

Nevada
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DOE/NV--811-ADD



Addendum to the Corrective Action Decision Document/Closure Report for Corrective Action Unit 34: Area 3 Contaminated Waste Sites Nevada Test Site, Nevada

Controlled Copy No.: ____

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October 2008

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**ADDENDUM TO THE CORRECTIVE ACTION DECISION
DOCUMENT/CLOSURE REPORT
FOR CORRECTIVE ACTION UNIT 34:
AREA 3 CONTAMINATED WASTE SITES
NEVADA TEST SITE, NEVADA**

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

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Addendum to the Corrective Action Decision Document / Closure Report for Removal of the Use Restriction

This document constitutes an addendum to the April 2002, Corrective Action Decision Document/Closure Report for Corrective Action Unit 34: Area 3 Contaminated Waste Sites as described in the document *Recommendations and Justifications for Modifications for Use Restrictions Established under the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office Federal Facility Agreement and Consent Order* (UR Modification document) dated February 2008. The UR Modification document was approved by NDEP on February 26, 2008. The approval of the UR Modification document constituted approval of each of the recommended UR modifications. In conformance with the UR Modification document, this addendum consists of:

- This cover page that refers the reader to the UR Modification document for additional information
- The cover and signature pages of the UR Modification document
- The NDEP approval letter
- The corresponding section of the UR Modification document

This addendum provides the documentation justifying the cancellation of the URs for:

- CAS 03-09-06, Mud Disposal Crater
- CAS 03-09-07, Mud Pit

These URs were established as part of *Federal Facility Agreement and Consent Order* (FFACO) corrective actions and were based on the presence of contaminants at concentrations greater than the action levels established at the time of the initial investigation (FFACO, 1996; as amended August 2006).

Since these URs were established, practices and procedures relating to the implementation of risk-based corrective actions (RBCA) have changed. Therefore, these URs were re-evaluated against the current RBCA criteria as defined in the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006c). This re-evaluation consisted of comparing the original data (used to define the need for the URs) to risk-based final action levels (FALs) developed using the current Industrial Sites RBCA process.

The re-evaluation resulted in a recommendation to remove these URs because contamination is not present at these sites above the risk-based FALs. Requirements for inspecting and maintaining these URs will be canceled, and the postings and signage at each site will be removed. Fencing and posting may be present at these sites that are unrelated to the FFACO URs such as for radiological control purposes as required by the *NV/YMP Radiological Control Manual* (NNSA/NSO, 2004f). This modification will not affect or modify any non-FFACO requirements for fencing, posting, or monitoring at these sites.

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DOE/NV--1237



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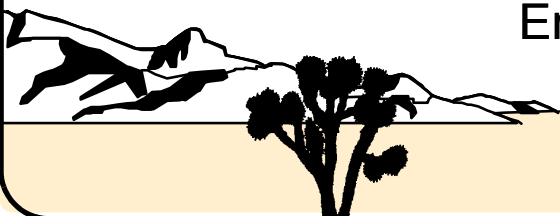
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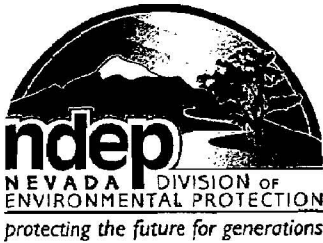
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**Recommendations and Justifications for Modifications for
Use Restrictions Established under the U.S. Department of Energy,
National Nuclear Security Administration Nevada Site Office
*Federal Facility Agreement and Consent Order***

Approved by: /s/ Kevin J. Cabble Date: 02/05/2008
Kevin J. Cabble
Federal Sub-Project Director
Industrial Sites Sub-Project

Approved by: /s/ John B. Jones Date: 02/04/2008
John B. Jones
Acting Federal Project Director
Environmental Restoration Project



STATE OF NEVADA

Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Jim Gibbons, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

February 26, 2008

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

RE: Approval of Recommendations and Justifications for Modifications for Use Restrictions
Established under the U.S. Department of Energy, National Nuclear Security
Administration, Nevada Site Office *Federal Facility Agreement and Consent Order*

Dear Mr. Jones:

The Nevada Division of Environmental Protection, Bureau of Federal Facilities (NDEP) staff has received and reviewed the February 2008 final report for Recommendations and Justifications for Modifications for Use Restrictions Established under the U.S. Department of Energy, National Nuclear Security Administration, Nevada Site Office. The NDEP approves the requested changes to the previously agreed upon use restrictions for those Corrective Action Sites (CASS) as described in the report.

