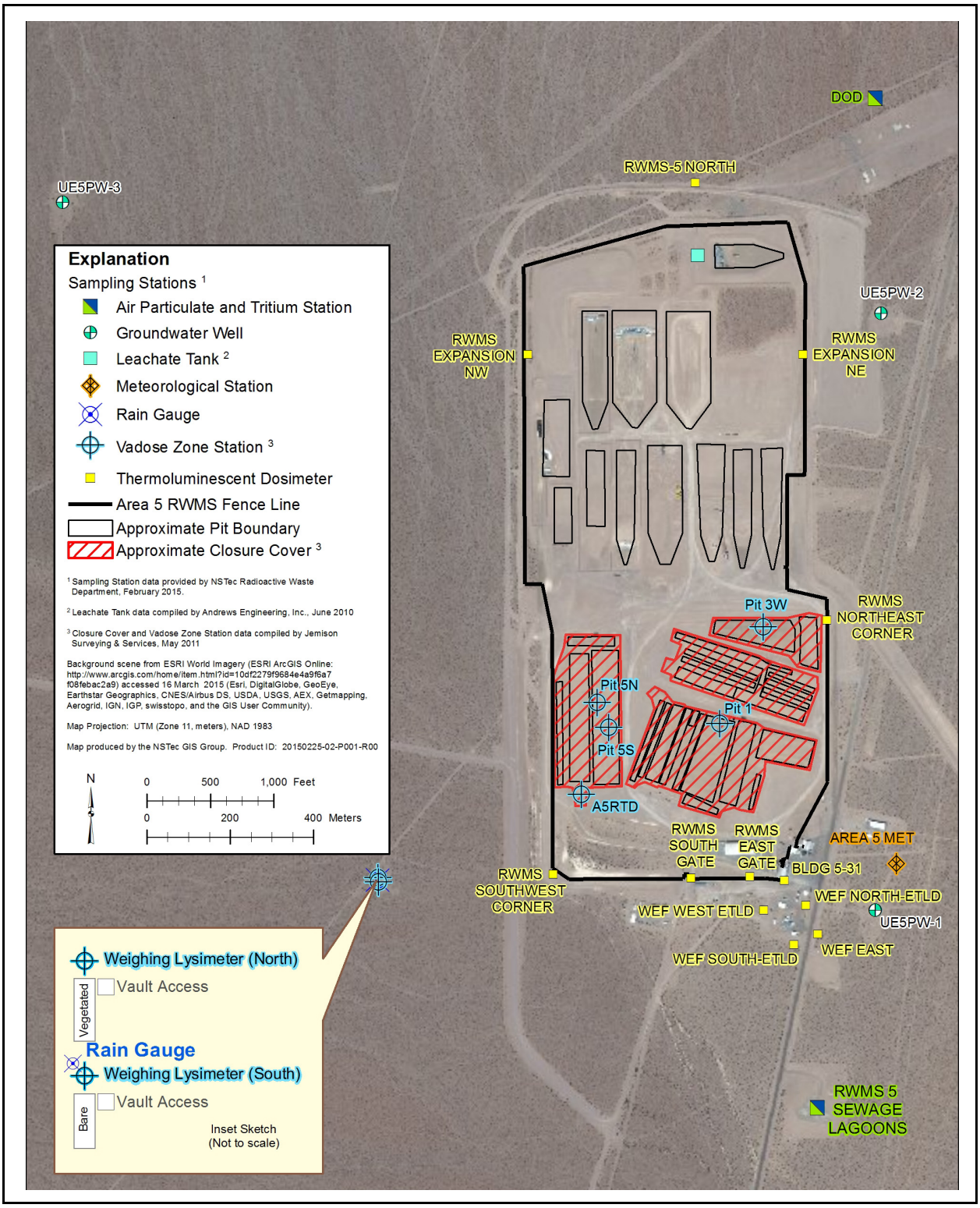


Figure 5-1
Monitoring Locations at the Area 5 RWMC and RWMS

Note: The Area 5 RWMC includes the Area 5 Radioactive Waste Management Site (RWMS) and supporting structures. The Area 5 RWMS contains the waste cells and is bounded by the Area 5 fence line.

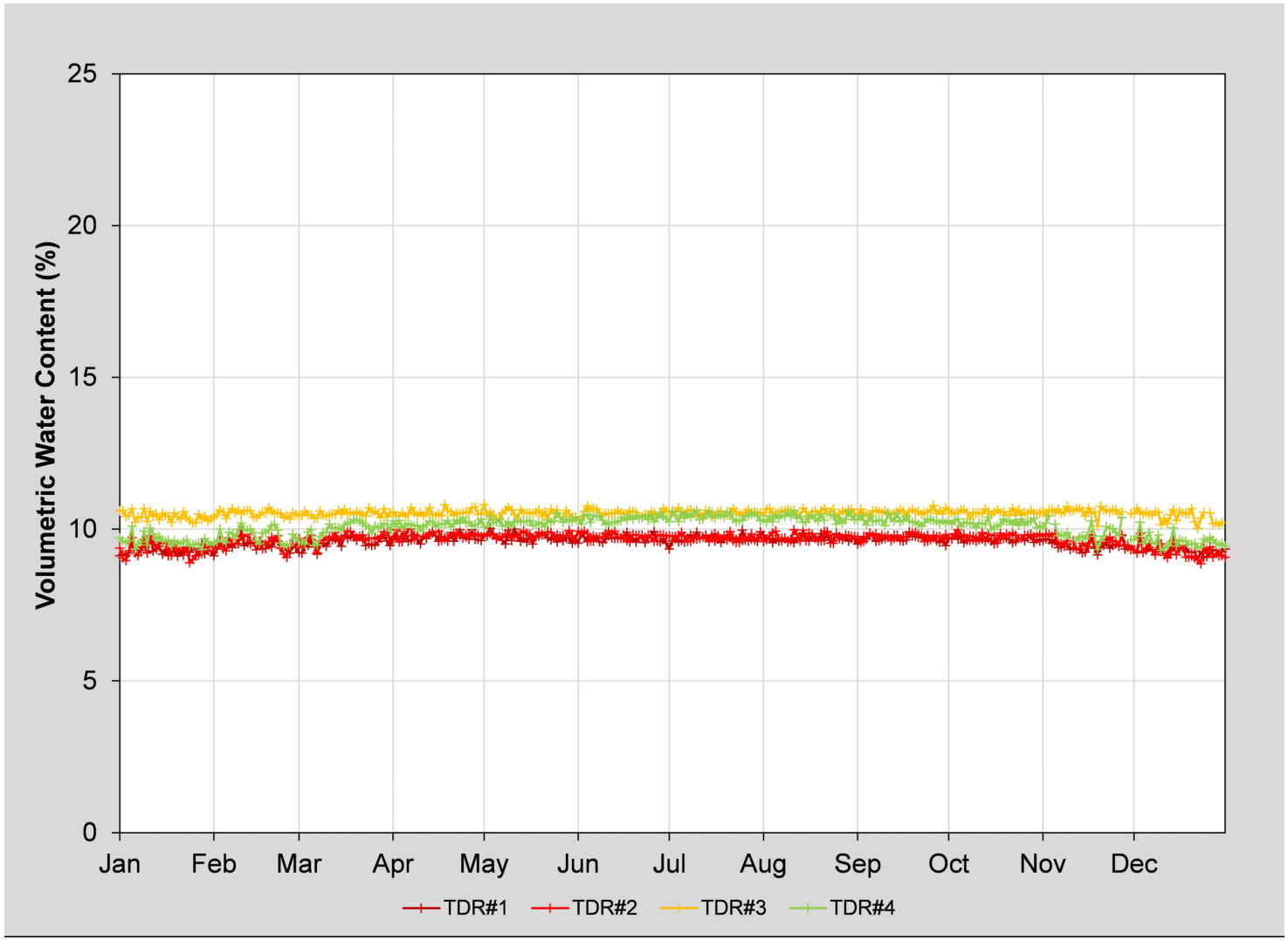


Figure 5-2
Area 5 RWMC 2017 Pit 5 Subfloor Soil VWC

with soil and mounted on a sensitive scale. Weight changes of each lysimeter are continuously monitored using an electronic load cell. Each load cell can measure approximately 0.1 millimeters (mm) (0.004 in.) of precipitation. One lysimeter is vegetated with native plants at the approximate density of the surrounding desert. The other lysimeter is kept bare to simulate the bare operational waste covers at the Area 5 RWMC.

The weighing lysimeter data represent water storage in soil. Total soil water storage for the period of January 1 through December 31, 2017, is provided in Figure 5-3 for the vegetated lysimeter and Figure 5-4 for the non-vegetated lysimeter.

5.2.3 TLD Measurements

Direct radiation monitoring assesses and detects changes in the external radiation environment and measures gamma radiation levels near potential exposure sites. Thermoluminescent dosimeter (TLDs) are used to measure ionizing radiation exposure from all sources, including natural and man-made radioactivity.

Figure 5-1 shows TLD monitoring locations near the Area 5 RWMC. A pair of TLDs is placed 1 ± 0.3 m (28 to 51 in.) above ground level (agl) at each location and exchanged for analysis on a quarterly basis. Figure 5-5 presents the quarterly average exposure rates (in milliroentgens per day [mR/day]).

5.2.4 Atmospheric Moisture Samples

Atmospheric moisture is continuously collected at the Area 5 RWMC and analyzed for tritium. Approximately 11 cubic meters (m^3) (388 cubic feet [ft^3]) of air is drawn across a desiccant during each 2-week sample period to collect atmospheric moisture. Moisture is distilled from the desiccant, and tritium activity is measured by liquid scintillation.

Tritium was sampled at two air monitoring locations near the Area 5 RWMC during 2017 (Figure 5-1). These locations are U.S. Department of Defense (DoD) and RWMS 5 Sewage Lagoons stations. The DoD station is approximately 1.0 kilometers (km) (0.6 miles [mi]) north–northeast of the center of the Area 5 RWMC, and the RWMS 5 Sewage Lagoons station is approximately 1.5 km (0.9 mi) south–southeast of the center of the Area 5 RWMC (Figure 5-1). Tritium concentrations

