

Nevada
Environmental
Management
Operations Activity

DOE/NV--1510



Recommendations and Justifications
To Remove Use Restrictions Established
under the U.S. Department of Energy,
National Nuclear Security Administration
Nevada Field Office
*Federal Facility Agreement
and Consent Order*

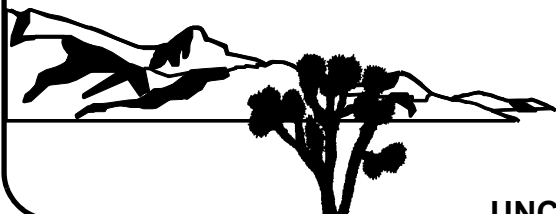
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/s/ Joseph P. Johnston, N-I CO 09/09/2013

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**RECOMMENDATIONS AND JUSTIFICATIONS
TO REMOVE USE RESTRICTIONS ESTABLISHED
UNDER THE U.S. DEPARTMENT OF ENERGY,
NATIONAL NUCLEAR SECURITY ADMINISTRATION
NEVADA FIELD OFFICE
*FEDERAL FACILITY AGREEMENT
AND CONSENT ORDER***

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

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TO REMOVE USE RESTRICTIONS ESTABLISHED
UNDER THE U.S. DEPARTMENT OF ENERGY,
NATIONAL NUCLEAR SECURITY ADMINISTRATION NEVADA FIELD OFFICE
*FEDERAL FACILITY AGREEMENT AND CONSENT ORDER***

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List of Acronyms and Abbreviations

BEEF	Big Explosives Experimental Facility
bgs	Below ground surface
CADD	Corrective action decision document
CAS	Corrective action site
CAU	Corrective action unit
COC	Contaminant of concern
COPC	Contaminant of potential concern
CR	Closure report
Cs	Cesium
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DQO	Data quality objective
DRO	Diesel-range organics
EPA	U.S. Environmental Protection Agency
FAL	Final action level
FFACO	<i>Federal Facility Agreement and Consent Order</i>
ft	Foot
GIS	Geographic Information Systems
GRO	Gasoline-range organics
hr/yr	Hours per year
IA	Industrial Area
ID	Identification
in.	Inch
mg/kg	Milligrams per kilogram
M&O	Management and operating
mrem	Millirem

List of Acronyms and Abbreviations (Continued)

mrem/yr	Millirem per year
NAC	<i>Nevada Administrative Code</i>
NCRP	National Council on Radiation Protection and Measurements
NDEP	Nevada Division of Environmental Protection
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
OU	Occasional Use Area
PAL	Preliminary action level
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene
pCi/g	Picocuries per gram
PRG	Preliminary remediation goal
Pu	Plutonium
RBCA	Risk-based corrective action
RBSL	Risk-based screening level
RCRA	<i>Resource Conservation and Recovery Act</i>
ROTC	Record of Technical Change
RRMG	Residual radioactive material guideline
RSL	Regional screening level
RW	Remote Work Area
Sr	Strontium
SSTL	Site-specific target level
SVOC	Semivolatile organic compound
TED	Total effective dose
TPH	Total petroleum hydrocarbons
U	Uranium

List of Acronyms and Abbreviations (Continued)

UCL	Upper confidence limit
UGTA	Underground Test Area
UR	Use restriction
USAF	U.S. Air Force
VCP	Vitrified clay pipe
VOC	Volatile organic compound

1.0 Purpose

Many *Federal Facility Agreement and Consent Order* (FFACO) Use Restrictions (URs) and Administrative URs have been established at various corrective action sites (CASs) as part of FFACO (1996, as amended) corrective actions. Since the signing of the FFACO in 1996, practices and procedures relating to the implementation of risk-based corrective action (RBCA) have evolved. This document is part of an effort to reevaluate 37 FFACO and Administrative URs against the current *Soils Risk-Based Corrective Action Evaluation Process* (NNSA/NSO, 2012b) (referred to in this document as the RBCA criteria). The Soils RBCA document is being used instead of the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006) because the Soils RBCA document has the most current definitions of work scenarios, and the latest discussions regarding chemical and radiological risk-based corrective actions. Based on this reevaluation, the URs were sorted into the following categories:

1. Where sufficient information exists to determine that the current UR may be removed or downgraded based on RBCA criteria.
2. Where sufficient information exists to determine that the current UR should not be changed when evaluated against the RBCA criteria.
3. Where sufficient information does not exist to evaluate the current UR against the RBCA criteria.

After reviewing 37 existing FFACO and Administrative URs, 3 URs addressed in this document have sufficient information to determine that these current URs may be removed, based on the RBCA criteria. This document presents recommendations on modifications to existing URs that will be consistent with the RBCA criteria.

2.0 Process

The evaluations of URs presented in this document will result in the removal of the current UR because contamination is not present at the site above risk-based final action levels (FALs).