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

Sincerely,

/s/ Tim Murphy

T.H. Murphy
Chief
Bureau of Federal Facilities

TZ

cc: E.F. DiSanza, WMP, NNSA/NSO
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John Wong, Jeff MacDougall, Dennis Nicodemus, NDEP Las Vegas, NV



3.0 CAU 34, CAS 03-09-06 – Mud Disposal Crater

3.1 CAS Description

The Mud Disposal Crater is located approximately 25 feet (ft) north of the Area 3 Mud Plant Building, approximately 24 miles (mi) north of Mercury, Nevada, and east of Mercury Highway on Road 3-03. The Mud Disposal Crater received drilling waste and excess mud from the mud plant. The crater is approximately 314 ft in diameter, 42 ft deep, and was created by a 1962 underground nuclear detonation called the Chinchilla test. Later in 1962, after the test, the crater was used to mix and store mud. After 1962, the crater was used for disposal; receiving waste from Baker tanks, vacuum trucks, and the mud plant. The Mud Disposal Crater also received wastewater from the mud plant floor drains and from cleaning and flushing of mix tanks. The crater received exotic mud mixtures, including asbestos and chromate muds, used for experimentation at the mud plant between 1970 and 1972. Sometime between 1992 and 1994, the disposal of used mud and wastewater ceased (DOE/NV, 2001a).

3.2 Current Use Restriction Description

The future use of any land affected by this UR is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the Corrective Action Unit (CAU) CR or other CAU documentation unless appropriate concurrence is obtained in advance. There are no annual monitoring or inspection requirements associated with the UR (NNSA/NV, 2002b).

3.3 Basis for Current Use Restriction

Samples were analyzed for TPH diesel-range organics (DRO), total VOCs, total SVOCs, total RCRA metals, polychlorinated biphenyls (PCBs), isotopic uranium (U), isotopic plutonium (Pu), strontium (Sr)-90, americium (Am)-241, and gamma spectroscopy. The analytical results for soil samples collected at the Mud Disposal Crater indicated the presence of TPH (DRO) contamination exceeding the NDEP action level of 100 milligrams per kilogram (mg/kg) at five locations. No VOCs or SVOCs were detected above PALs. Arsenic was detected above the PAL of 2.7 mg/kg in 25 of the 30 samples analyzed, but all concentrations were within the range considered representative of ambient conditions at the site. Therefore, arsenic is not considered to be a basis for this UR. The radionuclides Am-241, U-235, Pu-238, and Pu-239/240 exceeded their respective PALs. The PALs for the radionuclides were established in the Corrective Action

Investigation Plan (CAIP) as any activity distinguishable from undisturbed background activity (DOE/NV, 2001a).

Table 3-1 contains analytical results of all COCs at CAS 03-09-06 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 03-09-06
Used To Establish Current Use Restriction

Sample ID	Depth (ft bgs)	TPH (DRO)	Am-241	U-235	Pu-238	Pu-239/240
		PAL 100 mg/kg	PAL 0.05 pCi/g	PAL 0.07 pCi/g	PAL 0.05 pCi/g	PAL 0.106 pCi/g
DC0101	1 - 2	--	0.94 ± 0.17	--	0.113 ± 0.039	5.97 ± 0.85
DC0205	5 - 7	180	--	--	--	--
DC0208	8 - 10	--	0.94 ± 0.18	--	0.085 ± 0.034	7 ± 1.0
DC0300	0 - 0.5	110	--	--	--	--
DC0606	6.5 - 7.5	--	0.81 ± 0.16	--	0.139 ± 0.045	6.61 ± 0.95
DC0799	1 - 6	190	--	--	--	--
DC0911	11.5 - 12.5	--	0.97 ± 0.18	--	0.078 ± 0.032	7.1 ± 1.0
DC1102	2.5 - 3.5	5,300 (J)	--	--	--	--
DC1104	4.5 - 5.5	8,000 (J)	--	--	--	--
DC1211	11 - 13	--	0.255 ± 0.069	--	--	1.65 ± 0.27
DC0799	1 - 6	--	0.07 ± 0.025 (J)	0.145 ± 0.052	--	0.38 ± 0.086