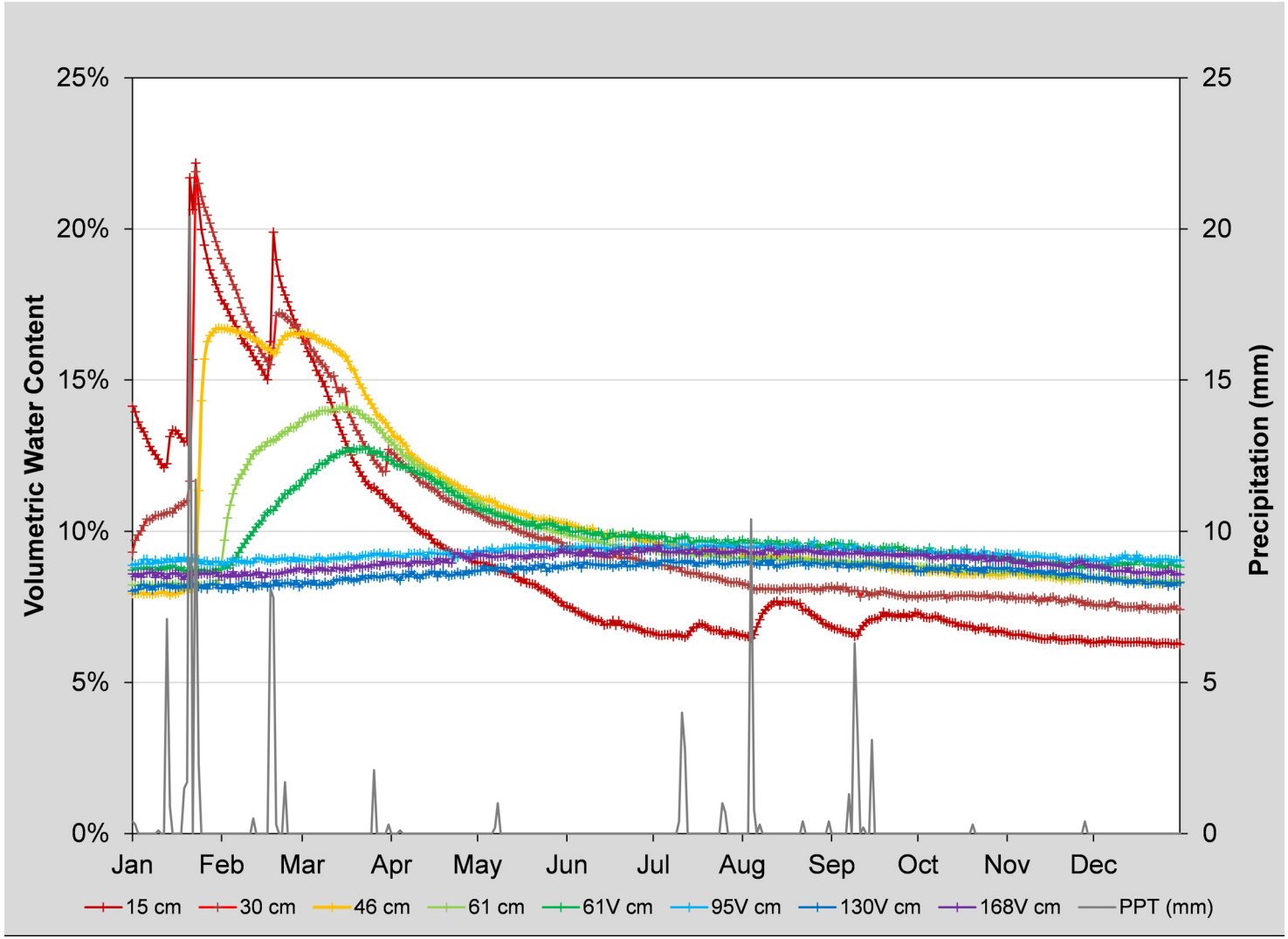


Figure 5-3
Area 5 RWMC 2017 Vegetated Lysimeter VWC

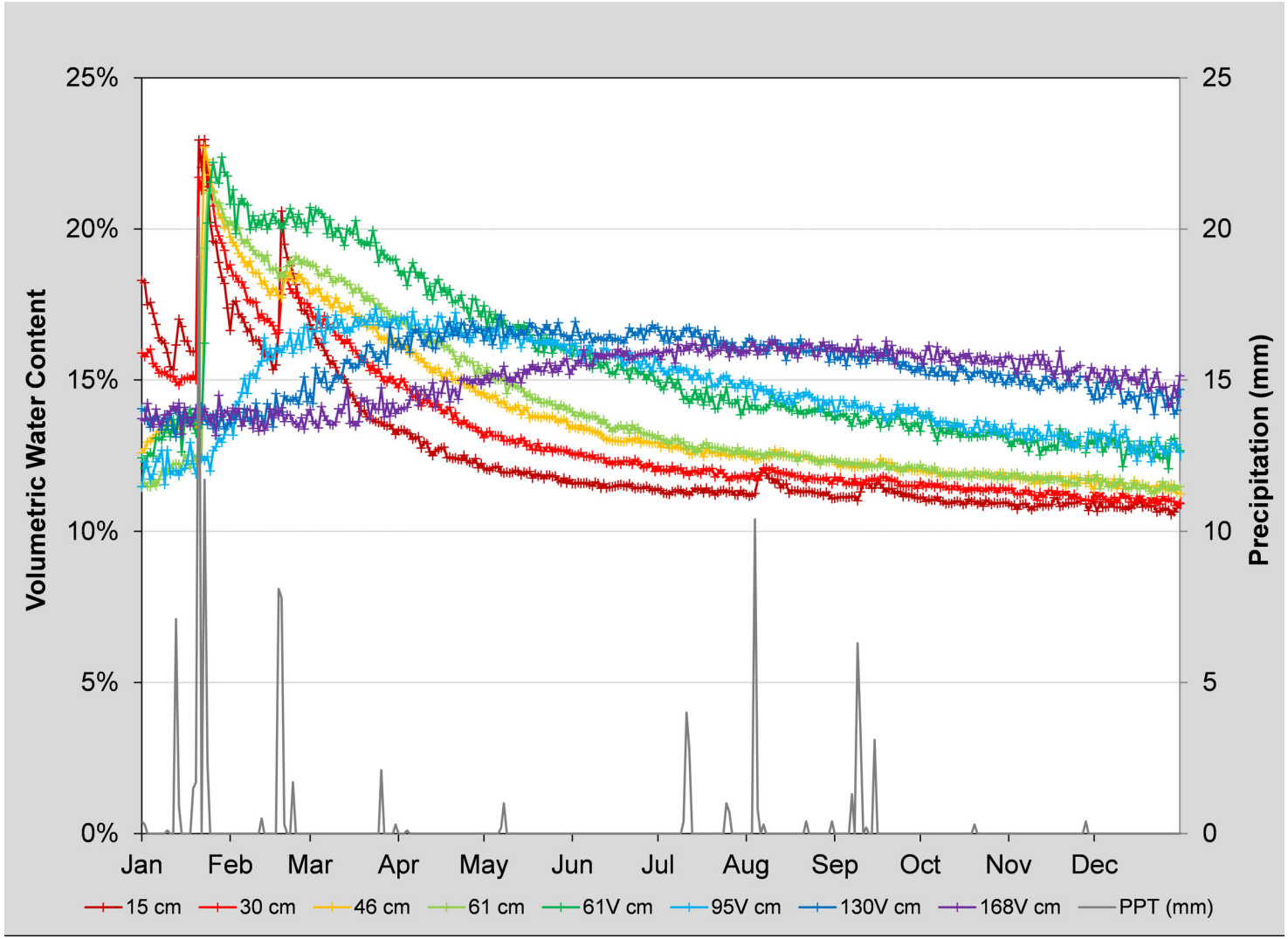


Figure 5-4
Area 5 RWMC 2017 Non-vegetated Lysimeter VWC

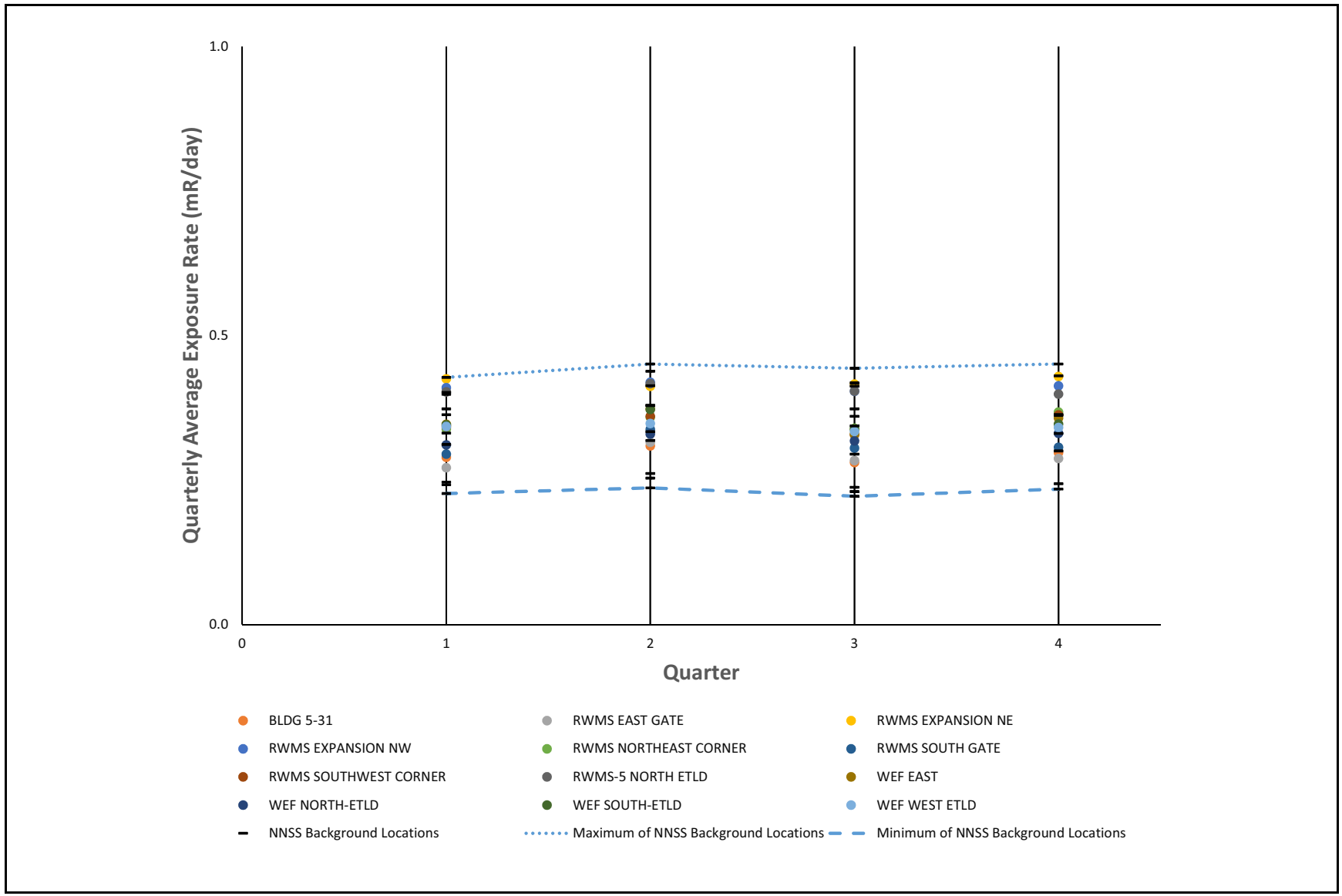


Figure 5-5
Area 5 RWMC 2017 Direction Radiation Exposure Rates by TLD Measurements

(in picocuries per cubic meter [pCi/m^3]) determined in 2017 at the Area 5 RWMC are presented in Figure 5-6.

5.2.5 Air Samples

Air particulate samples were collected quarterly during 2017 at the same locations described above for tritium monitoring (Figure 5-1). Each sample was collected using a vacuum pump to draw approximately 1,700 m^3 (60,035 ft^3) of air through a glass-fiber filter with a collection efficiency of 99.99 percent. The air particulates are collected on the filter. Each filter was screened for gross alpha and gross beta radioactivity to provide early detection of any change in environmental concentrations of airborne radioactivity. Quarterly composites of the filters from each sampling location were analyzed by gamma spectroscopy for gamma-emitting radionuclides and by alpha spectroscopy for americium (Am) and plutonium (Pu). The results for ^{241}Am, ^{238}Pu, and $^{239+240}$Pu in air are provided in Figures 5-7, 5-8, and 5-9, respectively.

5.2.6 Radon Flux Measurements

Radon flux was measured at the Area 5 RWMC. Specifically, radon flux was measured at two locations on the Cell 20 cover and one locations on the 92-Acre Landfill west cover, while background radon flux was measured at the Area 5 weighing lysimeters. Radon fluxes were measured using radon flux domes (Rad Elec, Inc.) placed on the ground surface. Electrets inserted in the domes are electrically discharged by ionization of air from radon. The amount of discharge is correlated with radon flux from the ground. Radon fluxes were measured on December 20 and 21, 2017. Gross radon flux averaged results from December 2017 at the Area 5 RWMC are presented in Figure 5-10.

5.2.7 General Weather Data

Meteorology monitoring data collected in 2017 included precipitation, air temperature, humidity, wind speed and direction, and barometric pressure. These data were collected from a meteorology station located near the Area 5 RWMC, about 100 m (328 ft) north from Well UE5PW-1 (Figure 5-1).