All URs are established to protect site workers and the public from inadvertent contact with contaminants of concern (COCs). A COC is defined as any contaminant from an FFACO release that is present at a concentration that exceeds the corresponding FAL. For some of the existing URs, the FALs were established using the preliminary action level (PAL) values. The chemical PALs were established using the U.S. Environmental Protection Agency (EPA) Region 9 preliminary remediation goals (PRGs) for chemical constituents (EPA, 2004 and earlier). Radionuclide PALs were established using the National Council on Radiation Protection and Measurements (NCRP) Report No. 129, Table 2.1, “Construction, Commercial, Industrial” land use scenario column for a 25-millirem (mrem) dose constraint (NCRP, 1999), unless otherwise noted. PALs for total petroleum hydrocarbons (TPH) were established at 100 milligrams per kilograms (mg/kg), as listed in the *Nevada Administrative Code* (NAC) 445A.2272 (NAC, 2008). The PALs used as the basis for the current URs being reevaluated were calculated based on an Industrial Area (IA) land-use exposure scenario.

The PALs have been modified since the signing of the FFACO in 1996. Also, some of the URs were established before the RBCA process was developed. The RBCA process provides a methodology for determining risk-based FALs based on the establishment of a future land-use exposure scenario that may be different from the Industrial Area scenario. The data used to define the need for the original URs were compared to FALs developed using the current RBCA process to reevaluate the need for a UR and, if needed, the type of UR.

Two types of URs can be established: FFACO URs and Administrative URs. The FFACO URs are established at CASs where a contaminant is present at a concentration or dose exceeding the corresponding FAL. FFACO URs require warning signs to be posted at the perimeter corners of the CAS and periodic inspections. Other protective measures—such as fences, landfill boundary monuments, and polychlorinated biphenyl (PCB) or radiation postings—may also be implemented at FFACO URs. If a UR is proposed for a CAS, a determination must be made regarding the type of UR.

If the contamination is above FALs, then an FFACO UR is implemented. If the contamination is below FALs, but above PALs, then an Administrative UR is implemented. This is done to protect against an inadvertent exposure in case some future use of the site would cause the presence of a full-time worker. Administrative URs do not require onsite postings or physical barriers, and do not require periodic inspections (NNSA/NFO, 2013b). Both types of URs are recorded in the FFACO database; the Management and Operating (M&O) Contractor Geographic Information Systems (GIS); and the U.S. Department of Energy (DOE), National Nuclear Security Administration Nevada Field Office (NNSA/NFO) Corrective Action Unit (CAU)/CAS files.

2.1 Scope

The URs addressed in this document are listed in [Table 2-1](#). If a UR is being recommended for removal the following criteria were met:

- The size and depth of the contaminant plume have been adequately defined.
- Where the UR basis included TPH contamination, both volatile organic compound (VOC) and semivolatile organic compound (SVOC) results are available for the samples with the maximum TPH concentrations.
- The concentrations of the contaminants are below the FALs.

**Table 2-1
 Use Restrictions**

CAU	CAS	CAS Description	Recommendation
165	25-20-01	Lab Drain Dry Well	Remove UR
357	04-26-03	Lead Bricks	Remove UR
529	25-23-17	Contaminated Wash (Parcel H)	Remove UR

These sites are addressed in [Sections 3.0](#) through [5.0](#) and include the following information:

- The CAS description as listed in the FFACO database.
- The current UR description as listed in the corresponding FFACO closure document.

- The basis for current UR, as listed in the corresponding FFACO closure document, including the analytical results driving the decision.
- The basis for UR modification based on the current RBCA process.

2.2 Action Levels

The current RBCA process used to establish FALs is described in the *Soils Risk-Based Corrective Action Evaluation Process* (NNSA/NSO, 2012b). This process conforms to NAC Section 445A.227 (NAC, 2012a), which lists the requirements for sites with soil contamination. For the evaluation of corrective actions, NAC Section 445A.22705 (NAC, 2012b) recommends the use of ASTM International Method E 1739 (ASTM, 1995) to “conduct an evaluation of the site, based on the risk it poses to public health and the environment, to determine the necessary remediation standards (i.e., FALs) or to establish that corrective action is not necessary.”

This RBCA process defines three tiers (or levels) of evaluation involving increasingly sophisticated analyses:

- **Tier 1 evaluation.** Tier 1 risk-based screening levels (RBSLs) are the generic (non-site-specific) PALs defined in the data quality objective (DQO) process and listed in the FFACO plans. These are compared to contamination levels at source areas.
- **Tier 2 evaluation.** Tier 2 site-specific target levels (SSTLs) are calculated using site-specific inputs and receptor exposure scenarios. Total TPH concentrations will not be used for risk-based decisions under Tier 2 or Tier 3. Rather, the individual hazardous constituents will be compared to the SSTLs.
- **Tier 3 evaluation.** Tier 3 SSTLs are calculated using site-specific inputs to more sophisticated chemical fate/transport and probabilistic models. These are compared to contamination levels at points of compliance.

The comparison of laboratory results to the revised FALs is used to evaluate the need for and the type of UR at each site. The revised FALs are defined (along with the basis for their definition) in each of the subsequent UR sections.

2.2.1 Tier 1-Based FALs

All FALs based on a Tier 1 evaluation were defined as the PALs listed in the following subsections.