Am = Americium
bgs = Below ground surface
DRO = Diesel-range organics
ft = Foot
ID = Identification
J = Estimated value
-- = No detects above action levels

mg/kg = Milligrams per kilogram
PAL = Preliminary action level
pCi/g = Picocuries per gram
Pu = Plutonium
TPH = Total petroleum hydrocarbons
U = Uranium

3.4 Basis for Use Restriction Modification

The revised FALs for radionuclides listed in Table 3-2 were established based on the PALs presented in Section 2.2.1. The revised FALs associated with the TPH contamination were established based on the PALs of the hazardous constituents of TPH (DRO) described in Section 2.2.2. Hazardous constituents of TPH were not detected in any of the samples at concentrations greater than their respective PALs (DOE/NV, 2001a). Therefore, no contaminants are present at this site in concentrations exceeding the revised FALs. All revised FALs were established at the PAL concentrations.

Table 3-2 presents the sample results that are the basis for the current UR and demonstrate that no results exceed the revised FALs.

Table 3-2
Revised Final Action Levels for CAS 03-09-06

Sample ID	Depth (ft bgs)	Am-241	U-235	Pu-238	Pu-239
		Revised FAL 12.7 pCi/g	Revised FAL 17.6 pCi/g	Revised FAL 13 pCi/g	Revised FAL 12.7 pCi/g
DC0101	1 - 2	0.94 ± 0.17	--	0.113 ± 0.039	5.97 ± 0.85
DC0208	8 - 10	0.94 ± 0.18	--	0.085 ± 0.034	7 ± 1.0
DC0606	6.5 - 7.5	0.81 ± 0.16	--	0.139 ± 0.045	6.61 ± 0.95
DC0911	11.5 - 12.5	0.97 ± 0.18	--	0.078 ± 0.032	7.1 ± 1.0
DC1211	11 - 13	0.255 ± 0.069	--	--	1.65 ± 0.27
DC0799	1 - 6	0.07 ± 0.025 (J)	0.145 ± 0.052	--	0.38 ± 0.086

Am = Americium
bgs = Below ground surface
FAL = Final action level
ft = Foot

ID = Identification
pCi/g = Picocuries per gram
Pu = Plutonium
U = Uranium

J = Estimated value
-- = No detects above original action levels

3.5 Proposed Modification

Remove the FFACO UR and associated fencing and postings from this CAS.

4.0 CAU 34, CAS 03-09-07 – Mud Pit

4.1 CAS Description

Corrective Action Site 03-09-07, Mud Pit, is located south of the Area 3 camp and north of the U3gd crater. The Mud Pit possibly received pre- and post-test drill waste and drill yard waste. The site consists of a mud pit approximately 315 by 245 ft with an approximate 100-by-40-ft internal bermed area at the northeast corner of the large pit. The interior bermed area was used for disposal of excess mud from washing drilling equipment, specifically Baker and Shaker tanks. The mud pit was used for disposal from 1968 to sometime before 1974, at which time the U3ag crater (CAS 03-09-06) was used for excess mud disposal. The mud pit is currently inactive (DOE/NV, 2001a).

4.2 Current Use Restriction Description

The future use of any land affected by this UR is restricted from any DOE or Air Force activity that may alter or modify the containment control, as approved by the state and identified in the CAU CR or other CAU documentation, unless appropriate concurrence is obtained in advance. There are no annual monitoring or inspection requirements associated with the UR (NNSA/NV, 2002b).