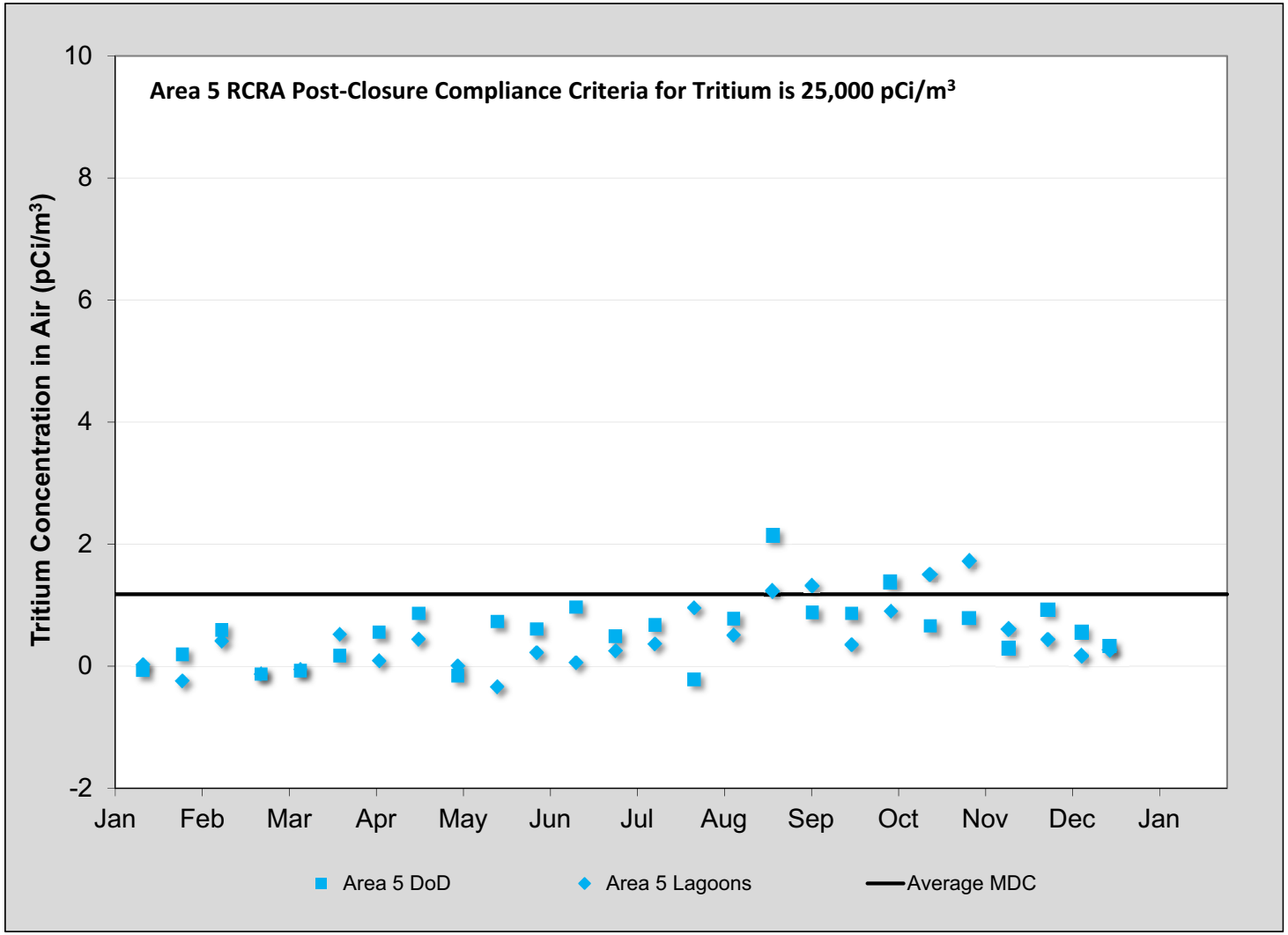


Figure 5-6
Area 5 RWMC 2017 Tritium Concentrations in Atmospheric Moisture

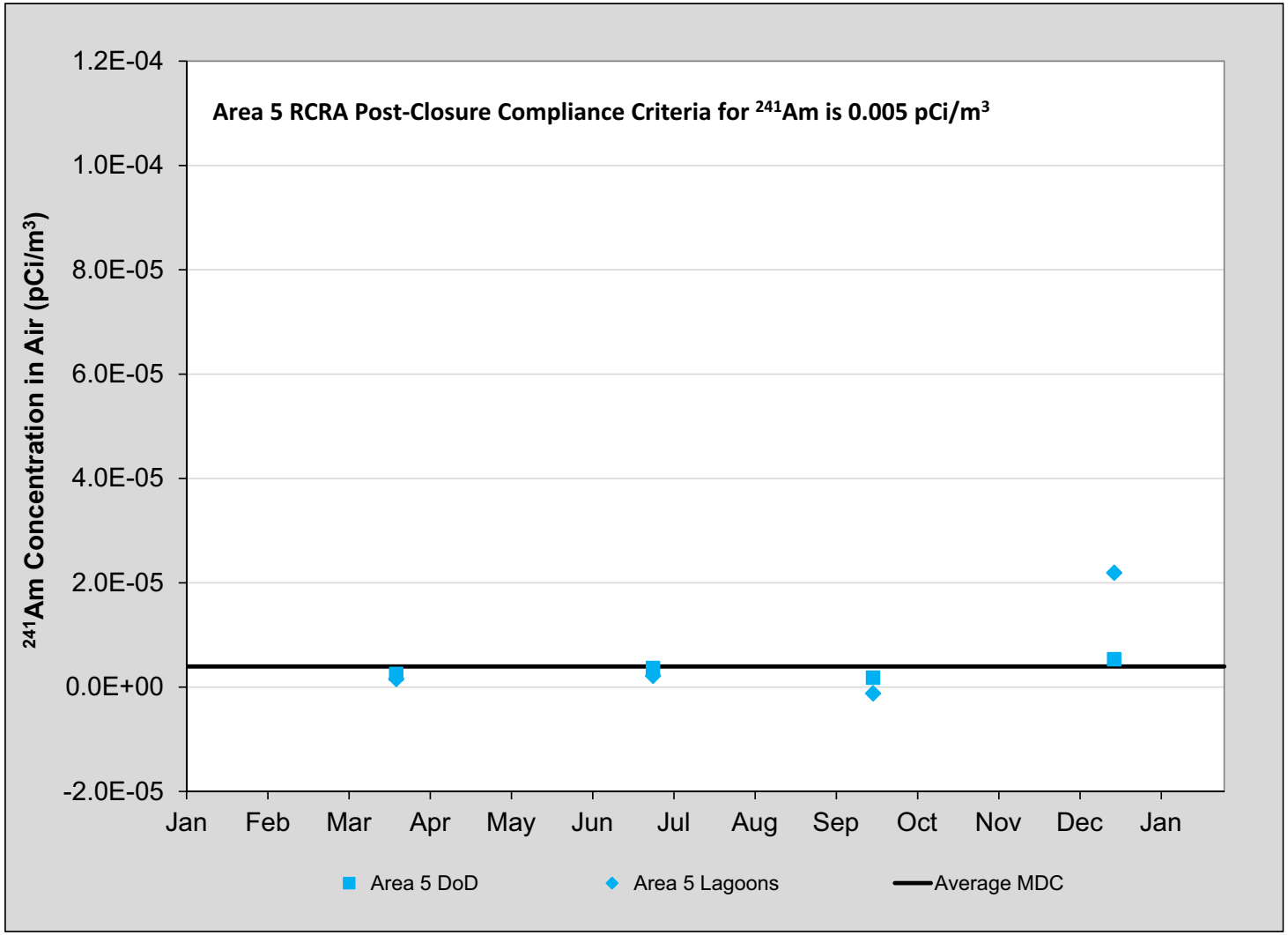


Figure 5-7
Area 5 RWMC 2017 Air Particulate Concentrations of ^{241}Am

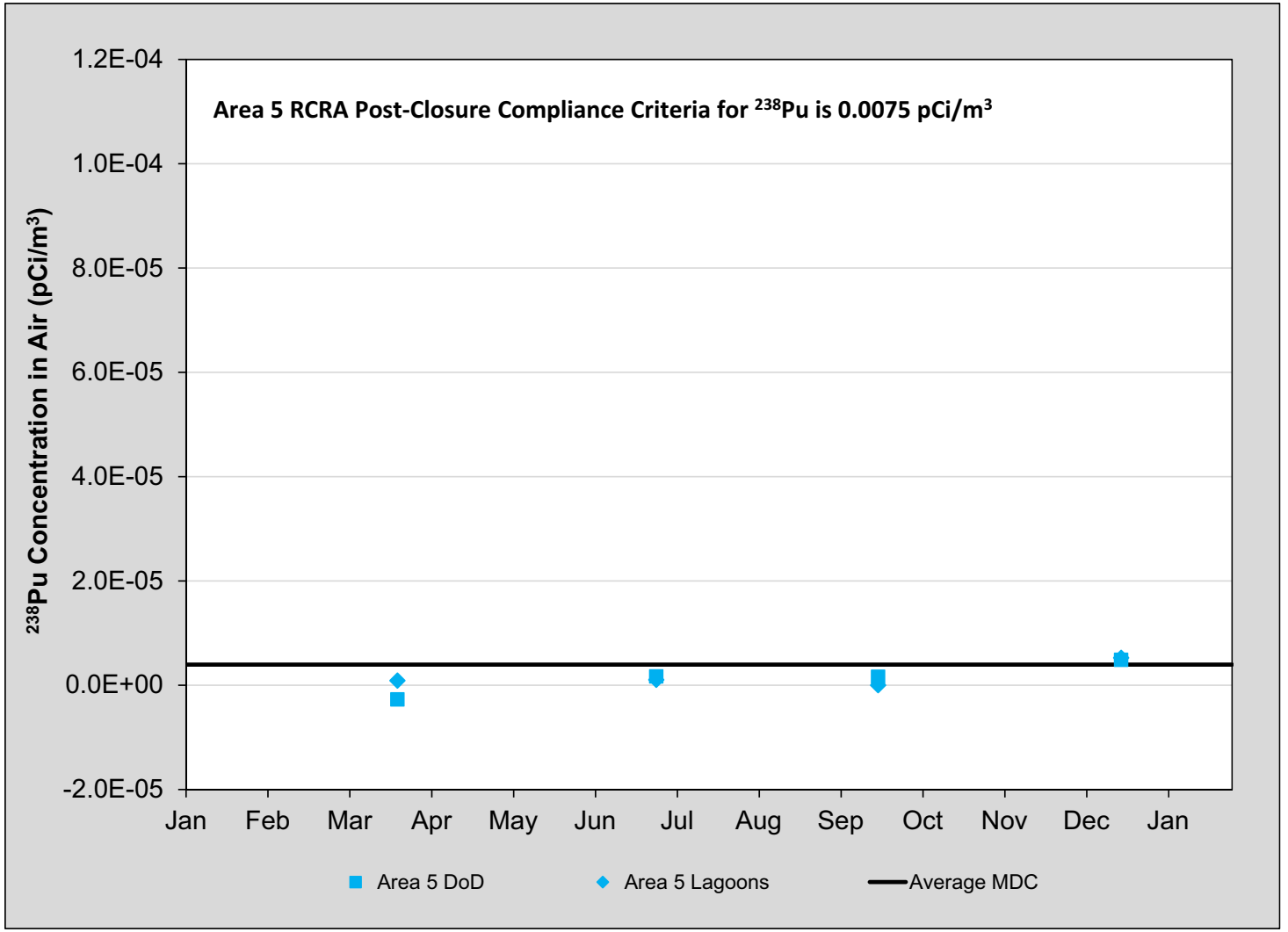


Figure 5-8
Area 5 RWMC 2017 Air Particulate Concentrations of ^{238}Pu

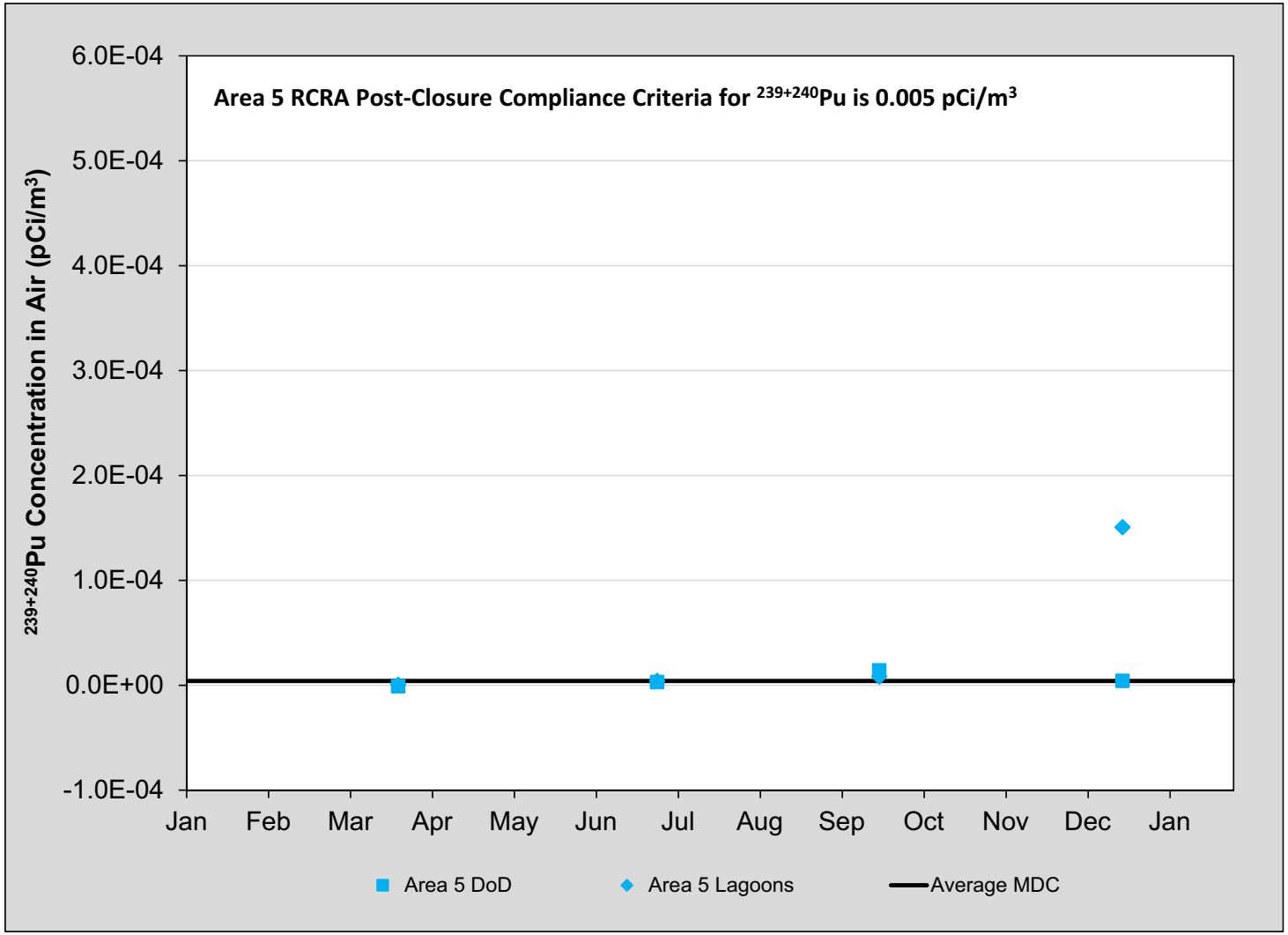


Figure 5-9
Area 5 RWMC 2017 Air Particulate Concentrations of $^{239+240}$Pu

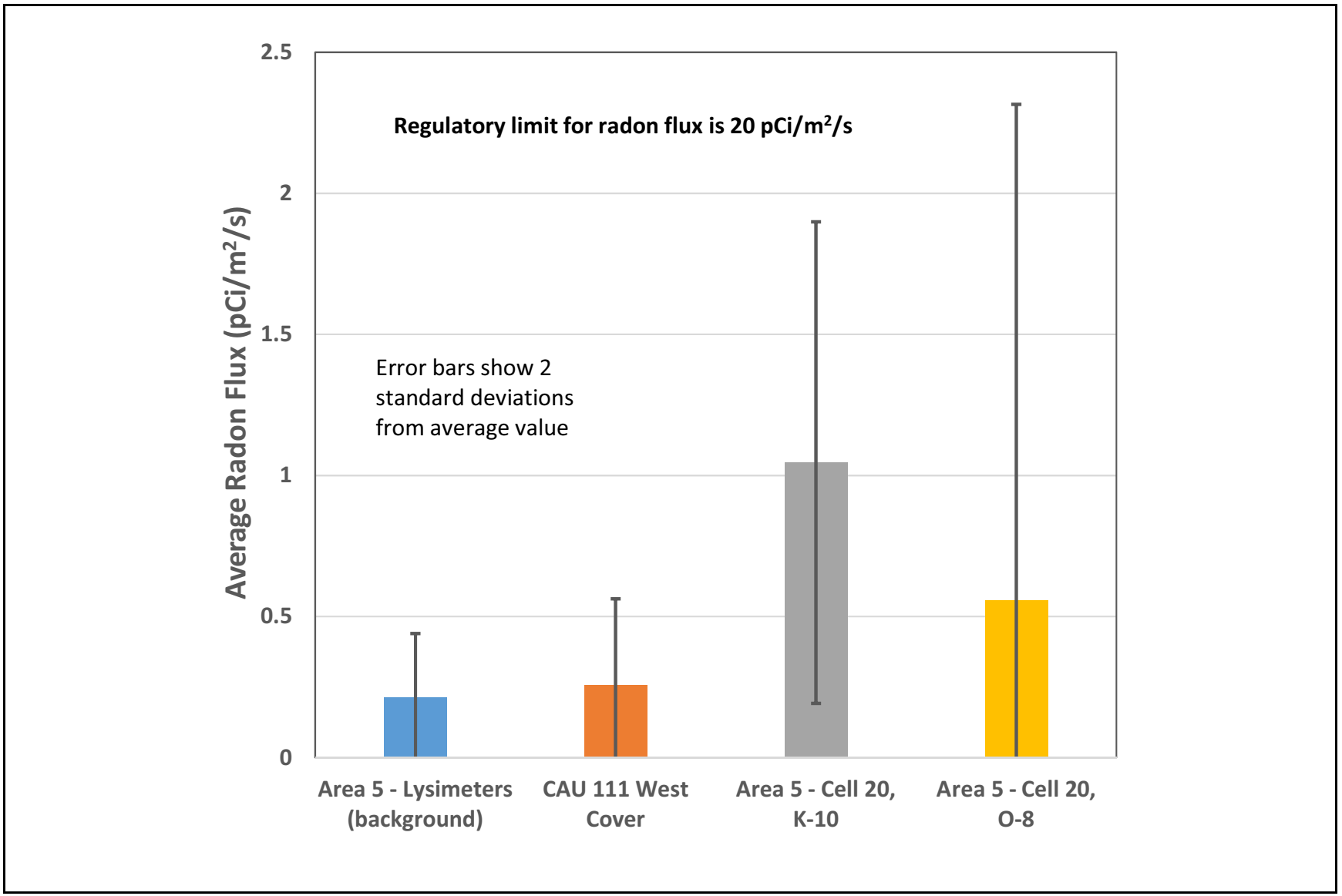


Figure 5-10
Area 5 RWMC 2017 Quarterly Net Radon Flux Measurement Results

5.2.7.1 Temperature

The daily maximum, minimum, and average air temperature values at the Area 5 RWMC are presented in Figure 5-11.

5.2.7.2 Relative Humidity

The daily maximum, minimum, and average relative humidity values at the Area 5 RWMC are presented in Figure 5-12.

5.2.7.3 Barometric Pressure

The daily average barometric pressure values at the Area 5 RWMC are presented in Figure 5-13.

5.2.7.4 Wind Speed and Wind Direction

The daily maximum and average wind speed values at the Area 5 RWMC are presented in Figure 5-14.

Wind rose diagrams illustrate wind direction and wind speed distribution in each direction using hourly wind data measured at a height of 9.5 m (31 ft) agl. The wind rose from the Area 5 RWMC is presented in Figure 5-15.

5.2.7.5 Precipitation

The daily precipitation measurements at the Area 5 RWMC are presented in Figure 5-16.

5.2.8 Vegetation Survey

5.2.8.1 Vegetation Survey

Visual inspection of the vegetation on all four covers at CAU 111 was performed on July 12, 2017.

- **South Cover—**Weedy species dominate the site predominantly saltlover (*Halogeton glomeratus*), Russian thistle (*Salsola iberica*), and Arabian schismus (*Schismus arabicus*). Two small fourwing saltbush (*Atriplex canescens*) plants were discovered on the east portion of the cover (Figure 5-17). The plants appeared to be 1 to 2 years old. Rodent holes were found on the site but are not enough of a concern to trap them.

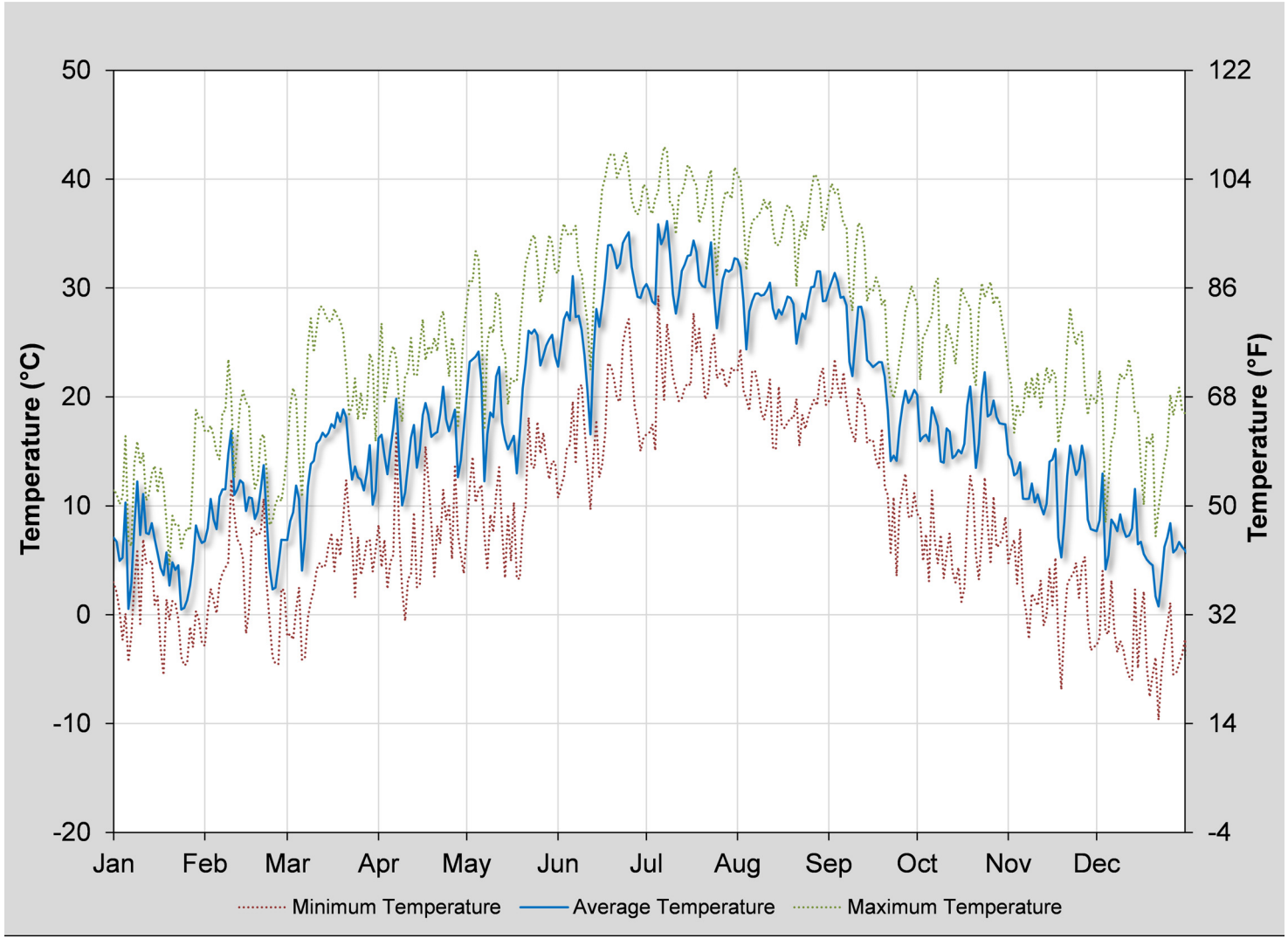


Figure 5-11
Area 5 RWMC 2017 Daily Average, Maximum, and Minimum Air Temperatures

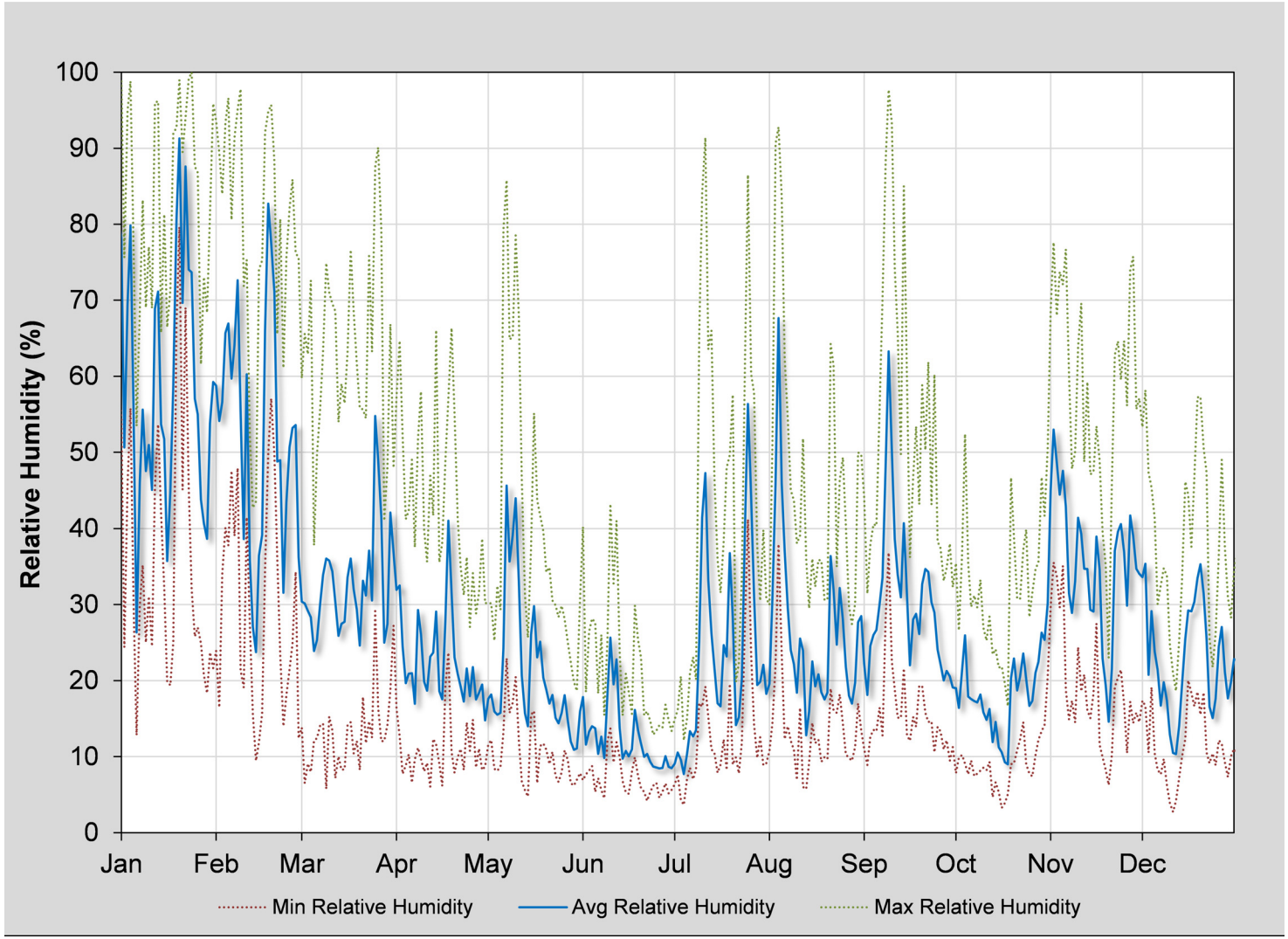


Figure 5-12
Area 5 RWMC 2017 Daily Average, Maximum, and Minimum Relative Humidity Percentages