2.2.1.1 Chemical PALs

Historical

Except as noted herein, the chemical PALs were historically defined as the EPA Region 9 PRGs for chemical contaminants in industrial soils (EPA, 2004 and earlier). Background concentrations for *Resource Conservation and Recovery Act* (RCRA) metals were used instead of PRGs when natural background concentrations exceed the PRG, which is often the case with arsenic on the Nevada National Security Site (NNSS).

Current

The EPA Region 9 PRGs are updated approximately semiannually (EPA, 2013a). Current chemical PALs are now derived from current EPA Region 9 regional screening levels (RSLs).

2.2.1.2 Total Petroleum Hydrocarbon PALs

Historical

The PAL for TPH was 100 mg/kg as listed in NAC 445A.2272 (NAC, 2008).

Current

On August 24, 2009, new regulations pertaining to assessment and corrective action at leaking USTs and other remediation sites were approved by the Nevada Legislative Committee (NAC, 2008). For TPH contamination, PALs are now established for the individual specific hazardous constituents of TPH, because TPH is an inconsistent mixture of many chemical compounds that do not have established RSLs (NNSA/NSO, 2012b).

2.2.1.3 Radionuclide PALs

Historical

The PALs for radiological contaminants (other than tritium) were based on the NCRP Report No. 129 recommended screening limits for construction, commercial, and industrial land-use scenarios (NCRP, 1999) scaled to a 25-millirem-per-year (mrem/yr) dose constraint (Murphy, 2004) and the generic guidelines for residual concentration of radionuclides in DOE Order 5400.5 (DOE, 1993).

These PALs were based on the construction, commercial, and industrial land-use scenarios provided in the guidance and were appropriate for the NNSC based on future land use scenarios (NCRP, 1999). The PAL for tritium is based on the Underground Test Area (UGTA) Activity limit of 400,000 picocuries per liter for discharge of water containing tritium (NNSA/NSO, 2009b).

Current

All radiological action levels are based on the 25-mrem/yr total effective dose (TED) constraint. Action levels can be established for each radioisotope. The action levels represent the concentration in soil for a specific radionuclide that would result in a 25-mrem/yr TED to a receptor for a specific exposure time. The radionuclide-specific action levels are referred to as residual radioactive material guidelines (RRMGs) and are expressed in picocuries per gram (pCi/g). The RRMGs are dependent upon exposure time and exposure pathway. Therefore, separate sets of RRMGs have been developed for the exposure scenarios of IA, Remote Work Area (RW), and Occasional Use Area (OU); and for the internal exposure pathway and the combination of all pathways (internal and external dose) (NNSA/NFO, 2013a). The revised PALs use the RBCA criteria RRMG tables for the combined internal and external dose. The RRMGs are calculated using the RESRAD computer code (Yu et al., 2001). The RESRAD methodology is cited in DOE Order 458.1 (DOE, 2011) for dose assessment and for the determination of guidelines to be used in the cleanup of contaminated sites.

2.2.2 Tier 2-Based FALs

All FALs established based on a Tier 2 evaluation were calculated using one of the following site-specific exposure scenarios, as defined in the *Soils Risk-Based Corrective Action Evaluation Process* (NNSA/NSO, 2012b):

- **Industrial Area.** Worker will be exposed to the site full time (250 days per year, 8 hours per day for 25 years). This exposure scenario assumes continuous industrial use of a site where workers are present full time (e.g., a site located at Mercury).
- **Remote Work Area.** Worker will be exposed to the site part-time (up to 336 hours per year [hr/yr] for 25 years). This exposure scenario assumes non-continuous work activities at a site where workers are present part time (e.g., a site located near a substation that workers might visit for inspection and maintenance).

- **Occasional Use Area.** Worker will be exposed to the site occasionally (up to 80 hr/yr for 5 years). This exposure scenario is for sites where workers are present occasionally (e.g., an open desert area with no facilities or regular work areas).

The Tier 2 evaluation starts by evaluating site-specific land use and potential receptors to determine appropriate exposure scenarios and determine the most exposed individual. Then Tier 2 SSTLs are calculated using site-specific inputs to standard risk equations (for chemical contaminants), using pre-calculated RRMGs based on the RW or OU exposure scenarios, or calculating RRMGs based on site-specific RESRAD input parameters (including site-specific exposure scenarios). The Tier 2 SSTLs are then compared to individual sample results from reasonable points of exposure (as opposed to the source areas as is done in Tier 1) or to the 95 percent upper confidence limit (UCL) of the mean concentration or activity of sample results collected from random sample locations representative of the exposure area. Points of exposure or exposure areas are defined as those locations or areas at which an individual or population may come in contact with a COC originating from a release site. Tier 2-based FALs do not include an action level for petroleum hydrocarbon as a whole (e.g., TPH). Instead, the risk posed by TPH (not yet established) is addressed as the risk posed by the individual hazardous constituents of TPH present at the site.