4.3 Basis for Current Use Restriction

Samples were analyzed for TPH (DRO), total VOCs, total SVOCs, total RCRA metals, PCBs, isotopic U, isotopic Pu, Sr-90, Am-241, and gamma spectroscopy. No VOCs or SVOCs were detected above PALs. The analytical results for soil samples collected at the Mud Pit indicated the presence of TPH (DRO) contamination exceeding the NDEP action level of 100 mg/kg at 12 locations, and the presence of TPH gasoline-range organics (GRO) contamination exceeding the NDEP action level of 100 mg/kg at one location. Arsenic was detected above the PAL of 2.7 mg/kg in 44 of the 46 samples analyzed, but all concentrations were within the range considered representative of ambient conditions at the site. Therefore, arsenic is not considered to be a basis for this UR. The radionuclides Am-241, europium (Eu)-152, U-235, Pu-238, and Pu-239/240 exceeded their respective PALs. The PALs for the radionuclides were established in the CAIP as any activity distinguishable from undisturbed background activity (DOE/NV, 2001a).

Table 4-1 contains analytical results of all COCs at CAS 03-09-07 that are the basis for the current UR. The sample matrix for all samples is soil.

Table 4-1
Sample Results for COCs at CAS 03-09-07
Used To Establish Current Use Restriction
(Page 1 of 2)

Sample ID	Depth (ft bgs)	TPH (DRO)	TPH (GRO)	Am-241	Eu-152	U-235	Pu-238	Pu-239/240
		PAL 100 mg/kg	PAL 100 mg/kg	PAL 0.05 pCi/g	PAL Not Identified	PAL 0.07 pCi/g	PAL 0.05 pCi/g	PAL 0.106 pCi/g
MP0108	8 - 10	--	--	--	1.25 ± 0.48 (J)	--	--	--
MP0500	0 - 0.5	--	--	--	6.1 ± 1.2	--	--	--
MP0507	7.5 - 9.5	140	--	--	--	--	--	--
MP0600	0 - 1	--	--	0.212 ± 0.066 (J)	1.97 ± 0.48	0.079 ± 0.036	0.193 ± 0.053	1.16 ± 0.19
MP0601	1 - 3	48,000 (J)	1,800	--	--	--	--	--
MP0703	3 - 5	11,000 (J)	--	--	--	--	--	--
MP0800	0 - 0.5	--	--	2.00 ± 0.72	--	--	--	0.43 ± 0.09
MP0808	8 - 10	2,300	--	--	--	--	--	--
MP0900	0 - 1	--	--	0.125 ± 0.032 (J)	1.26 ± 0.45 (J)	0.072 ± 0.038	--	0.18 ± 0.05
MP1001	1 - 3	290	--	--	--	--	--	--
MP1103	3 - 5	930	--	--	--	--	--	--
MP1200	0 - 1	210	--	0.066 ± 0.022 (J)	--	--	--	0.37 ± 0.08
MP1203	3 - 5	130	--	--	--	--	--	--
MP1400	0 - 0.5	--	--	--	2.61 ± 0.62	0.103 ± 0.041	--	0.29 ± 0.08
MP1401	1 - 3	1,700	--	--	2.77 ± 0.65	--	--	--
MP1499	0 - 0.5	--	--	--	2.55 ± 0.64	--	--	--
MP1504	4 - 6	5,300	--	--	--	--	--	--
MP1601	1 - 3	3,300	--	--	1.72 ± 0.59 (J)	--	--	--
MP1603	3 - 5	200	--	--	1.95 ± 0.58	--	--	--
MP1708	8 - 10	--	--	--	3.95 ± 0.91	--	--	--

Table 4-1
Sample Results for COCs at CAS 03-09-07
Used To Establish Current Use Restriction
(Page 2 of 2)

Sample ID	Depth (ft bgs)	TPH (DRO)	TPH (GRO)	Am-241	Eu-152	U-235	Pu-238	Pu-239
		PAL 100 mg/kg	PAL 100 mg/kg	PAL 0.05 pCi/g	PAL Not Identified	PAL 0.07 pCi/g	PAL 0.05 pCi/g	PAL 0.106 pCi/g
MP1711	11 - 13	--	--	--	2.85 ± 0.63	--	--	--
MP1907	7 - 9	--	--	0.96 ± 0.39	--	--	--	0.19 ± 0.055
MP2004	4 - 6	--	--	--	1.75 ± 0.52	--	--	--