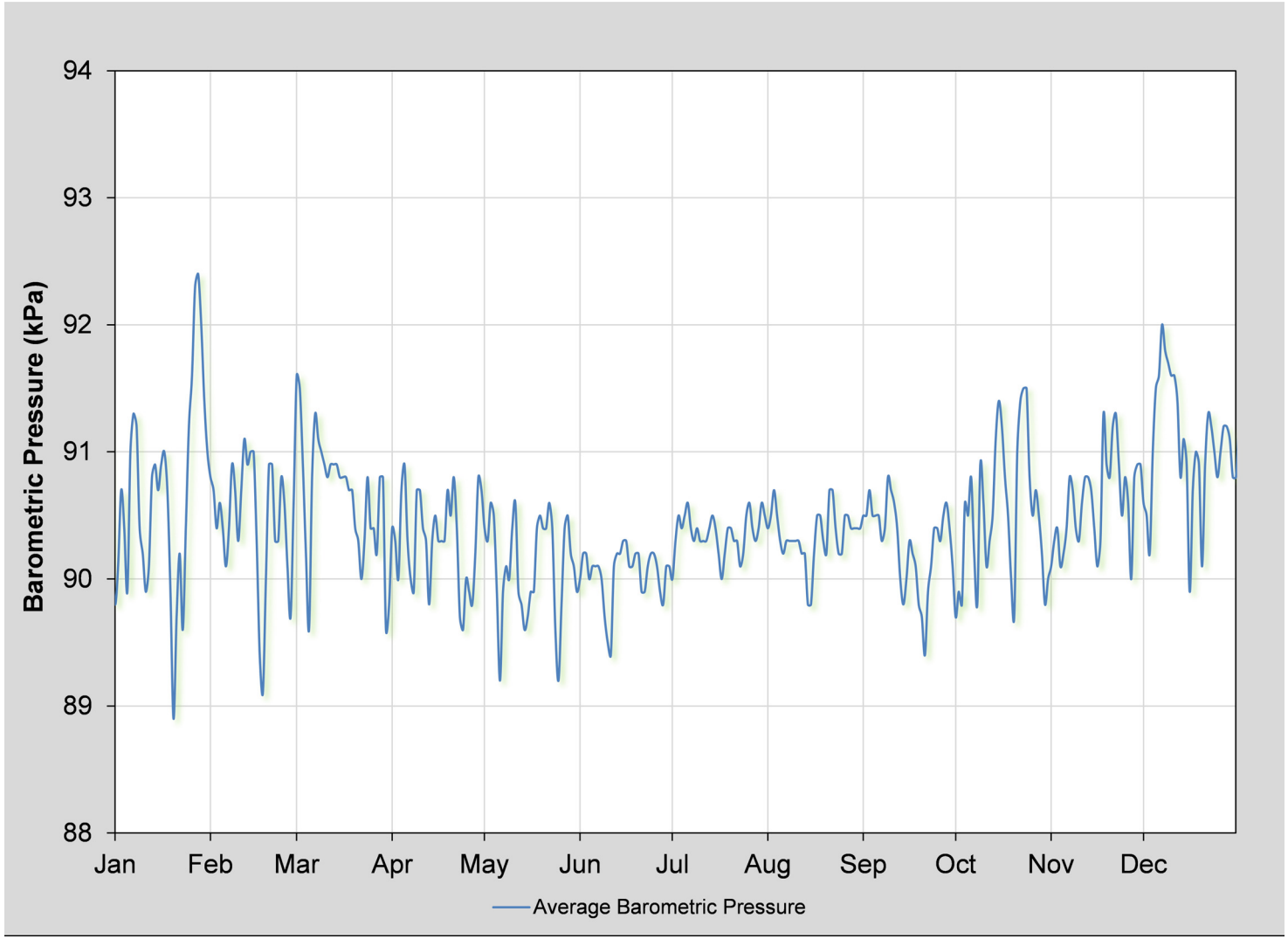


Figure 5-13
Area 5 RWMC 2017 Average Daily Barometric Pressure

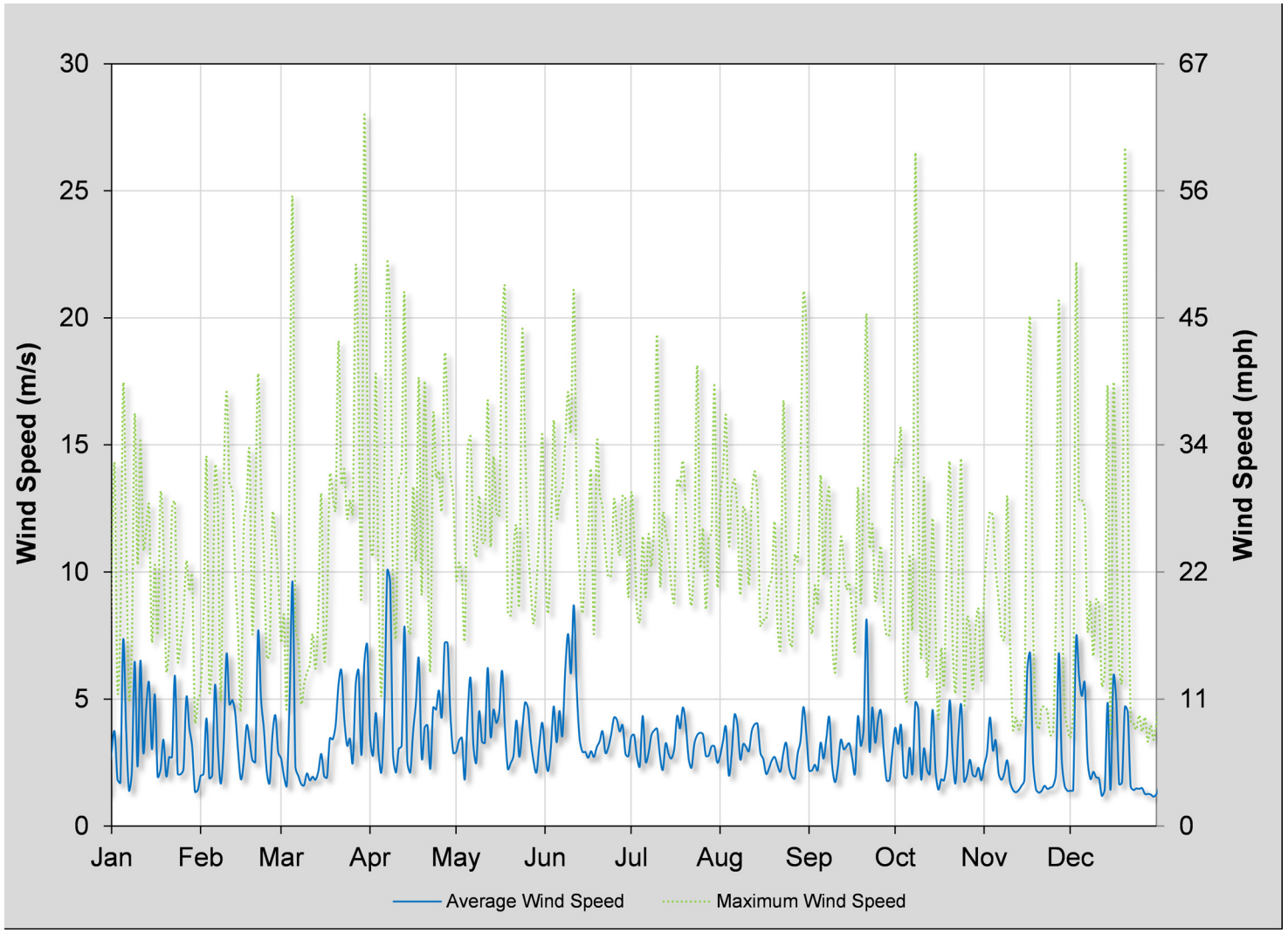


Figure 5-14
Area 5 RWMC 2017 2017 Daily Average and Maximum Wind Speeds

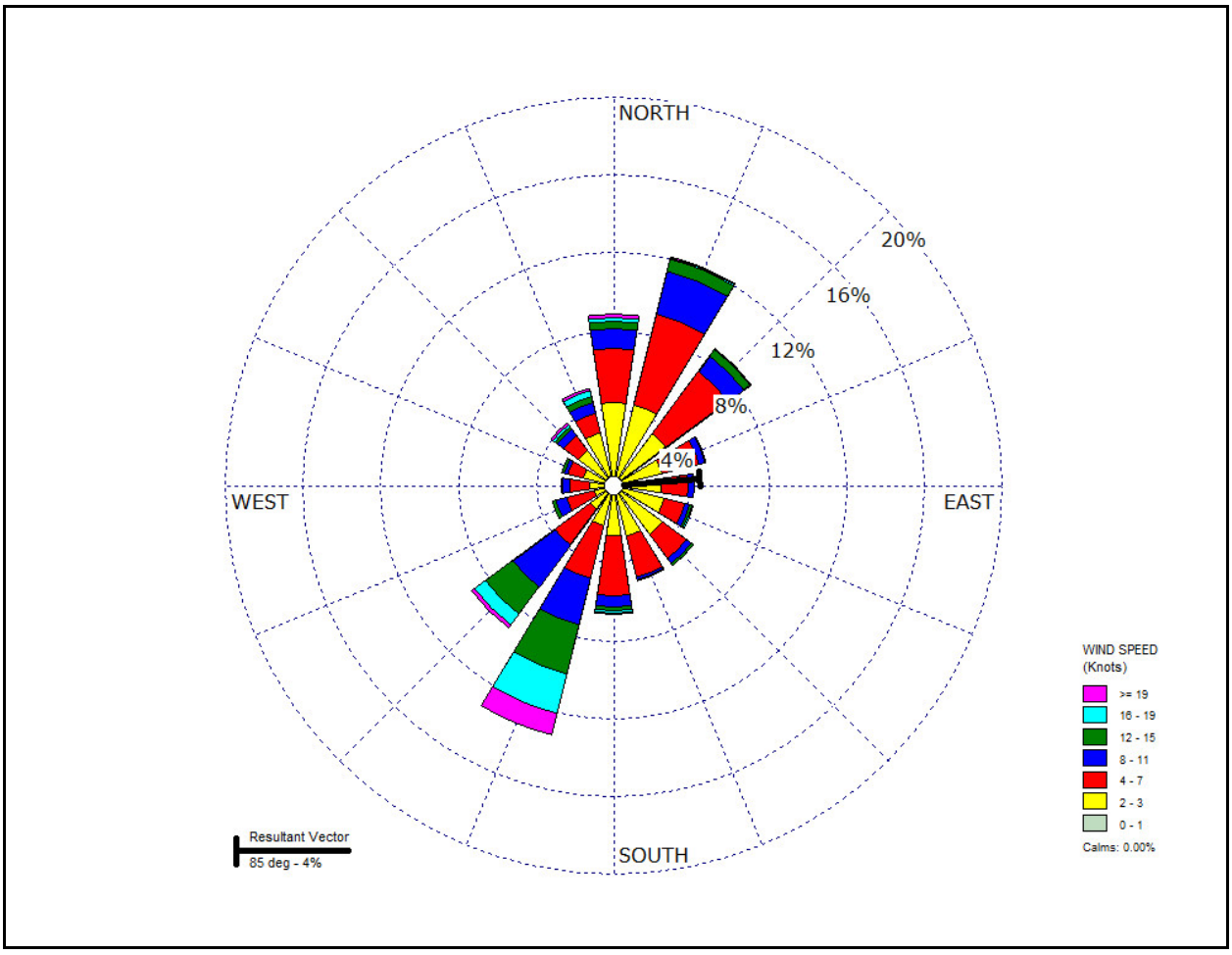


Figure 5-15
Area 5 RWMC 2017 Wind Rose

- **North–South Cover—**Weedy species dominate the site predominantly saltlover, Russian thistle, and Arabian schismus. Around 20 mature fourwing saltbush plants were found on the eastern part. A few rodent holes were seen but not a concern. A zebra-tailed lizard (*Callisaurus draconoides*) was observed on site.

- **North–North Cover—**Weedy species dominate the site predominantly saltlover, Russian thistle, and Arabian schismus, with schismus dominating the eastern portion of the cover (Figure 5-18). Rodent holes were found on the site but are not enough of a concern to trap the rodents.

- **West Cover—**Weedy species dominate the site, predominantly saltlover, Russian thistle, and Arabian schismus. A few rodent holes were seen but not a concern.

Overall, the integrity of the cover caps is very good. Given the abundant precipitation received last fall and winter, it is surprising that weedy plant cover is not higher than it is. No rabbits were

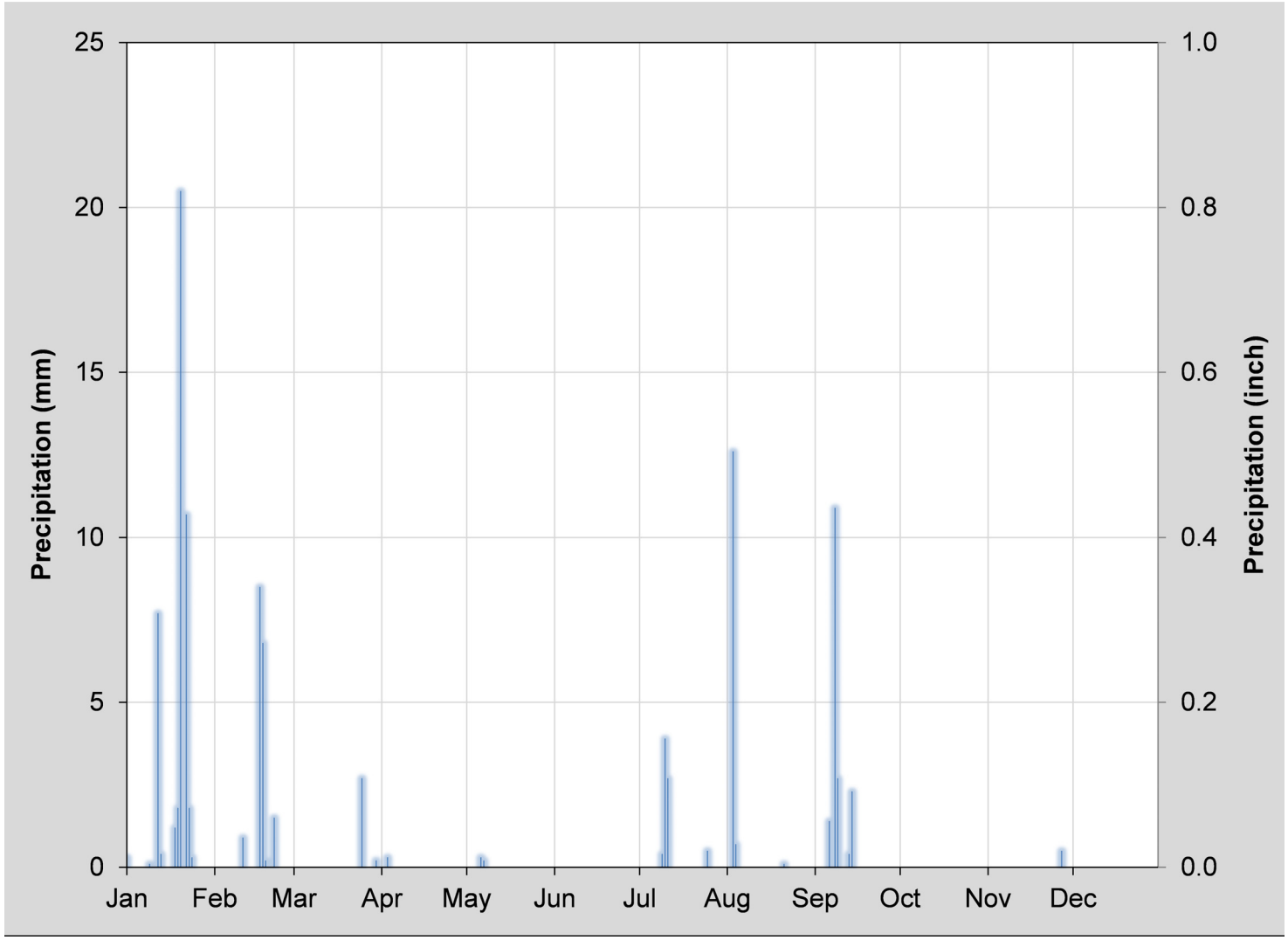


Figure 5-16
Area 5 RWMC 2017 Daily Precipitation Amounts

Figure 5-17
CAU 111 South Cover - Fourwing Saltbush

observed, but some rabbit droppings were found on some of the covers. Perennial plant cover is still lacking, and efforts should be made to establish perennial vegetation on the cover caps.

5.2.8.2 Revegetation of the South–North Cover

The revegetation test plot effort of the south–north cover was started on December 4, 2017, and is ongoing. The purpose of the effort is to eventually revegetate the 92-Acre Landfill area with a diversity of healthy native plants that will be sustainable. Field practices follow processes outlined in the *Tribal Revegetation Project, Fieldwork Plan, 92-Acre Area, Area 5 Radioactive Waste Management Complex, Nevada National Security Site, Nevada* (December 2017).