The following contaminants of potential concern (COPCs) are defined as the hazardous constituents of TPH diesel fuel (NNSA/NSO, 2012b):

- 1,3,5-Trimethylbenzene
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Anthracene
- Benzo(a)anthracene
- Benzene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Chrysene
- Ethylbenzene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- n-Nonane
- n-Propylbenzene

- o-Xylene
- Phenanthrene
- Pyrene
- Toluene

The following COPCs are defined as the hazardous constituents of TPH gasoline (NNSA/NSO, 2012b):

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 1,3-Butadiene
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Benzene
- Cyclohexane
- Ethylbenzene
- Methyl-tert-butylether
- Naphthalene
- n-Hexane
- n-Pentane
- Toluene
- Xylenes

The hazardous constituents of TPH diesel and TPH gasoline are included in the list of reported analytical results from the VOC and SVOC analytical methods. Therefore, when all SVOC and VOC analyte results are below PALs, TPH diesel and TPH gasoline can be considered to be within acceptable exposure levels.

2.3 Modified UR Decision Basis

Most CASs were closed originally using the IA land use exposure scenario. All CASs are being evaluated with the assumption that the future land use is IA, and therefore that exposure scenario will be used to revise FALs for comparison to the original results. The recommendation to modify the UR will be based on the following decision statements:

- If the site contains a contaminant exceeding a FAL, based on the site-specific foreseeable future land-use exposure scenario ([Section 2.2.2](#)), the current FFACO UR will remain.

Otherwise:

- If the site does not contain a contaminant exceeding a FAL, based on the site-specific exposure scenario, the UR may be downgraded to an Administrative UR or may be removed.

Otherwise:

- If the site contains a contaminant exceeding an IA PAL, an Administrative UR will be implemented. Changing to an Administrative UR would eliminate ongoing inspection and maintenance requirements (e.g., no requirement for fencing or signage).

2.4 Modification of URs

All FFACO and Administrative URs were established in an approved FFACO closure document (e.g., Corrective Action Decision Document [CADD]/Closure Report [CR] or CR).

Changes to approved FFACO documents are in the form of an addendum, an errata sheet, or Record of Technical Change (ROTC). Addenda are used when extensive corrections/additions to a section or multiple sections of an FFACO document are necessary.

Approval of this document will constitute approval of the UR modifications recommended for each UR addressed herein. After approval, an addendum to each of the associated closure documents (that originally established each UR) will be prepared and submitted as DOE NNSA/NFO FFACO records. These addenda will comprise the following:

- A cover page referring the reader to this document for additional information
- The cover and signature pages of this document
- The Nevada Division of Environmental Protection (NDEP) approval letter
- The corresponding section of this document

As applicable, requirements for inspecting and maintaining the modified URs will be lifted, and the postings and signage, at each site specific to the FFACO UR, will be removed. Fencing and posting may be present at these sites that are unrelated to the FFACO UR, such as for radiological control purposes, as required by the *Nevada National Security Site Radiological Control Manual* (NNSA/NSO, 2012a).

3.0 CAU 165, CAS 25-20-01 – Lab Drain Dry Well

3.1 CAS Description

The Lab Drain Dry Well is located approximately 55 feet (ft) north of Building 4215 in the Central Support Area of Area 25 on the NNSA. System components include a concrete dry well and two waste pipes. The chemical waste pipe includes 55 ft of 6-inch (in.) vitrified clay pipe (VCP) from the north side of Building 4215 to the dry well. Another waste pipe was discovered during field activities. This waste pipe is also a 6-in. VCP and is 60 ft long running east–west from a pipe stickup into the dry well. This pipe was unknown before the investigation; however, personnel who work in Building 4215 reported that there used to be trailers in the vicinity of the stick-up and that it was probably a sanitary pipe. The dry well is a 4-by-8-ft precast concrete manhole ring with an open bottom and is filled with 0.75- to 1.5-in. gravel to a minimum depth of 4 ft. The manhole to the dry well is set to surface grade (NNSA/NSO, 2004b). As a best management practice, during closure activities the dry well was backfilled to grade with clean soil (NNSA/NSO, 2005a).

3.2 Current UR Description

The future use of any land related to this CAS is restricted from any DOE or U.S. Air Force (USAF) activity that may alter or modify the containment control, as approved by the State of Nevada and identified in the CAU CR or other CAU documentation, unless appropriate concurrence is obtained in advance. Two UR warning signs were posted to warn against intrusive activity; no fencing around the UR is required. Annual site inspections are conducted to ensure the signs are in good repair and that the UR is maintained (NNSA/NSO, 2005a).

3.3 Basis for Current UR

Samples were analyzed for VOCs, SVOCs, RCRA metals, TPH-diesel-range organics (DRO), TPH-gasoline-range organics (GRO), PCBs, gamma spectroscopy, isotopic uranium (U), isotopic plutonium (Pu), and strontium (Sr)-90. The analytical results for soil samples collected at the CAS indicated that no SVOCs, RCRA metals, PCBs, TPH-GRO, or radionuclides were detected above PALs. Tetrachloroethene (PCE), a VOC, exceeded the EPA Region 9 PRGs, while TPH-DRO

concentrations exceeded the NDEP action level of 100 mg/kg. No hazardous constituents of TPH-DRO exceeded the EPA Region 9 PRGs (NNSA/NSO, 2004b).