Am = Americium
bgs = Below ground surface
DRO = Diesel-range organics
Eu = Europium
ft = Foot
GRO = Gasoline-range organics
ID = Identification

mg/kg = Milligrams per kilogram
PAL = Preliminary action level
pCi/g = Picocuries per gram
Pu = Plutonium
TPH = Total petroleum hydrocarbons
U = Uranium

J = Estimated value
-- = No detects above action levels

4.4 Basis for Use Restriction Modification

The revised FALs for radionuclides other than Eu-152 listed in Table 4-2 were established based on the PALs presented in Section 2.2.1. The revised FAL for Eu-152 was established based on a site-specific RESRAD calculation of a 25 mrem/yr dose under an industrial scenario (see Section 2.2.2) as prescribed in *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006c).

The revised FALs associated with the TPH contamination were established based on the PALs of hazardous constituents of TPH diesel and TPH gasoline described in Section 2.2.2. Hazardous constituents of TPH diesel and TPH gasoline were not detected in any of the samples at concentrations greater than their respective PALs (DOE/NV, 2001a). Therefore, no contaminants are present at this site in concentrations exceeding the revised FALs. All revised FALs other than Eu-152 were established at the PAL concentrations.

Table 4-2 presents the sample results with the revised FALs and demonstrate that none exceed the revised FALs.

Table 4-2
Revised Final Action Levels for CAS 03-09-07

Sample ID	Depth (ft bgs)	Am-241	Eu-152	U-235	Pu-238	Pu-239
		Revised FAL 12.7 pCi/g	Revised FAL 62.6 pCi/g	Revised FAL 17.6 pCi/g	Revised FAL 13 pCi/g	Revised FAL 12.7 pCi/g
MP0108	8 - 10	--	1.25 ± 0.48 (J)	--	--	--
MP0500	0 - 0.5	--	6.1 ± 1.2	--	--	--
MP0600	0 - 1	0.212 ± 0.066 (J)	1.97 ± 0.48	0.079 ± 0.036	0.193 ± 0.053	1.16 ± 0.19
MP0800	0 - 0.5	2.00 ± 0.72	--	--	--	0.43 ± 0.09
MP0900	0 - 1	0.125 ± 0.032 (J)	1.26 ± 0.45 (J)	0.072 ± 0.038	--	0.18 ± 0.05
MP1200	0 - 1	0.066 ± 0.022 (J)	--	--	--	0.37 ± 0.08
MP1400	0 - 0.5	--	2.61 ± 0.62	0.103 ± 0.041	--	0.29 ± 0.08
MP1401	1 - 3	--	2.77 ± 0.65	--	--	--
MP1499	0 - 0.5	--	2.55 ± 0.64	--	--	--
MP1601	1 - 3	--	1.72 ± 0.59 (J)	--	--	--
MP1603	3 - 5	--	1.95 ± 0.58	--	--	--
MP1708	8 - 10	--	3.95 ± 0.91	--	--	--
MP1711	11 - 13	--	2.85 ± 0.63	--	--	--
MP1907	7 - 9	0.96 ± 0.39	--	--	--	0.19 ± 0.055
MP2004	4 - 6	--	1.75 ± 0.52	--	--	--

Am = Americium
bgs = Below ground surface
Eu = Europium
FAL = Final action level
ft = Foot

J = Estimated value
-- = No detects above original action levels

ID = Identification
pCi/g = Picocuries per gram
Pu = Plutonium
U = Uranium

4.5 Proposed Modification

Remove the FFACO UR and associated fencing and/or postings from this site.

References

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

FFACO, see *Federal Facility Agreement and Consent Order*.

Federal Facility Agreement and Consent Order. 1996 (as amended). Agreed to by the State of Nevada; U.S. Department of Energy, Environmental Management; U.S. Department of Defense; and U.S. Department of Energy, Legacy Management.

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

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

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