Figure 5-18
CAU 111 North–North Cover - Weed Species Dominate

6.0 CAU 112, Area 23 Hazardous Waste Trenches

6.1 Summary of Inspections, Repairs, and Maintenance

6.1.1 Post-Closure Requirements

Annual inspections are required to evaluate the condition of the unit. The results of the inspections are documented on a checklist. The permit does not specify a time limit for repairs at CAU 112.

6.1.2 Inspection, Repair, and Maintenance Activities

The annual inspection was performed on December 5, 2017. All permit controls were in place, and no maintenance or repairs were required.

7.0 Conclusions and Recommendations

7.1 CAU 90, Area 2 Bitcutter Containment

Annual inspections were performed as required. Future inspections will be conducted annually.

7.2 CAU 91, Area 3 U-3fi Injection Well

Annual inspections were performed as required. Future inspections will be conducted annually.

7.3 CAU 92, Area 6 Decon Pond Facility

Semiannual inspections were performed as required. There was no precipitation event in excess of 1.0 in. within a 24-hour period. Future inspections will be conducted semiannually and when a precipitation event exceeds 1.0 in. within a 24-hour period.

7.4 CAU 110, Area 3 WMD U-3ax/bl Crater

Semiannual inspections were performed as required. Soil moisture results indicate that the cover is functioning as designed, and the action level was not exceeded. It is recommended to continue soil moisture monitoring, biennial subsidence surveys, annual subjective vegetation evaluations, and detailed quantitative vegetation monitoring every five years. Future inspections will be conducted semiannually.

7.5 CAU 111, Area 5 WMD Retired Mixed Waste Pits

Quarterly inspections were performed as required. There was no precipitation in excess of 1.0 in., and no precipitation inspections were conducted at CAU 111 during CY 2017. Revegetation efforts on the south–north cover are ongoing. It is recommended to continue soil moisture monitoring, biennial subsidence surveys, annual subjective vegetation evaluations, detailed quantitative vegetation monitoring every five years, direct radiation monitoring by TLD, atmospheric moisture monitoring of tritium and gamma emitting isotopic radionuclides, radon emissions by radon flux measurements, and weather condition monitoring.

Because of the frequent subsidence at this CAU, it is recommended to continue quarterly inspections and after precipitation events in excess of 1.0 in. within a 24-hour period.

Results of additional monitoring at CAU 111 are documented annually in the *Nevada National Security Site Waste Management Monitoring Report Area 3* and *Area 5 Radioactive Waste Management Sites and in the Nevada National Security Site Data Report: Groundwater Monitoring Program Area 5 Radioactive Waste Management Site*.

7.6 CAU 112, Area 23 Hazardous Waste Trenches

Annual inspections were performed as required. Future inspections will be conducted annually.

Appendix A

Inspection Checklists

(33 Pages)

CAU 90 Inspection Checklist

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 90, AREA 2 BITCUTTER CONTAINMENT – CAS 02-20-01, BITCUTTER/PS INJ. WELLS (3) (RCRA), AND CAS 02-20-03, WASTEWATER PIT

Inspection Date: 12/5/17	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 12/8/16	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Cathy Birney	Title: Geologist

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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	
2. Were maintenance or repair activities performed since the last inspection?		X	
a. If yes, has repair resulted in a change from as-built conditions?			NA X
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?	X		
e. How many damaged or missing use restriction signs need to be replaced?	0		
f. How many use restriction signs are down or loose and need to be re-hung?	0		
g. Is there damage to any of the monuments?		X	
3. Waste Unit Covers:	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 onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 90, AREA 2 BITCUTTER CONTAINMENT – CAS 02-20-01, BITCUTTER/PS INJ. WELLS (3) (RCRA), AND CAS 02-20-03, WASTEWATER PIT

e. Is there evidence of animal burrowing?		X	
f. Is there vegetation growing on the cover?		X	
g. Is there trash or debris within the fenced area?		X	
h. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Three of the west unit from outside the fence, one in each compass direction (i.e., N, S, E)
  - Three of the east unit from outside the fence, one in each compass direction (i.e., N, S, W)
- 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 general housekeeping or minor repair (including cracks or settling imperfections less than 15 centimeters deep that extend less than 1 meter on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 15 centimeters deep and 1 meter long on the cover?) Deficiencies requiring a remedy other than general housekeeping issues shall be remedied within 60 days of discovery.		X	
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: Site is in good condition, no issues.

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/ luan Alvarado Date: 12/5/17

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

Signature: /s/ Dan Neubauer Date: 4/12/18

Printed Name: DAN NEUBAUER

CAU 91 Inspection Checklist

Inspection Requirements: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 91, AREA 3 U-3FI INJECTION WELL – CAS 03-20-03, U-3FI WASTE DISPOSAL UNIT (RCRA)

Inspection Date: 6/7/17	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 6/23/16	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env. Sci II
Assistant Inspector: Steve Felton	Title: Env. Sci IV

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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		Vegitation should be removed
2. Were maintenance or repair activities performed since the last inspection?	X		Herbicied applied on 10/4/16
a. If yes, has site repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	gate lock oiled
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?		X	2 signs have faded black lettering South facing and west facing signs
e. How many damaged or missing use restriction signs need to be replaced?	2		
f. How many use restriction signs are down or loose and need to be re-hung?	Ø		
g. Is there damage to the monument or monitoring well?		X	
3. Waste Unit Cover:	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 onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 91, AREA 3 U-3FI INJECTION WELL – CAS 03-20-03, U-3FI WASTE DISPOSAL UNIT (RCRA)

e. Is there evidence of animal burrowing?		X	
f. Is there vegetation growing on the cover?		X	
g. Is there trash or debris within the fenced area?		X	
h. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Four from the center of the unit, one in each compass direction (i.e., N, S, E, W)
  - Four of the unit from outside the fence, one in each compass direction
  - Two of the monitoring well surface (N and S)
- 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:

Two signs have faded or fading black lettering. Should get new signs. ~~No other issues.~~ 6/8/17

6/8/17 NDEP requested additional herbicide treatment and removal of dead weeds.

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 Alvarado Date: 6/7/17

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

Signature: /s/ Dan Neubauer Date: 7/17/18

Printed Name: Dan Neubauer

CAU 92 Inspection Checklists

Inspection Requirement: **Semi-Annual** or **Rain Event** >1.0 inches in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 92, AREA 6 DECON POND FACILITY – CAS 06-05-02, DECONTAMINATION POND (RCRA)

Inspection Date: 6/7/17	Reason for Inspection: Semi - Annual
If this inspection is for a rain event, date of event:	Quantity of Rainfall: inches
Date of Last Post-Closure Inspection: 12/8/16	Reason for Last Post-Closure Inspection: Semi - Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed. J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Steven Felton	Title: Env Sci IV

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.***
- 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	
2. Were maintenance or repair activities performed since the last inspection?		X	
a. If yes, has repair resulted in a change from as-built conditions?			NA X
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	oiled lock, sediment & litter outside of compound
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?		X	2 signs w/ faded black letters
e. How many damaged or missing use restriction signs need to be replaced?	2		
f. How many use restriction signs are down or loose and need to be re-hung?	Ø		
g. Do any Underground Radioactive Material Area signs need to be replaced or re-hung?		X	
h. Is there damage to any of the subsidence survey markers?		X	
i. Is there standing water within the fenced area?		X	
j. Is there trash or other debris within the fenced area?		X	
3. Waste Unit Cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 92, AREA 6 DECON POND FACILITY – CAS 06-05-02, DECONTAMINATION POND (RCRA)

b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?		X	
f. Is there vegetation growing on the cover?		X	
g. Is there standing water on the cover?		X	
h. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Four from the center of the unit, one in each compass direction (i.e., N, S, E, W)
  - Four of the unit from outside the fence, one in each compass direction (i.e., N, S, E, W)
- 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling less than 2 inches deep on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (i.e., are there cracks greater than 2 inches deep on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 2 inches deep on the cover shall be completed within 60 days of discovery.		X	
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: Two signs have faded black lettering. No other issues

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 Alvarado Date: 6/7/17

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

Signature: /s/ Dan Neubauer Date: 6/17/17

Printed Name: DAN NEUBAUER

Inspection Requirement: **Semi-Annual** or **Rain Event** >1.0 inches in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 92, AREA 6 DECON POND FACILITY – CAS 06-05-02, DECONTAMINATION POND (RCRA)

Inspection Date: 12/5/17	Reason for Inspection: Semi-Annual
If this inspection is for a rain event, date of event:	Quantity of Rainfall: NA inches NA
Date of Last Post-Closure Inspection: 6/7/17	Reason for Last Post-Closure Inspection: Semi-Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed. J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Cathy Birney	Title: Geologist

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.***
- 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		2 Faded signs
2. Were maintenance or repair activities performed since the last inspection?	X		Signs replaced on 9/6/17
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?	X		
e. How many damaged or missing use restriction signs need to be replaced?	0		
f. How many use restriction signs are down or loose and need to be re-hung?	0		
g. Do any Underground Radioactive Material Area signs need to be replaced or re-hung?		X	
h. Is there damage to any of the subsidence survey markers?		X	
i. Is there standing water within the fenced area?		X	
j. Is there trash or other debris within the fenced area?		X	
3. Waste Unit Cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 92, AREA 6 DECON POND FACILITY – CAS 06-05-02, DECONTAMINATION POND (RCRA)

b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?		X	
f. Is there vegetation growing on the cover?		X	
g. Is there standing water on the cover?		X	
h. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Four from the center of the unit, one in each compass direction (i.e., N, S, E, W)
  - Four of the unit from outside the fence, one in each compass direction (i.e., N, S, E, W)
- 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling less than 2 inches deep on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (i.e., are there cracks greater than 2 inches deep on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 2 inches deep on the cover shall be completed within 60 days of discovery.		X	
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: The site is in general good condition no issues

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 Alvarado Date: 12/5/17

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

Signature: /s/ Dan Neubauer Date: 4/12/18

Printed Name: DAN NEUBAUER

CAU 110 Inspection Checklists

Inspection Requirements: **Semi-Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 110, AREA 3 WMD U-3AX/BL CRATER – CAS 03-23-04, U-3AXBL SUBSIDENCE CRATER

Inspection Date:	6/7/17	Reason for Inspection:	Semi-Annual
Date of Last Post-Closure Inspection:	12/6/16	Reason for Last Post-Closure Inspection:	Semi-Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada			
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project			
Chief Inspector:	Juan Alvarado	Title:	Env Sci II
Assistant Inspector:	Steve Felton	Title:	Env Sci IV

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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		3 signs need to be replaced, (S, SE, W signs)
2. Were maintenance or repair activities performed since the last inspection?		X	working on getting new signs
a. If yes, has repair resulted in a change from as-built conditions?			NA X
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?	X		right gate at hinge, need tools to reset
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?		X	5 signs have faded black lettering includes 3 from 12/06/16 inspection
e. How many damaged or missing use restriction signs need to be replaced?	5		
f. How many use restriction signs are down or loose and need to be re-hung?	Ø		
g. Do any Underground Radioactive Material Area signs need to be replaced or re-hung?		X	
h. Is there damage to any of the subsidence survey markers?		X	
i. Is there any evidence that TDR probes have been disturbed or the wires damaged?		X	
j. Is there trash or other debris within the fenced area?		X	
3. Waste Unit Cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 110, AREA 3 WMD U-3AX/BL CRATER – CAS 03-23-04, U-3AXBL SUBSIDENCE CRATER

b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?		X	small animal burrows, no issues
f. Is there a change in the vegetation growing on the cover?		X	
g. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Four from the center of the unit, one in each compass direction (i.e., N, S, E, W)
  - Four of the unit from outside the fence, one in each compass direction (i.e., N, S, E, W)
- 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 6 inches deep that extend less than 3 feet on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 6 inches deep and 3 feet long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 6 inches deep and 3 feet long on the cover shall be completed within 60 days of discovery.		X	
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: 5 signs have faded letters. 1 sign on the south has many weeds (dead) obstructing the letters. weeds should be removed from around signs. ~~See map~~ JA 6/7/17

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 Alvarado Date: 6/7/17

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

Signature: /s/ Dan Neubauer Date: 4/17/18

Printed Name: DAN NEUBAUER

Inspection Requirements: **Semi-Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 110, AREA 3 WMD U-3AX/BL CRATER – CAS 03-23-04, U-3AXBL SUBSIDENCE CRATER

Inspection Date: 12/4/17	Reason for Inspection: Semi-Annual
Date of Last Post-Closure Inspection: 6/7/17	Reason for Last Post-Closure Inspection: Semi-Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Cathy Birney	Title: Geologist

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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		Signs faded and pile of tumble weeds
2. Were maintenance or repair activities performed since the last inspection?	X		signs replaced by 12/4/17
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?	X		
e. How many damaged or missing use restriction signs need to be replaced?	Ø		
f. How many use restriction signs are down or loose and need to be re-hung?	Ø		
g. Do any Underground Radioactive Material Area signs need to be replaced or re-hung?		X	
h. Is there damage to any of the subsidence survey markers?		X	
i. Is there any evidence that TDR probes have been disturbed or the wires damaged?		X	
j. Is there trash or other debris within the fenced area?		X	
3. Waste Unit Cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	X		3 areas of cracking. 1 large animal burrow

POST-CLOSURE INSPECTION CHECKLIST

CAU 110, AREA 3 WMD U-3AX/BL CRATER – CAS 03-23-04, U-3AXBL SUBSIDENCE CRATER

b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?	X		~~boring~~ 12/4/17 1 large animal burrow
e. Is there evidence of animal burrowing?	X		Many small mammal burrows
f. Is there a change in the vegetation growing on the cover?		X	
g. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- The following photographs must be taken during each inspection:
  - Four from the center of the unit, one in each compass direction (i.e., N, S, E, W)
  - Four of the unit from outside the fence, one in each compass direction (i.e., N, S, E, W)
- 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 6 inches deep that extend less than 3 feet on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 6 inches deep and 3 feet long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 6 inches deep and 3 feet long on the cover shall be completed within 60 days of discovery.	X		3 cracks, 1 burrow
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: There are 2 areas of cracking near each other near the eastern portion of cap. There is 1 area of cracking and 1 animal burrow near each other near the SE portion of cap. All signs were in good shape, there was no other issue.

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 Alvarado Date: 12/4/17

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

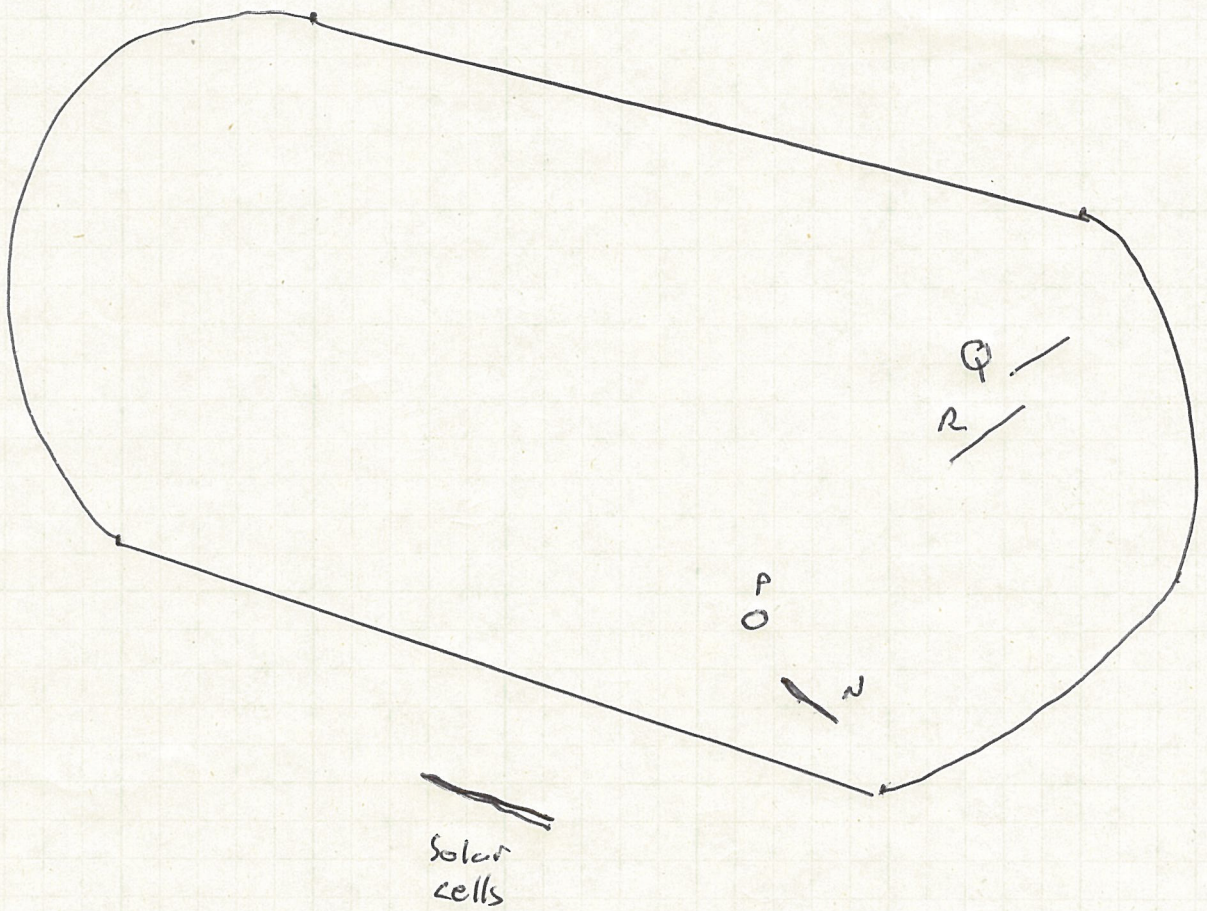
Signature: /s/ Dan Neubauer Date: 4/12/18