The concentrations of both PCE and TPH-DRO decreased with depth and were below PALs within 2.5 ft vertically of the dry well base. Step-out samples were analyzed for PCE only, as PCE is more mobile than TPH-DRO. Step-out sample results indicated that the PCE did not migrate 15 ft laterally in significant concentrations (NNSA/NSO, 2004b).

Table 3-1 contains analytical results of COCs at CAS 25-20-01 that are the basis for the current UR. The sample matrix for all samples is soil.

**Table 3-1
 Sample Results for COCs at CAS 25-20-01
 Used To Establish Current UR**

Sample ID	Depth (ft bgs)	TPH-DRO	PCE
		PAL 100 mg/kg	PAL 19 mg/kg
165A001	9.0 - 10.0	170 (D, M, Z)	--
165A005	9.0 - 10.0	--	110

bgs = Below ground surface
 ID = Identification

D = Indicates a pattern resembling diesel was detected in the sample.
 M = Motor oil.

Z = Reported results did not resemble the patterns found in the following hydrocarbon products:
 gasoline, JP-4, JP-8, diesel, mineral spirits, motor oil, Stoddard solvent, and Bunker C.

-- = No detects above original action levels.

3.4 Basis for UR Modification

The site-specific Tier 2 IA FAL for PCE was calculated using the EPA Region 9 RSLs for Chemical Contaminants at Superfund Sites Calculator (EPA, 2013b) and the latest input values (NNSA/NFO, 2013c). Table 3-2 presents the sample result for PCE that is the basis for the current UR and the revised site-specific Tier 2 IA FAL. Because no hazardous constituents of TPH-DRO were detected in any of the samples at concentrations greater than their respective FALs, and because the PCE does not exceed the Tier 2 IA FAL, no contaminants are present at this site.

Table 3-2
Revised IA Tier 2 FAL for PCE at CAS 25-20-01

Sample ID	Depth (ft bgs)	PCE
		IA FAL 175 mg/kg
165A005	9.0 - 10.0	110

3.5 Proposed Modification

Remove the FFACO UR and associated signs, and discontinue annual inspection and maintenance requirements at this site. These modifications will not affect or modify any non-FFACO requirements at this site.

4.0 CAU 357, CAS 04-26-03 – Lead Bricks

4.1 CAS Description

CAS 04-26-03, Lead Bricks, is located in Area 4, north of 4-04 Road and west of the Big Explosives Experimental Facility (BEEF). The area of investigation is approximately 3.4 acres and consists of scattered lead bricks throughout an area west of the T-4 Bunker. The lead bricks at CAS 04-26-03 are believed to have been left *in situ* from activities associated with the Apple-1, Fox, Kepler, and Nancy tests, which occurred between 1952 through 1957. Radionuclide contamination is present at this CAS, but the scope of this CAS is chemical only, and the radionuclide contamination is addressed in CAU 370. During closure activities at this CAS, approximately 1,000 lead bricks or pieces of lead bricks (“high-density area”) and associated soil were removed and contained, and a UR was implemented (NNSA/NSO, 2005b).

4.2 Current UR Description

The future use of any land related to this CAU is restricted from any DOE or USAF activity that may alter or modify the containment control, as approved by the State of Nevada and identified in the CAU CR or other CAU documentation, unless appropriate concurrence is obtained in advance. The UR is for surface and shallow subsurface contamination. Four monuments surround the CAS, and three UR signs are posted on the northeast, northwest, and southwest side of the CAS; a berm runs along the southeast side and is not posted. Inspections are conducted annually to ensure the monuments and UR signs are in good condition (NNSA/NSO, 2005b).

4.3 Basis for Current UR

To assist with the identification of buried or partially buried lead bricks and steel debris, geophysical surveys were conducted throughout the investigation. The survey data were used to identify areas having high magnetic conductance; these areas were excavated using shovels, and the lead/steel debris was removed. A metal detector was also used during the investigation to assist in distinguishing lead from steel debris. A “high-density area” was identified as having more than 400 lead bricks located very close to one another. Approximately 1,000 bricks or pieces of bricks

were removed, and the lead-contaminated soil was excavated from beneath the removed bricks or clusters of bricks.

Surface and shallow subsurface samples were analyzed for lead only. After the bricks were removed, a minimum of two shovel scoops of soil was removed from beneath the former brick locations. A total of 91 Decision I shallow subsurface samples were then collected from the former brick locations. Concentrations of lead were above the PAL of 750 mg/kg in soil samples collected at 15 sample locations; the concentrations of lead ranged from 950 to 19,000 mg/kg (NNSA/NSO, 2005b).

Table 4-1 contains the Decision I sample analytical results for lead at CAS 04-26-03 that are the basis for the current UR. The sample matrix for all samples is soil.

