Nevada
Environmental
Restoration
Project

DOE/NV--531-Rev. 0-ADD

Addendum to the Corrective Action Investigation Plan for Corrective Action Unit 321: Area 22 Weather Station Fuel Storage, Nevada Test Site, Nevada

Controlled Copy No.: ____
Addendum Revision No.: 0

November 2000

Approved for public release; further dissemination unlimited.

Environmental Restoration
Division

U.S. Department of Energy
Nevada Operations Office

RECORD OF TECHNICAL CHANGE

Technical Change No. 1

Project/Job No. 799417.01020010

Project/Job Name Industrial Sites/ Addendum to the CAIP for CAU 321

UNCONTROLLED

Page 1 of 2

Date 2-12-01

The following technical changes (including justification) are requested by:

Jeffrey Johnson

(Name)

Task Manager

(Title)

Technical Change:

Modify Section 2.2.1 *Field Screening Levels*

Change second bullet to read:

- Total petroleum hydrocarbon is 100 ppm using the PetroFLAG kit and/or the siteLAB UVF test kit.

Add Section 3.1.2.1 as follows:

"3.1.2.1 Additional Soil Sampling"

Following the initial rotary-sonic drilling investigation, additional investigation activities at CAU 321 will be as follows:

- Rotary-sonic drilling will be used to drill additional boreholes within the fuel storage area. The borehole locations will be in the areas of highest suspected contamination as indicated by field screening with a PetroFLAG test kit during remediation activities. Soil samples will be collected for field screening and laboratory analysis.
- The vertical extent of contamination will be determined; maximum depth is expected to be limited to 20 ft bgs. The sample frequency will be at 5-ft intervals. The bottom of the excavation created during remediation activities was approximately 16 ft bgs. The first sample will be collected at 0 to 1 ft bgs. The drilling will continue until two samples are collected with field-screening results less than FSLs to a maximum depth of 50 ft bgs. If the contamination extends beyond 50 ft bgs, DOE/NV and NDEP will be notified and a determination for additional drilling requirements will be made. If all field-screening results are less than FSLs within a borehole, drilling will continue to a minimum depth of 20 ft bgs.
- Soil samples will be field screened for the following:
 - Volatile organic compounds using a photoionization detector at 5-ft intervals.
 - Total petroleum hydrocarbons using the siteLAB UVF and/or PetroFLAG test kits at 5-ft intervals.

- At each sample depth where the COPC is above the FSLs, the following will apply:
 - Continue field screening to the next depth interval. If field-screening results are less than FSLs at a target depth, continue drilling an additional 5 ft; resample and field screen until two consecutive samples are below FSLs. Additional depths may be field screened at the discretion of the Site Supervisor. If all field-screening results are less than FSLs, drilling will continue to a minimum depth of 20 ft bgs.
 - Submit a minimum of two samples from each borehole for laboratory analysis: the sample with the highest field-screening result and the first of two samples with results less than FSLs. If all field-screening results are less than FSLs, the sample collected from the bottom of the borehole and an additional sample, selected by the Site Supervisor, will be submitted for laboratory analysis."
- Boreholes to determine the lateral extent of contamination will be drilled as shown on Figure 3-2."

Insert the attached Figure 3-2 immediately following Figure 3-1

Justification:

Data collected during the January 2001 ITLV Field Investigation have demonstrated that additional sampling is required to select a preferred correction action alternative at this Corrective Action Unit. Additional sample locations will facilitate the vertical and lateral delineation of the petroleum hydrocarbon contamination at this site. These additional data are necessary to ensure that the site is adequately characterized.

The project time will be (Increased)(Decreased)(Unchanged) by approximately 0 days

Applicable Project-Specific Document(s): *Addendum to the Corrective Action Investigation Plan for Corrective Action Unit 321: Area 22 Weather Station Fuel Storage, Nevada Test Site, Nevada, Addendum Rev. 0, November 2000; DOE/NV-531-Rev. 0-ADD.*

cc:

Approved By:

Janet Appenzeller-Wing Date 2/12/01
 Janet Appenzeller-Wing, Project Manager
 Industrial Sites Project

Runore C. Wycoff Date 2/12/01
 Runore C. Wycoff, Division Director
 Environmental Restoration Division

Client Notified Yes X No Date
 NDEP Concurrence Yes No Date
 Contract Change Order Required Yes No X
 Contract Change Order No. N/A

Figure 3-2
February 2001 Soil Sample Locations for the CAU 321 Fuel Storage Area

- At each sample depth where the COPC is above the FSLs, the following will apply:

- Continue field screening to the next depth interval. If field-screening results are less than FSLs at a target depth, continue drilling an additional 3 ft; resample and field screen until two consecutive samples are below FSLs. Additional depths may be field screened at the discretion of the Site Supervisor. If all field-screening results are less than FSLs, drilling will continue to a minimum depth of 20 ft bgs.
- Submit a minimum of two samples from each borehole for laboratory analysis: the sample with the highest field-screening result and the first of two samples with results less than FSLs. If all field-screening results are less than FSLs, the sample collected from the bottom of the borehole and an additional sample, selected by the Site Supervisor, will be submitted for laboratory analysis."