Printed Name: DAN NEUBAUER

CAU 110

N, Q, R cracks

O badger Hole



11/4/21

CAU 111 Inspection Checklists

Inspection Requirement: **Quarterly** or **Rain Event** >1.0 inch in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

Inspection Date: 3/8/17	Reason for Inspection: Quarterly
If this inspection is for a rain event, date of event:	Quantity of Rainfall: NA inches NA
Date of Last Post-Closure Inspection: 12/6/16	Reason for Last Post-Closure Inspection: Quarterly
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Steve Felton	Title: Tech lead

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.*** Complete this checklist during the site 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. 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		Area of subsidence on south, west and north cells
2. Were maintenance or repair activities performed since the last inspection?	X		Areas of subsidence were repaired
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all use restriction signs legible?	X		
b. How many damaged or missing use restriction signs need to be replaced?	Ø		
c. How many use restriction signs are down or loose and need to be re-hung?	Ø		
d. Is there damage to any of the monuments?		X	
3. Waste Unit Covers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	X		West cover 6 areas see map South cover 1 area
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?	X		Small disturbance over all cells, but very shallow (< 0.3')
f. Is there a change in the vegetation growing on the cover?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

g. Is there trash or debris on the cover?		X	
h. 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 15 centimeters deep that extend less than 1 meter on the cover) required?	X		see areas of subsidence on west and south landfill see map
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 15 centimeters deep and 1 meter long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 15 centimeters deep and 1 meter long on the cover shall be completed within 60 days of discovery. Damaged or missing UR warning signs will be repaired or replaced within 60 days of discovery.	X		see areas of subsidence on west and south covers on map
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations:

Subsidence areas are located in the west and south covers. There were 6 areas of subsidence on the west cover (cracks and holes) most longer than a meter and about 15 cm deep. One area of subsidence on the south cover. 3 x 1 meter long cracks. All will need to be addressed

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

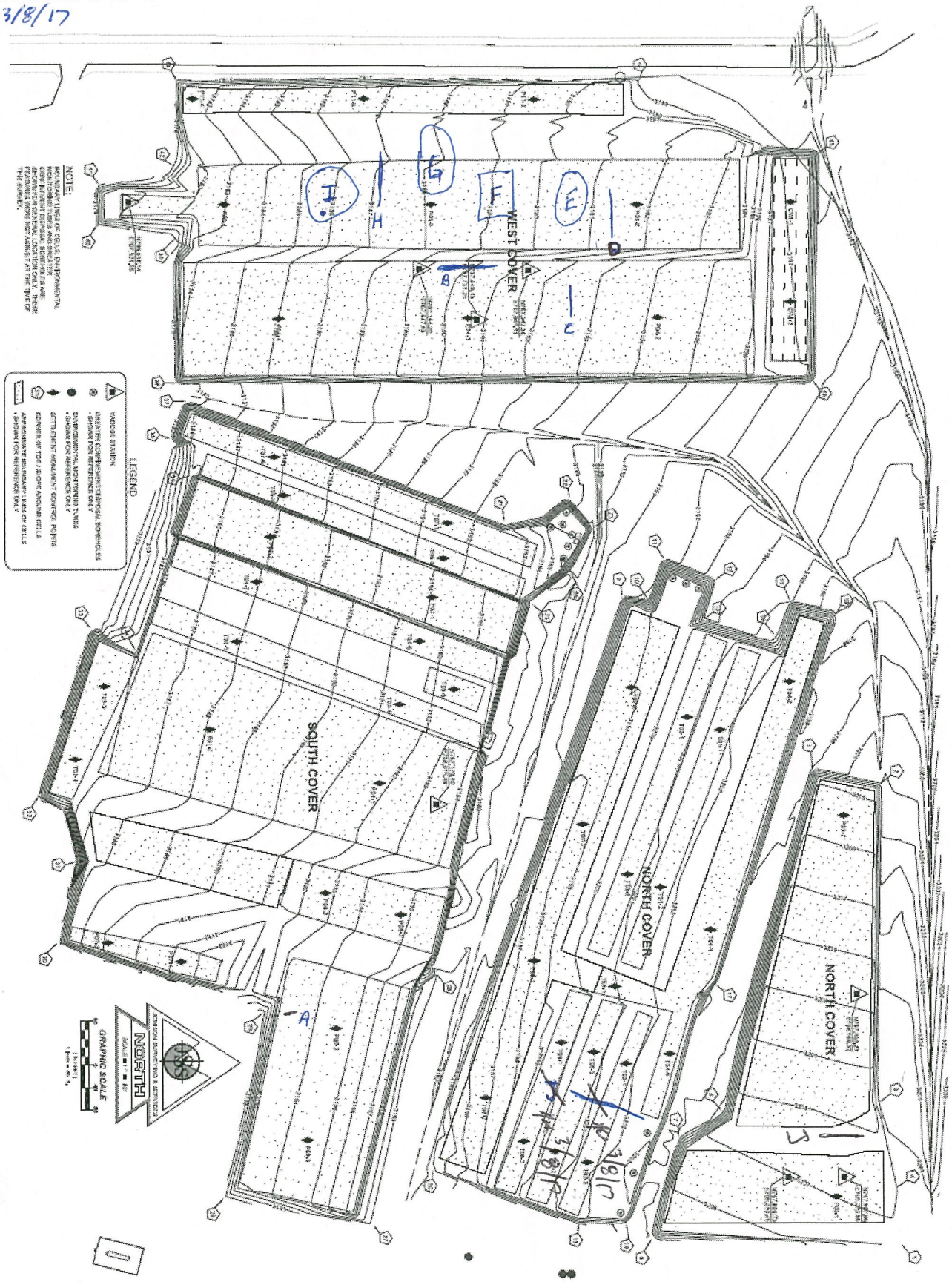
Chief Inspector's Signature: /s/ Juan Alvarado	Date: 3/8/17

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

Signature: /s/ Steve Felton	Date: 3/8/17
Printed Name: Steve Felton	

CAU 111. CAS 05-21-01

3/8/17



Inspection Requirement: **Quarterly** or **Rain Event** >1.0 inch in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

Inspection Date: 6/7/17	Reason for Inspection: Quarterly
If this inspection is for a rain event, date of event:	Quantity of Rainfall: inches
Date of Last Post-Closure Inspection: 3/8/17	Reason for Last Post-Closure Inspection: Quarterly
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Jason Alvarado	Title: Env Sci II
Assistant Inspector: Steve Felton	Title: Env Sci IV

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.*** Complete this checklist during the site 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. 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		6 areas of subsidence on western part of west cover, and 1 area of subsidence on the south cover (south central)
2. Were maintenance or repair activities performed since the last inspection?	X		Subsidence areas completed by 5/2/17
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all use restriction signs legible?	X		
b. How many damaged or missing use restriction signs need to be replaced?	Ø		
c. How many use restriction signs are down or loose and need to be re-hung?	Ø		
d. Is there damage to any of the monuments?		X	
3. Waste Unit Covers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	X		See exact map
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?		X	Small animals no issue
f. Is there a change in the vegetation growing on the cover?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

g. Is there trash or debris on the cover?		X	
h. 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 15 centimeters deep that extend less than 1 meter on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 15 centimeters deep and 1 meter long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 15 centimeters deep and 1 meter long on the cover shall be completed within 60 days of discovery. Damaged or missing UR warning signs will be repaired or replaced within 60 days of discovery.	X		See crack map. Cracks will need to be filled in.
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: There were many areas of subsidence (crack, holes, and depressions) on the west landfill. Mostly in and around the west (center) portion of the west landfill cap. There was one subsidence crack on the north north landfill cap, located in the NE portion of the cap. See map

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 Alvarado Date: 6/17/17

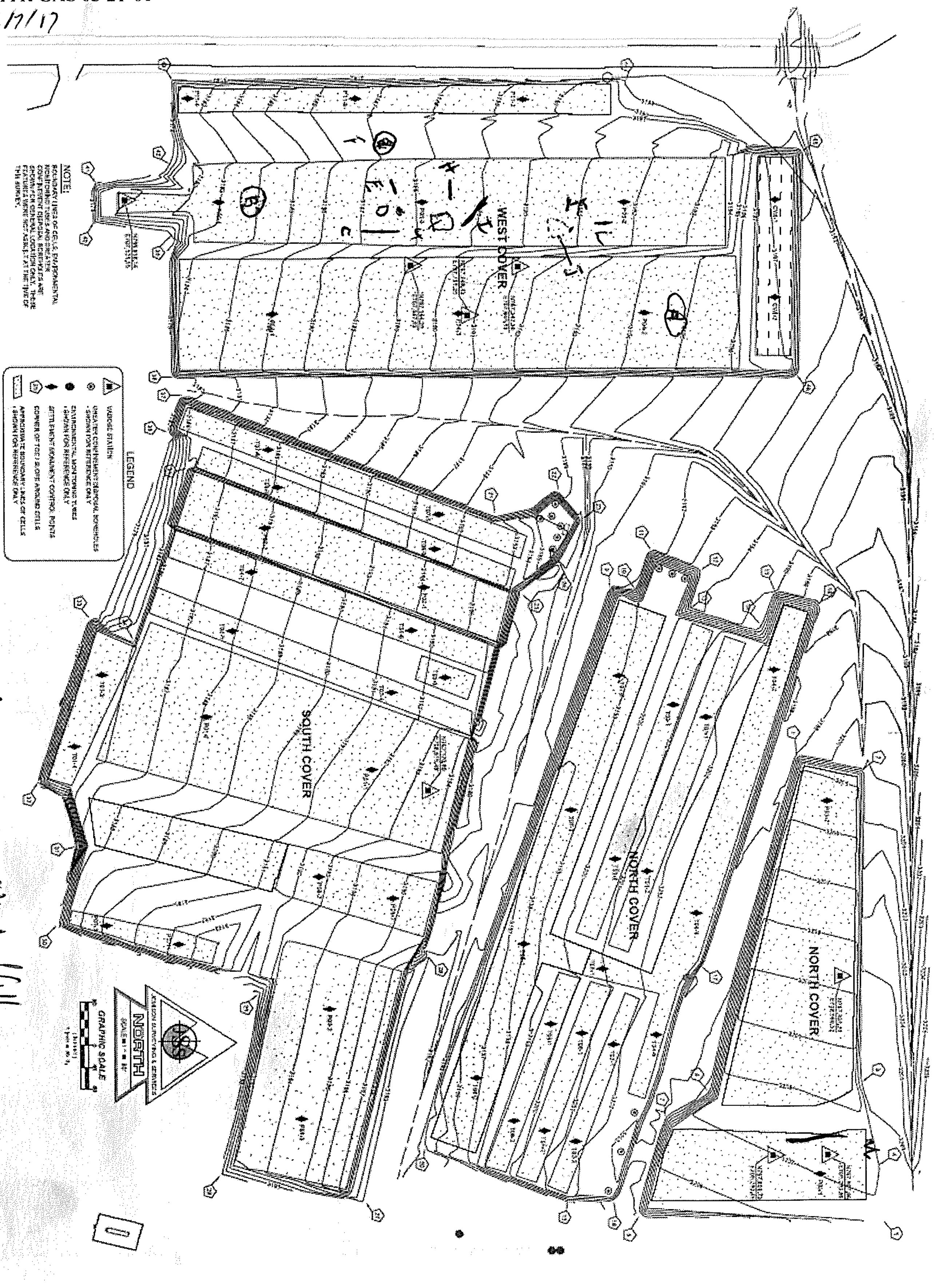
F. VERIFICATION: I have reviewed this checklist and attachments and have verified that they are complete.

Signature: /s/ Dan Neubauer Date: 7/17/18

Printed Name: Dan Neubauer

CAU 111. CAS 05-21-01

6/7/17



Subsidence A-L on west landfill

" on north north landfill

Inspection Requirement: **Quarterly** or **Rain Event** >1.0 inch in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

Inspection Date: 9/6/2017	Reason for Inspection: Quarterly
If this inspection is for a rain event, date of event: NO	Quantity of Rainfall: inches N/A
Date of Last Post-Closure Inspection: 6/7/2017	Reason for Last Post-Closure Inspection: Quarterly
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Ezra	Title: Field Coor

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.*** Complete this checklist during the site 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. 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		multiple locations on west cell and one subsidence crack on north north cell
2. Were maintenance or repair activities performed since the last inspection?	X		repaired 8/1/2017
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all use restriction signs legible?	X		
b. How many damaged or missing use restriction signs need to be replaced?	Ø		
c. How many use restriction signs are down or loose and need to be re-hung?	Ø		
d. Is there damage to any of the monuments?		X	
3. Waste Unit Covers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	X		9 locations on west cell, 1 location on north cell (middle), 1 location on N. north cell
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?	X		North cell (middle) many survey stakes have been pulled no issue.
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?	X		Small animal burrows not an issues
f. Is there a change in the vegetation growing on the cover?		X	

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

g. Is there trash or debris on the cover?		X	
h. 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 15 centimeters deep that extend less than 1 meter on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 15 centimeters deep and 1 meter long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 15 centimeters deep and 1 meter long on the cover shall be completed within 60 days of discovery. Damaged or missing UR warning signs will be repaired or replaced within 60 days of discovery.	X		Cracks and holes (9) Nine areas on west cell, 1 area on the north cell (middle) and 1 area on north north cell
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: There are many areas (9) of subsidence (cracks, holes, depressions) on the west landfill cell (see map). There is one subsidence hole in the center/ part of the north cell (middle). There is one crack on the south slope (near the southeast corner) of the north north slope of the north north cell. See map 9/7/16

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 Alvarado Date: 9/6/17

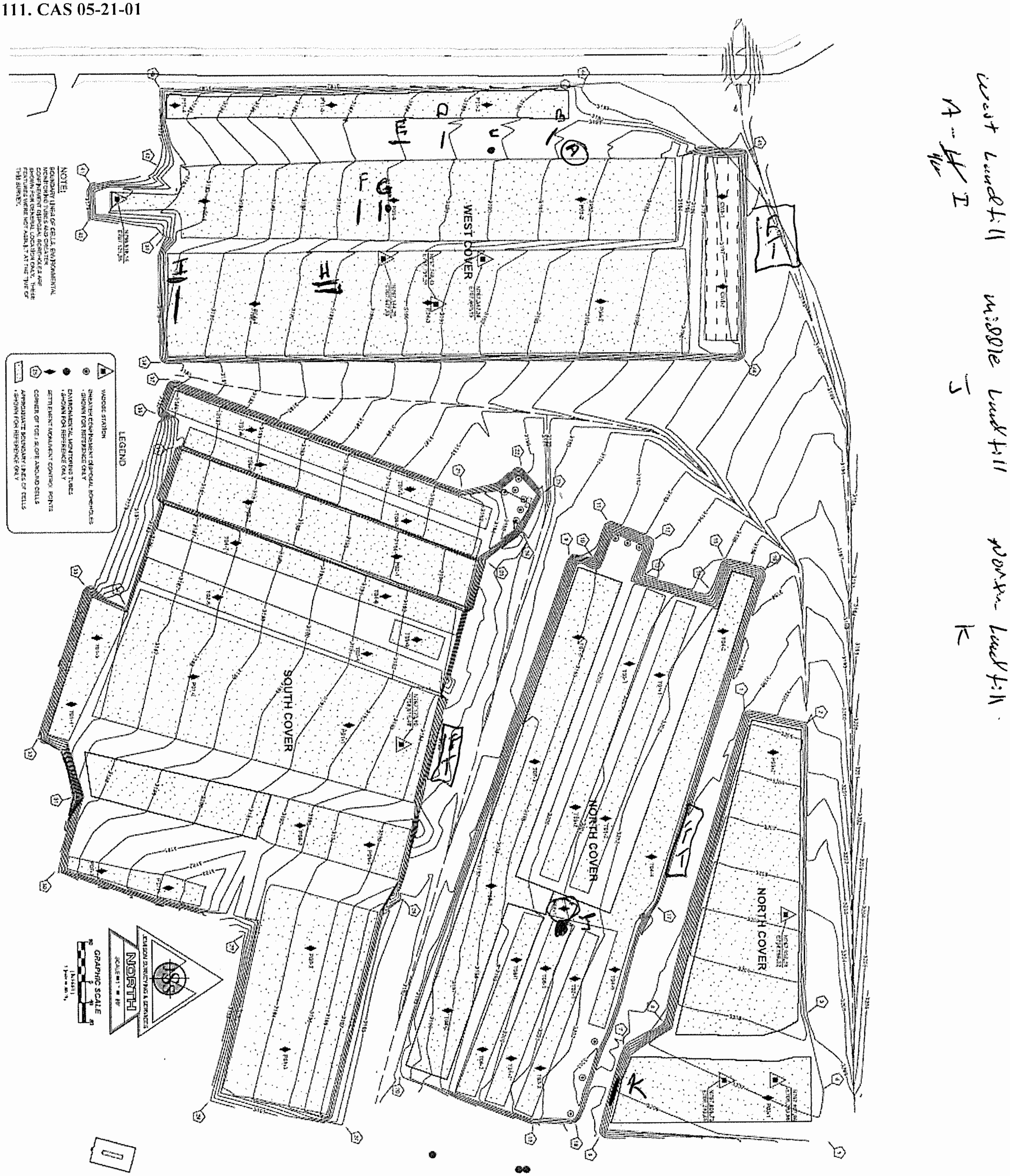
F. VERIFICATION: I have reviewed this checklist and attachments and have verified that they are complete.