Table 4-1
Sample Results for Lead at CAS 04-26-03 Used To Establish Current UR
 (Page 1 of 2)

Sample Location	Sample ID (Decision I samples)	Depth (in. bgs)	Lead
			PAL 750 mg/kg
M03	357M004	0.0 - 4.0	17,000
	357M010	6.0 - 8.0	3,500
	357M064	12.0 - 14.0	2,700
	357M067	14.0 - 16.0	1,100
M04	357M005	0.0 - 4.0	1,700
M05	357M006	0.0 - 4.0	5,300
	357M063	12.0 - 14.0	1,200
M06	357M007	0.0 - 4.0	4,500
	357M018	6.0 - 8.0	1,300
M11	357M011	6.0 - 8.0	950
M12	357M012	4.0 - 6.0	12,000
	357M013	6.0 - 8.0	5,000
M13	357M014	4.0 - 6.0	3,700

Table 4-1
Sample Results for Lead at CAS 04-26-03 Used To Establish Current UR
 (Page 2 of 2)

Sample Location	Sample ID (Decision I samples)	Depth (in. bgs)	Lead
			PAL 750 mg/kg
M15	357M019	0.0 - 4.0	9,700
	357M108	6.0 - 8.0	760 (J)
	357M110	14.0 - 16.0	4,300 (J)
M16	357M020	0.0 - 4.0	14,000
	357M066	12.0 - 14.0	2,400
M17	357M021	0.0 - 4.0	3,200
M74	357M091	6.0 - 8.0	4,400
M76	357M093	6.0 - 8.0	3,000
M85	357M116	0.0 - 4.0	19,000 (J)
M86	357M118	0.0 - 4.0	9,700 (J)
	357M119	6.0 - 8.0	3,100 (J)
M87	357M120	0.0 - 4.0	4,700 (J)

J = Estimated value.

Thirty Decision II samples were then collected at locations having lead above the PAL. These soil samples were collected to verify the vertical extent of lead in soil. The Decision II soil samples were collected at depths ranging from 6 to 8 in. bgs to 22 to 24 in. bgs across the site. The soil at these locations was excavated using shovels and contained on site for later disposal. A conservative estimate of the concentrations of lead in soil within the high-density area is 14,600 mg/kg. (NNSA/NSO, 2005b).

4.4 Basis for UR Modification

Although lead is still a hazard in the form of potential buried lead bricks at CAS 04-26-03, CAU 370, T-4 Atmospheric Test Site, has an FFACO UR in place for lead in the form of potential source material (e.g., lead shielding within the T-4 bunker) and for radiological dose. The UR at CAU 370 encompasses the CAU 357, CAS 04-26-03 FFACO UR. Therefore, the lead contamination at CAS 04-26-03 will be addressed by the CAU 370 UR monitoring requirements, which include annual

inspections of the UR signs and maintenance as needed (NNSA/NSO, 2009a). These modifications will not affect or modify any non-FFACO requirements at the site.

4.5 *Proposed Modification*

Although the estimated lead concentration at the high-density area is above the lead FAL for either IA or RW exposure scenarios, this FFACO UR may be removed. The associated monuments and postings may be removed, and the required annual inspections may be discontinued. The requirement for annual inspections of the UR postings at CAU 370, CAS 04-23-01 UR will remain, thereby ensuring that this area will be monitored annually.

5.0 CAU 529, CAS 25-23-17 – Contaminated Wash (Parcel H)

5.1 CAS Description

CAS 25-23-17, Contaminated Wash, is the only CAS in CAU 529 and is located in Area 25 of the NNSS. The CAS was divided into nine parcels because of the large area impacted by past operations and the complexity of the source areas. The CAS was subdivided into separate parcels based on separate and distinct releases as determined and approved in the DQO process and Corrective Action Investigation Plan (NNSA/NSO, 2003).

Parcel H, contaminated soil storage area, consists of the area west of Test Cell C within the wash and immediately south of the berm. Contaminated soil associated with the Phoebus 1A Test was stored in a pile on the floor of the wash and sprayed with oil to prevent wind erosion. The soil pile was eventually moved, and 2,340 cubic yards of contaminated soil was disposed of at the Area 3 Radioactive Waste Management Site (NNSA/NSO, 2004a).

During closure activities, a wire fence was installed around the entire area of TPH-DRO contamination with concentrations exceeding the 100 mg/kg NAC action level, and UR signs were posted (NNSA/NSO, 2004a).

5.2 Current UR Description

The future use of any land related to this CAU is restricted from any DOE or U.S. Department of Defense (DoD) activity that may alter or modify the containment control as approved by the State of Nevada and identified in the CAU CR or other CAU documentation unless appropriate concurrence is obtained in advance.

The post-closure inspections of the Parcel H UR consist of annual visual inspections. Visual inspections of the wire fence, T-posts, and signage are conducted to verify that they are intact, undisturbed, and in good condition (NNSA/NSO, 2004a).

5.3 Basis for Current UR

Surface and subsurface soil samples were analyzed for SVOCs, PCBs, TPH-DRO, beryllium, RCRA metals, gamma spectroscopy, isotopic U, and Sr-90. The analytical results at five sample locations exceeded the TPH-DRO PAL of 100 mg/kg. Although the radionuclides cesium (Cs)-137 and U-234 exceeded their respective PALs, a risk assessment was conducted to determine whether the presence of the radiological site contamination posed an unacceptable risk to human health and the environment. The radiological contamination identified in Parcel H is below the FAL for unrestricted industrial reuse for Cs-137 and U-234, and therefore does not pose an unacceptable risk. All other constituents had results below PALs. Table 5-1 contains analytical results for TPH-DRO at CAS 25-23-17 (Parcel H) that are the basis for the current UR. The sample matrix for all samples is soil.

**Table 5-1
 Sample Results for TPH-DRO at CAS 25-23-17 (Parcel H)
 Used To Establish Current UR**

Sample Location	Sample ID	Depth (ft bgs)	TPH-DRO
			PAL 100 mg/kg
H01	529H007	0.0 - 0.5	240 (H, M)
H02	529H005	0.0 - 0.5	7,900 (J) ^a
	529H006	2.0 - 3.0	260 (H, M)
H08	529H017	0.0 - 0.5	580 (H, M)
H10	529H021	1.5 - 2.0	300 (H, M)
H13	529H025	0.0 - 0.5	130 (H, M)

^aQualifier added to laboratory data; record accepted. Surrogates diluted out.

H = Fuel pattern was in the heavier end of the retention time window for the analyte of interest.

M = A pattern resembling motor oil was detected.

J = Estimated value.

The PALs for all radioisotopes, except those covered by DOE Order 5400.5 (DOE, 1993), were derived from the construction, commercial, industrial land-use scenario in Table 2.1 of the NCRP Report No. 129 (NCRP, 1999). The values provided in this source document are based on a 25-mrem/yr dose but were scaled to a 15-mrem/yr dose for this corrective action investigation.

5.4 Basis for UR Modification

The samples were analyzed only for TPH-DRO and SVOCs, but not VOCs. There are no Tier 2 FALs for TPH, and total TPH concentrations are not used for risk-based decisions under Tier 2 or Tier 3. Rather, the individual hazardous constituents of TPH (e.g., VOCs and SVOCs) are compared to the Tier 2 SSTLs; however, there were no VOC results to compare to PAL or to conduct Tier 2 evaluations.

In July 2013, samples were collected at Parcel H at the five previous sample locations and depths that had the highest TPH-DRO concentrations. These samples were analyzed for TPH-DRO, VOCs, and SVOCs. The TPH-DRO concentrations ranged from 1.8 to 24 mg/kg. The VOC and SVOC concentrations were compared to the IA EPA RSLs; none of the results exceed the RSLs, and the FALs were established at the PAL concentrations.

5.5 Proposed Modification

Remove the FFACO UR, associated wire fencing and postings, and annual inspection and maintenance requirements from this site. The previous sample locations at Parcel H with the highest TPH-DRO concentrations were resampled and analyzed for TPH-DRO, VOCs, and SVOCs; the concentrations did not exceed the FALs. These modifications will not affect or modify any non-FFACO requirements at this site.

6.0 References

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U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2003. *Corrective Action Investigation Plan for Corrective Action Unit 529: Area 25 Contaminated Materials, Nevada Test Site, Nevada*, Rev. 0, DOE/NV--870. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2004a. *Corrective Action Decision Document/Closure Report for Corrective Action Unit 529: Area 25 Contaminated Materials, Nevada Test Site, Nevada*, Rev. 1, DOE/NV--1000--REV. 1. Las Vegas, NV.

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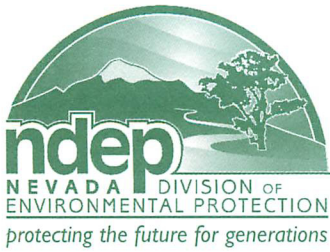
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Appendix A

Nevada Division of Environmental Protection Comments

(4 Pages)



STATE OF NEVADA

Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Administrator

August 22, 2013

Robert F. Boehlecke, Manager
Environmental Management Operations
National Nuclear Security Administration
Nevada Field Office
P. O. Box 98518
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RE: Review of Draft Recommendations and Justifications for Modifications to Downgrade Use Restrictions Established Under the U.S. Department of Energy, National Nuclear Security Administration, Nevada Field Office, *Federal Facility Agreement and Consent Order*, Revision 0, August 2013

Dear Mr. Boehlecke,

The Nevada Division of Environmental Protection, Bureau of Federal Facilities (NDEP) staff has received and reviewed the above-referenced draft document. NDEP's review of this document did not indicate any major deficiencies; however, the following comments should be addressed in the final document:

- Section 4.4: In the second paragraph, the document mentions average dose in units of picocuries per gram. This is a concentration and not a dose. Please revise this paragraph accordingly.
- Section 5.0: For CAS 22-44-01, removal of the administrative UR lifts the restriction on land use for DOE / USAF activity at this location— this site/area is contaminated with high concentrations of TPH at depths ranging from 20-140 feet below ground surface. The basis for UR Modification in Section 5.4 is ambiguous. While site-wide PALs may have been revised in the current RBCA document, justify/explain why the UR at this site can be appropriately removed, given that the subsurface is contaminated with relatively high levels of TPH.