Signature: /s/ Ezra L. Wasson Date: 9/6/17

Printed Name: EZRA L. WASSON

8/6/17 [initials]

CAU 111. CAS 05-21-01



POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

Inspection Date: 12/4/17	Reason for Inspection: Quarterly
If this inspection is for a rain event, date of event: NA	Quantity of Rainfall: NA inches NA
Date of Last Post-Closure Inspection: 9/6/2017	Reason for Last Post-Closure Inspection: Quarterly
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada	
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project	
Chief Inspector: Juan Alvarado	Title: Env Sci II
Assistant Inspector: Cathy Birney	Title: Geologist

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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.*** Complete this checklist during the site 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. 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		cracks on south, west and north north cells
2. Were maintenance or repair activities performed since the last inspection?	X		cracks repaired 11/29/17
a. If yes, has repair resulted in a change from as-built conditions?		X	NA
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	

2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all use restriction signs legible?	X		
b. How many damaged or missing use restriction signs need to be replaced?	Ø		
c. How many use restriction signs are down or loose and need to be re-hung?	Ø		
d. Is there damage to any of the monuments?		X	

3. Waste Unit Covers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling or cracking?	X		One large crack on north north cell, One crack in South CF, 12 cracks in west LF
b. Is there evidence of erosion (wind or water)?		X	
c. Is there evidence of human intrusion onto the site?	X		Stakes set for veggie plot study per South north cell (no issue)
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?	X		Small animal burrows throughout complex
f. Is there a change in the vegetation growing on the cover?		X	

Inspection Requirement: **Quarterly** or **Rain Event** >1.0 inch in 24 hours

POST-CLOSURE INSPECTION CHECKLIST

CAU 111, AREA 5 WMD RETIRED MIXED WASTE PITS – CAS 05-21-01, MIXED WASTE PITS

g. Is there trash or debris on the cover?		X	
h. 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 all required photographs of the site been taken?	X		

D. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Is general housekeeping or minor repair (including cracks or settling imperfections less than 15 centimeters deep that extend less than 1 meter on the cover) required?		X	
2. Are there deficiencies that require a remedy other than general housekeeping or minor repair? (For example, are there cracks greater than 15 centimeters deep and 1 meter long on the cover?) Maintenance or repairs of cracks or settling imperfections greater than 15 centimeters deep and 1 meter long on the cover shall be completed within 60 days of discovery. Damaged or missing UR warning signs will be repaired or replaced within 60 days of discovery.	X		See map.
3. Is there an imminent hazard to the integrity of the landfill cover?		X	

4. Field Conclusions/Recommendations: One crack in south cover, one crack in north north cell, 12 cracks / holes in west cell see map. All monuments and signs were in good condition.

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 Alvarado Date: 12/4/17

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

Signature: /s/ Dan Neubauer Date: 4/12/18

Printed Name: Dan Neubauer

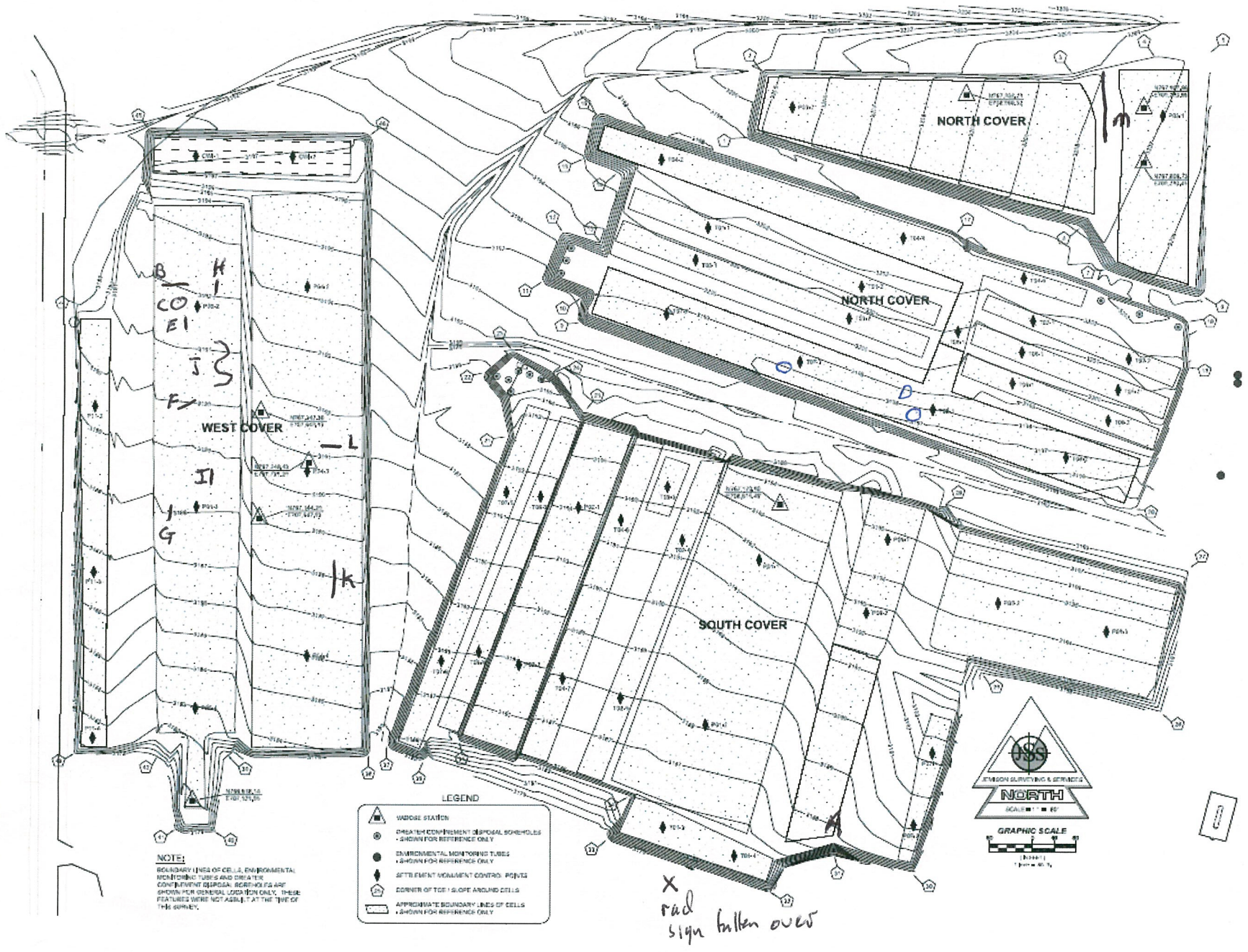
A - South cover

B - ~~M~~ West cover, No D

L ja

D - North Cover (South, Middle cap)

M - North Cover (North, North cap)



X rad sign fallen over

12/4/17

CAU 111, CAS 05-21-01

CAU 112 Inspection Checklist

Inspection Requirements: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 112, AREA 23 HAZARDOUS WASTE TRENCHES – CAS 23-21-02, AREA 23 HAZ. WASTE TRENCHES (RCRA)

Inspection Date:	12/5/17	Reason for Inspection:	Annual
Date of Last Post-Closure Inspection:	12/8/16	Reason for Last Post-Closure Inspection:	Annual
Responsible Entity: Navarro, Nevada National Security Site, Mercury, Nevada			
Responsible Facility Owner: Reed J. Poderis, Project Manager, Industrial Sites, Environmental Restoration Project			
Chief Inspector:	Juan Alvarado	Title:	Env Sci II
Assistant Inspector:	Cathy Birney	Title:	Geologist

A. GENERAL INSTRUCTIONS

- ***The site inspection is a walking 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	
2. Were maintenance or repair activities performed since the last inspection?		X	
a. If yes, has repair resulted in a change from as-built conditions?			NA X
b. If yes (to 2a), are revised as-built plans available that reflect repair changes?			NA X

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?		X	
2. Site Markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate or gate lock?		X	
b. Is there damage to or a break in the fence?		X	
c. Have any fenceposts been damaged or their anchoring weakened?		X	
d. Are all use restriction signs legible?	X		
e. How many damaged or missing use restriction signs need to be replaced?	0		
f. How many use restriction signs are down or loose and need to be re-hung?	0		
g. Is there damage to any of the monuments?		X	
h. Have neutron access pads been disturbed?		X	
i. Are well covers for neutron access tubes broken, lost, or otherwise damaged?		X	
3. Waste Unit Covers:	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	

POST-CLOSURE INSPECTION CHECKLIST

CAU 112, AREA 23 HAZARDOUS WASTE TRENCHES – CAS 23-21-02, AREA 23 HAZ. WASTE TRENCHES (RCRA)

c. Is there evidence of human intrusion onto the site?		X	
d. Is there evidence of large animal intrusion onto the site?		X	
e. Is there evidence of animal burrowing?		X	
f. Is there vegetation growing on the cover?		X	
g. Is there trash or debris within the fenced area?		X	
h. Are there any other issues not specifically described in this checklist?		X	

Photograph Instructions:

- Photographs should 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.
- Other photographs are optional.
- Photographs will be filed electronically.

4. Photograph Documentation:	YES	NO	EXPLANATION
a. Have 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:

The site is in generally good condition, no issues. The east facing signs are beginning to fade, but they are legible.

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 Alvarado Date: 12/5/17

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

Signature: /s/ Dan Neubauer Date: ~~12~~ 11/12/18

Printed Name: Dan Neubauer

Appendix B

Photographs

Table B-1
Key to Appendix B Photographs
(Page 1 of 3)

CAU	Date	Figure Number	Description
90	12/05/2017	B-1	CAS 02-20-01 West Unit Facing North
		B-2	CAS 02-20-01 West Unit Facing East
		B-3	CAS 02-20-01 West Unit Facing South
		B-4	CAS 02-20-03 East Unit Facing South
		B-5	CAS 02-20-03 East Unit Facing West
		B-6	CAS 02-20-03 East Unit Facing North
91	06/07/2017	B-7	Inside Facing North
		B-8	Inside Facing East
		B-9	Inside Facing South
		B-10	Inside Facing West
		B-11	Outside Facing North
		B-12	Outside Facing East
		B-13	Outside Facing South
		B-14	Outside Facing West
92	06/07/2017	B-15	Inside Facing North
		B-16	Inside Facing Northeast
		B-17	Inside Facing Southwest
		B-18	Inside Facing Northwest
		B-19	Outside Facing Northwest
		B-20	Outside Facing Northeast
		B-21	Outside Facing Southeast
		B-22	Outside Facing West
	12/07/2017	B-23	Inside Facing Northwest
		B-24	Inside Facing East
		B-25	Inside Facing South
		B-26	Inside Facing West
		B-27	Outside Facing North
		B-28	Outside Facing East
		B-29	Outside Facing South
		B-30	Outside Facing West

Table B-1
Key to Appendix B Photographs
(Page 2 of 3)

CAU	Date	Figure Number	Description
110	06/07/2017	B-31	Inside Facing North
		B-32	Inside Facing East
		B-33	Inside Facing South
		B-34	Inside Facing West
		B-35	Outside Facing North
		B-36	Outside Facing East
		B-37	Outside Facing South
		B-38	Outside Facing West
	12/04/2017	B-39	Inside Facing North
		B-40	Inside Facing East
		B-41	Inside Facing South
		B-42	Inside Facing West
		B-43	Outside Facing North
		B-44	Outside Facing East
		B-45	Outside Facing South
		B-46	Outside Facing West
111	03/08/2017	B-47	Facing Northwest, Lower North Cover
		B-48	Facing East, Lower North Cover
		B-49	Facing East, South Cover
		B-50	Facing East, Upper North Cover
		B-51	Facing Southeast, Upper North Cover
		B-52	Facing North, West Cover
		B-53	Facing North, South Cover
		B-54	Facing Northwest, South Cover
		B-55	Facing West, AZ Crossing

Table B-1
Key to Appendix B Photographs
(Page 3 of 3)

CAU	Date	Figure Number	Description
111	06/07/2017	B-56	Facing Northwest, Lower North Cover
		B-57	Facing East, Lower North Cover
		B-58	Facing East, South Cover
		B-59	Facing East, Upper North Cover
		B-60	Facing Southeast, Upper North Cover
		B-61	Facing North, West Cover
		B-62	Facing North, South Cover
		B-63	Facing Northwest, South Cover
		B-64	Facing West, AZ Crossing
	09/06/2017	B-65	Facing Northwest, Lower North Cover
		B-66	Facing East, Lower North Cover
		B-67	Facing East, South Cover
		B-68	Facing East, Upper North Cover
		B-69	Facing Southeast, Upper North Cover
		B-70	Facing North, West Cover
		B-71	Facing North, South Cover
		B-72	Facing Northwest, South Cover
		B-73	Facing West, AZ Crossing
	12/04/2017	B-74	Facing Northwest, Lower North Cover
		B-75	Facing East, Lower North Cover
		B-76	Facing East, South Cover
		B-77	Facing East, Upper North Cover
		B-78	Facing Southeast, Upper North Cover
		B-79	Facing North, West Cover
		B-80	Facing North, South Cover
		B-81	Facing Northwest, South Cover
		B-82	Facing West, AZ Crossing