If you have any questions regarding this matter contact me at (702) 486-2850 ext. 233.

Sincerely,

/s/ Jeff MacDougall

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



Robert F. Boehlecke

Page 2

August 22, 2013

ec: THM/TZ/JW/SP
N-I Central Files, MS NSF 156

cc: J. T. Fraher, DTRA/CXTS, Kirtland AFB, NM
NSTec Correspondence Management Coordinator, MS NLV008
T. A. Lantow, EMO, NNSA/NFO, Las Vegas, NV
FFACO Group, EMOS, NNSA/NFO, Las Vegas, NV
EM Records, AMEM, Las Vegas, NV (1 electronic, 1 hard copy)

Nevada Environmental Management Operations Activity

DOCUMENT REVIEW SHEET

1. Document Title/Number:	Draft Recommendations and Justifications for Modifications to Remove Use Restrictions Established Under the U.S. Department of Energy, National Nuclear Security Administration, Nevada Field Office, Federal Facility Agreement and Consent Order	2. Document Date:	8/14/2013
3. Revision Number:	0	4. Originator/Organization:	Navarro-INTERA
5. Responsible NNSA/NSO Activity Lead:	Tiffany A. Lantow	6. Date Comments Due:	9/13/2013
7. Review Criteria:	Full		
8. Reviewer/Organization/Phone No:	Jeff MacDougall, NDEP, 486-2850 ext. 233	9. Reviewer's Signature:	

10. Comment Number/Locatio	11. Type*	12. Comment	13. Comment Response	14. Accept
1.) Section 4.4	Mandatory	In the second paragraph, the document mentions average dose in units of picocuries per gram. This is a concentration and not a dose. Please revise this paragraph accordingly.	<p>The unit of picocuries per gram was a typo. The average dose numbers (9.3 and 5.6) in the paragraph are correct and pCi/g has been changed to mrem/IA-yr.</p> <p>After internal discussions, it was decided that rather than eliminating the FFACO UR at this CAS (CAS 05-18-02, Chemical Explosive Storage), the FFACO UR will be downgraded to an Administrative UR. Although the average TED in the entire area is 5.6 mrem/IA-yr, there is DU at this CAS and the Administrative UR will protect against an inadvertent exposure to the DU. Therefore, this section will be removed from the "Remove Use Restrictions" report, and there will not be an Addendum to the CR for CAU 204: Storage Bunkers. This CAS will be added to the "Downgrade Use Restriction" report, and an ROTC and Administrative UR form will be prepared for NDEP review.</p>	

Nevada Environmental Management Operations Activity DOCUMENT REVIEW SHEET

1. Document Title/Number:	Draft Recommendations and Justifications for Modifications to Remove Use Restrictions Established Under the U.S. Department of Energy, National Nuclear Security Administration, Nevada Field Office, Federal Facility Agreement and Consent Order	2. Document Date:	8/14/2013
3. Revision Number:	0	4. Originator/Organization:	Navarro-INTERA
5. Responsible NNSA/NSO Activity Lead:	Tiffany A. Lantow	6. Date Comments Due:	9/13/2013
7. Review Criteria:	Full		
8. Reviewer/Organization/Phone No:	Jeff MacDougall, NDEP, 486-2850 ext. 233	9. Reviewer's Signature:	

10. Comment Number/Locatio	11. Type*	12. Comment	13. Comment Response	14. Accept
2.) Section 5.0	Mandatory	For CAS 22-44-01, removal of the administrative UR lifts the restriction on land use for DOE/USAF activity at this location - this site/area is contaminated with high concentrations of TPH at depths ranging from 20-140 feet below ground surface. The basis for UR Modification in Section 5.4 is ambiguous. While site-wide PALs may have been revised in the current RBCA document, justify/explain why the UR at this site can be appropriately removed, given that the subsurface is contaminated with relatively high levels of TPH.	<p>After further consideration, the determination has been made that the Administrative UR will remain at CAS 22-44-01 so that personnel are aware of the high concentrations of TPH at depth before any intrusive work may be conducted at the site. Therefore, this section will be removed from the "Remove Use Restrictions" report, and there will not be an Addendum 2 to the Closure Report for CAU 329: Area 22 Desert Rock Airstrip Fuel Spill.</p> <p>In addition, although no comments were provided regarding CAS 23-02-08, in order to be consistent with the administrative UR at CAS 22-44-01 and to ensure that personnel are aware of the high concentrations of TPH at CAS 23-02-08, the FFACO UR at this CAS will be managed in the same manner. The FFACO UR in place at CAS 23-02-08 will be downgraded to an Administrative UR (to match the UR at CAS 22-44-01). This Administrative UR will ensure that personnel are aware of the TPH contamination before any intrusive work may be conducted in this location. Therefore, this section will be removed from the "Remove Use Restrictions" report, and there will not be an Addendum to the CADD/CR for CAU 554: Area 23 Release Site. This CAS will be added to the "Downgrade Use Restriction" report, and an ROTC and Administrative UR form will be prepared for NDEP review.</p>	

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