Figure B-1
CAU 90, CAS 02-20-01, Facing North, 12/05/2017

Figure B-2
CAU 90 CAS 02-20-01, Facing East, 12/05/2017

Figure B-3
CAU 90 CAS 02-20-01, Facing South, 12/05/2017

Figure B-4
CAU 90 CAS 02-20-03, Facing South, 12/05/2017

Figure B-5
CAU 90 CAS 02-20-03, Facing West, 12/05/2017

Figure B-6
CAU 90 CAS 02-20-03, Facing North, 12/05/2017

Figure B-7
CAU 91, Facing North from inside, 06/07/2017

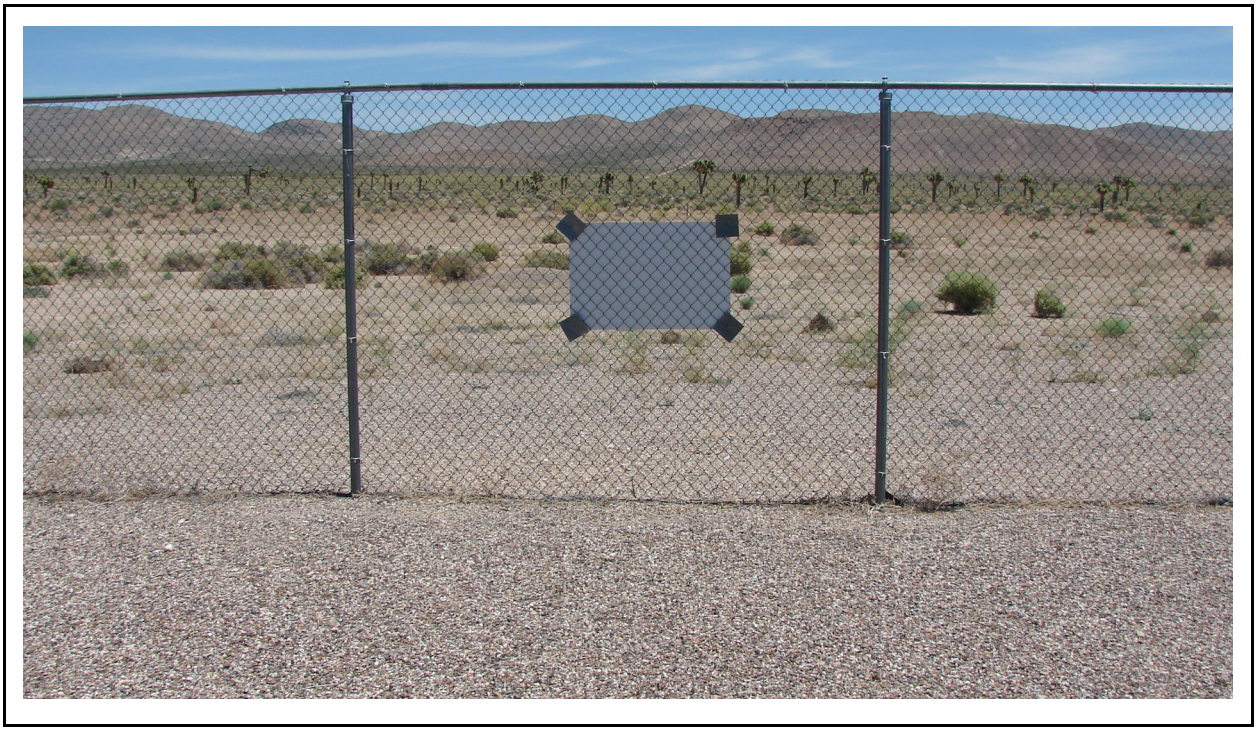


Figure B-8
CAU 91, Facing East from inside, 06/07/2017

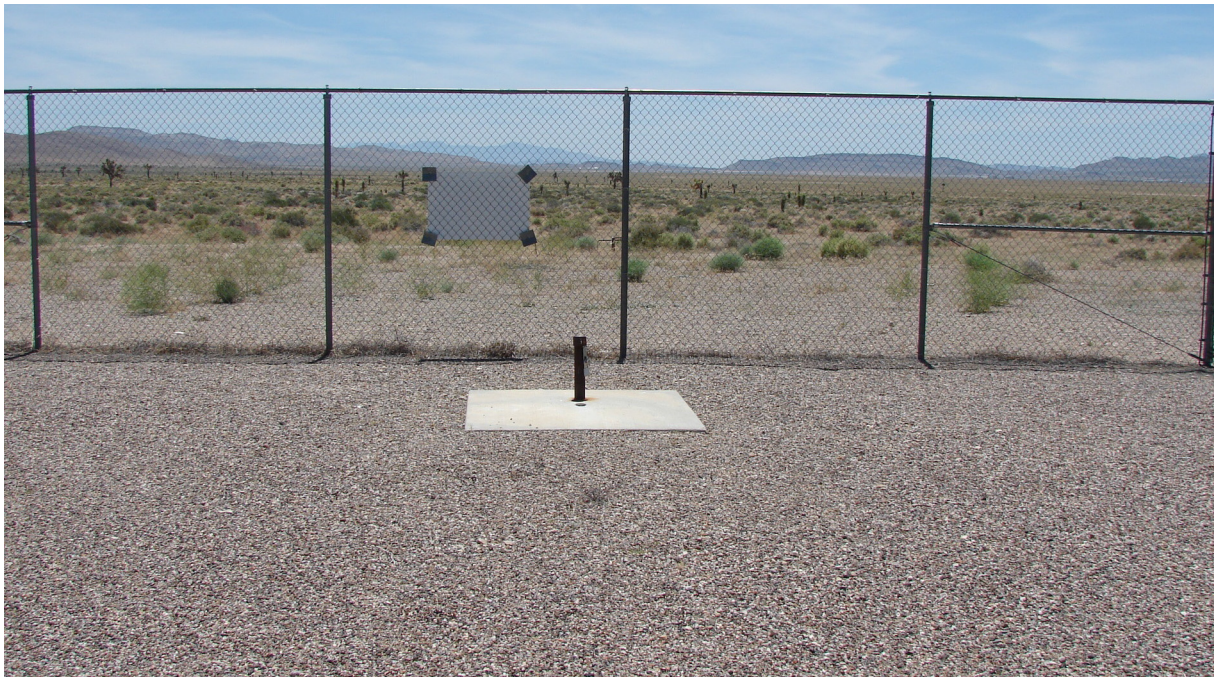


Figure B-9
CAU 91, Facing South from inside, 06/07/2017

Figure B-10
CAU 91, Facing West from inside, 06/07/2017

Figure B-11
CAU 91, Facing North from outside, 06/07/2017

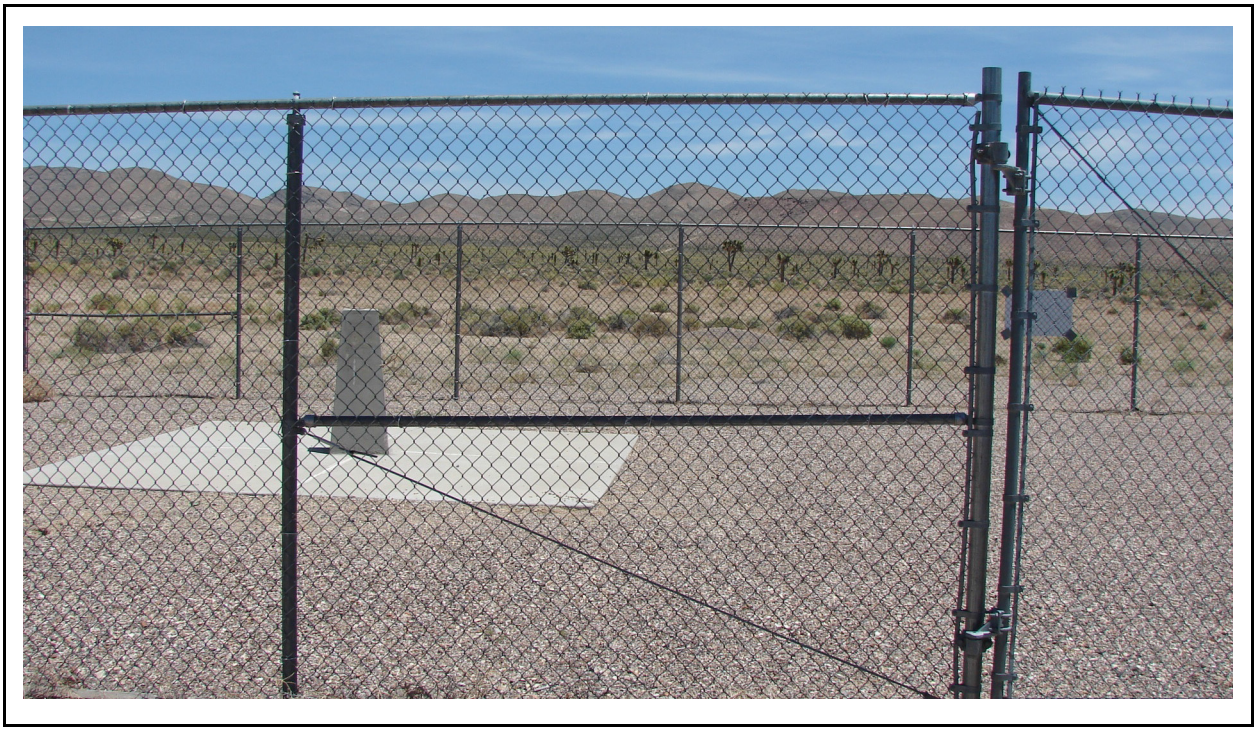


Figure B-12
CAU 91, Facing East from outside, 06/07/2017

Figure B-13
CAU 91, Facing South from outside, 06/07/2017

Figure B-14
CAU 91, Facing West from outside, 06/07/2017

Figure B-15
CAU 92, Facing North from inside, 06/07/2017

Figure B-16
CAU 92, Facing Northeast from inside, 06/07/2017

Figure B-17
CAU 92, Facing Southwest from inside, 06/07/2017

Figure B-18
CAU 92, Facing Northwest from inside, 06/07/2017

Figure B-19
CAU 92, Facing Northwest from outside, 06/07/2017

Figure B-20
CAU 92, Facing Northeast from outside, 06/07/2017

Figure B-21
CAU 92, Facing Southeast from outside, 06/07/2017

Figure B-22
CAU 92, Facing West from outside, 06/07/2017

Figure B-23
CAU 92, Facing Northwest from inside, 12/05/2017

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CAU 92, Facing East from inside, 12/05/2017

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CAU 92, Facing South from inside, 12/05/2017

Figure B-26
CAU 92, Facing West from inside, 12/05/2017

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CAU 92, Facing North from outside, 12/05/2017

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CAU 92, Facing East from outside, 12/05/2017

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CAU 92, Facing South from outside, 12/05/2017

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CAU 110, Facing North from inside, 06/07/2017

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CAU 110, Facing East from inside, 06/07/2017

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CAU 110, Facing East from inside, 12/04/2017

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CAU 110, Facing South from inside, 12/04/2017

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Figure B-43
CAU 110, Facing North from outside, 12/04/2017

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CAU 110, Facing East from outside, 12/04/2017

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CAU 110, Facing South from outside, 12/04/2017

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Figure B-47
CAU 111, Facing Northwest, 03/08/2017

Figure B-48
CAU 111, Facing East, 03/08/2017

Figure B-49
CAU 111, Facing East, 03/08/2017

Figure B-50
CAU 111, Facing East, 03/08/2017

Figure B-51
CAU 111, Facing Southeast, 03/08/2017

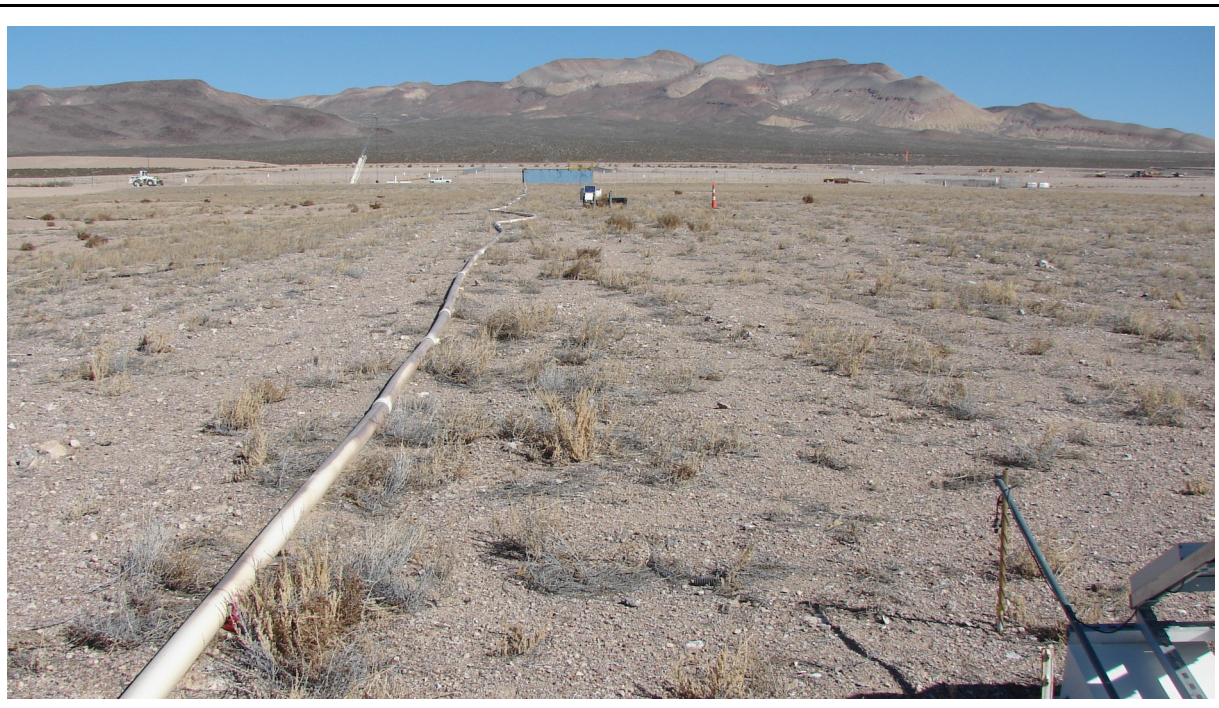

Figure B-52
CAU 111, Facing North, 03/08/2017

Figure B-53
CAU 111, Facing North, 03/08/2017

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CAU 111, Facing Northwest, 03/08/2017

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CAU 111, Facing West (AZ Crossing), 03/08/2017

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CAU 111, Facing East, 06/07/2017

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CAU 111, Facing East, 06/07/2017

Figure B-60
CAU 111, Facing Southeast, 06/07/2017

Figure B-61
CAU 111, Facing North, 06/07/2017

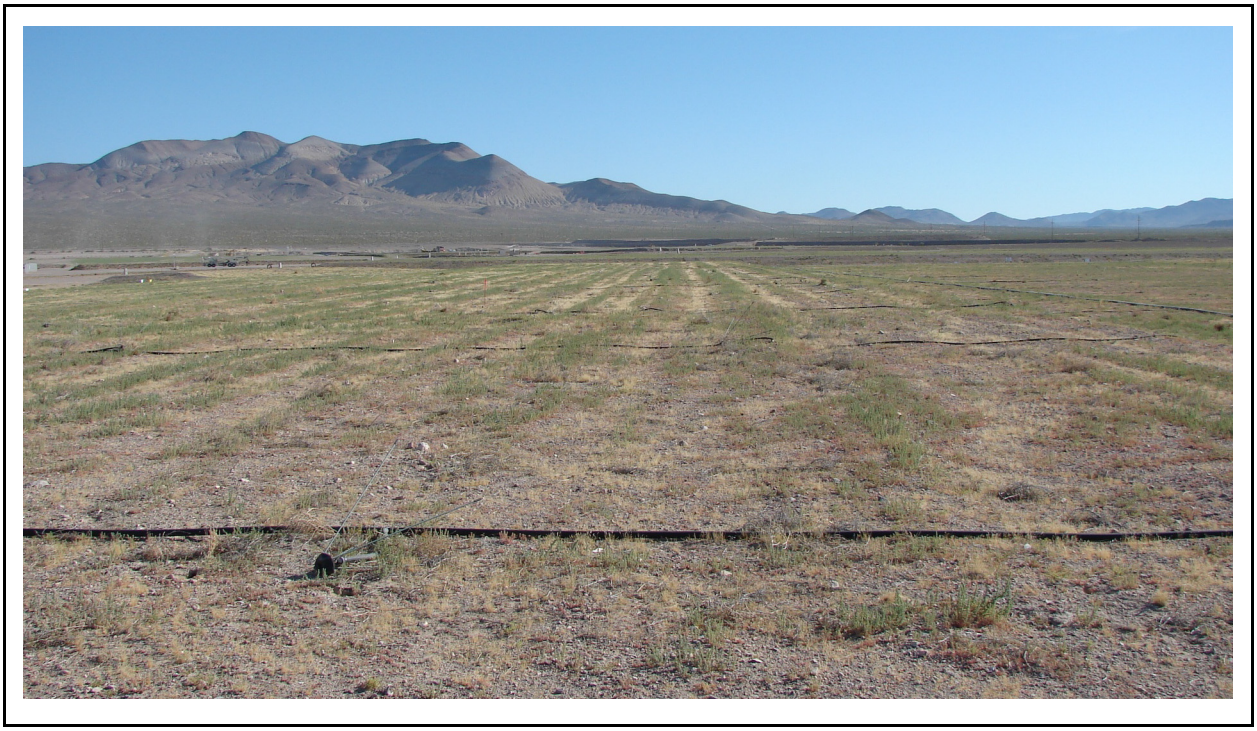

Figure B-62
CAU 111, Facing North, 06/07/2017

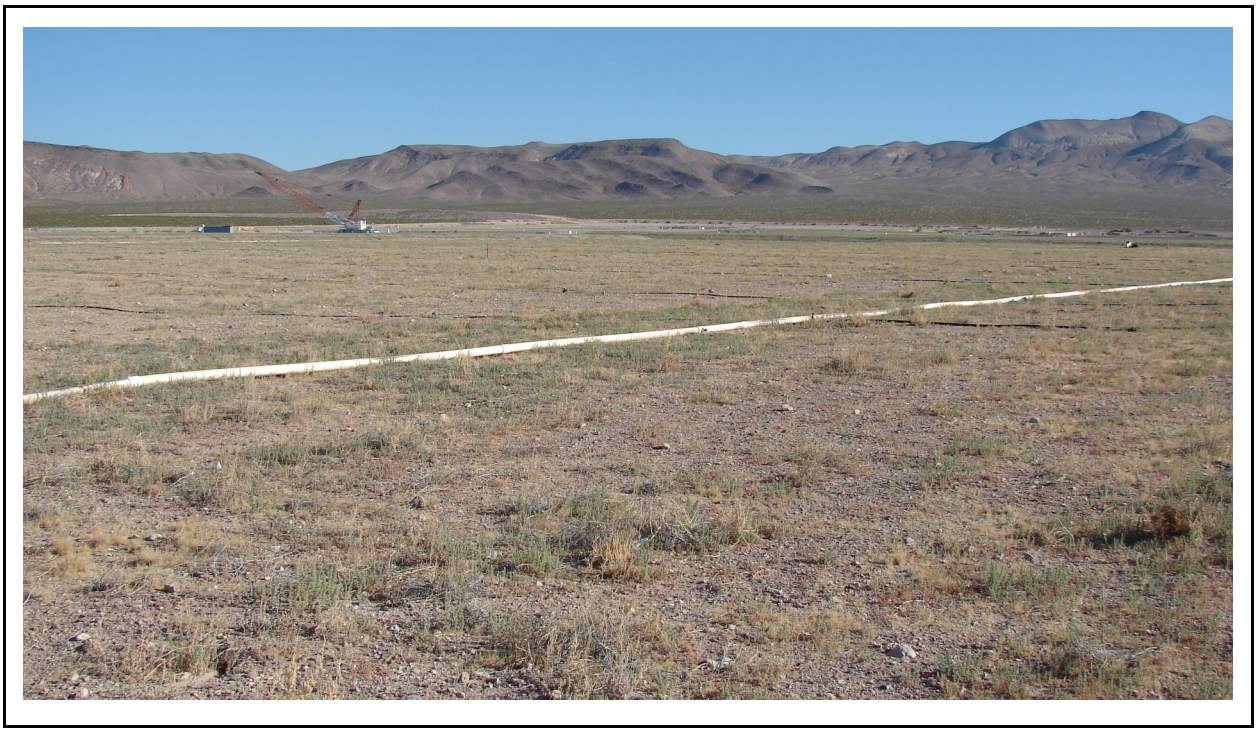

Figure B-63
CAU 111, Facing Northwest, 06/07/2017

Figure B-64
CAU 111, Facing West (AZ Crossing), 06/07/2017

Figure B-65
CAU 111, Facing Northwest, 09/06/2017

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CAU 111, Facing North, 09/06/2017

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CAU 111, Facing North, 09/06/2017

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CAU 111, Facing Northwest, 09/06/2017

Figure B-73
CAU 111, Facing West (AZ Crossing), 09/06/2017

Figure B-74
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CAU 111, Facing Southeast, 12/04/2017

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CAU 111, Facing North, 12/04/2017

Figure B-81
CAU 111, Facing Northwest, 12/04/2017

Figure B-82
CAU 111, Facing West (AZ Crossing), 12/04/2017

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