- Boreholes to determine the lateral extent of contamination will be drilled as shown on Figure 3-2."

Insert the attached Figure 3-2 immediately following Figure 3-1

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cc:

Approved By:

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Rumors C. Wycott, Division Director
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Client Notified Yes ☒ No ☐ Date 2/14/01

NDEP Concurrence Yes ☒ No ☐ Date 2/14/01

Contract Change Order Required Yes ☐ No ☒

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**ADDENDUM TO THE CORRECTIVE ACTION
INVESTIGATION PLAN
FOR CORRECTIVE ACTION UNIT 321:
AREA 22 WEATHER STATION FUEL STORAGE,
NEVADA TEST SITE, NEVADA**

DOE Nevada Operations Office
Las Vegas, Nevada

Controlled Copy No.: ____

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November 2000

Approved for public release; further dissemination unlimited.

**ADDENDUM TO THE CORRECTIVE ACTION INVESTIGATION PLAN
FOR CORRECTIVE ACTION UNIT 321:
AREA 22 WEATHER STATION FUEL STORAGE,
NEVADA TEST SITE, NEVADA**

Approved by: _____ Date: _____

Janet Appenzeller-Wing, Project Manager
Industrial Sites Project

Approved by: _____ Date: _____

Runore C. Wycoff, Division Director
Environmental Restoration Division

Preface

This document is an addendum to the Corrective Action Investigation Plan for CAU 321, Area 22 Weather Station Fuel Storage, CAS 22-99-05, Fuel Storage Area. This addendum contains the environmental sample collection objectives and the criteria for conducting additional site investigation activities.

Remedial activities were conducted at CAU 321 as set forth in the *Corrective Action Plan for Corrective Action Unit 321: Area 22 Weather Station Fuel Storage, Nevada Test Site, Nye County, Nevada*. These activities revealed that the extent of contamination was much greater than originally estimated in the *Corrective Action Decision Document for Corrective Action Unit 321: Area 22 Weather Station Fuel Storage, Nevada Test Site, Nye County, Nevada*. This addendum has been developed to determine the extent of contamination at the site beyond what was originally estimated.

Table of Contents

Preface	i
List of Figures	iii
1.0 Introduction	1
1.1 Purpose	1
1.2 Scope	1
2.0 Objectives	5
2.1 Contaminant of Potential Concern	5
2.2 Preliminary Action Levels	5
2.2.1 Field-Screening Levels	5
2.2.2 Chemical Preliminary Action Levels	5
3.0 Field Investigation	6
3.1 Sampling Strategy	6
3.1.1 Sampling Locations	7
3.1.2 Soil Sampling	7
3.1.3 Field Screening and Field Surveys	9
3.1.4 Sample Selection for Laboratory Analyses	9
3.2 Sample Collection and Decontamination Procedures	10
3.2.1 Quality Control Samples	10
4.0 Waste Management	11
4.1 Waste Minimization	11
4.2 Potential Waste Streams	11
4.3 Investigation-Derived Waste Management	12
4.3.1 Sanitary Waste	12
4.3.2 Hydrocarbon Waste	12
4.3.3 Hazardous Waste	13
4.3.4 Mixed Waste Management	14
5.0 Duration and Records Availability	15
5.1 Duration	15
5.2 Records Availability	15
6.0 References	16

List of Figures

Number	Title	Page
1-1	Nevada Test Site and CAU 321 Fuel Storage Area Location Map, Nevada.	2
1-2	CAU 321 Fuel Storage Area Location Map, Nevada Test Site.	3
3-1	Soil Sampling Locations for the CAU 321 Fuel Storage Area	8

1.0 Introduction

This Addendum to the CAIP has been developed to address contamination at the CAU 321, Area 22 Weather Station Fuel Storage, CAS 22-99-05 Fuel Storage Area. This addendum contains the environmental sample collection objectives and the criteria for conducting site investigation activities. For purposes of this discussion, this site will be referred to as either CAU 321 or the Fuel Storage Area.

The Fuel Storage Area is located in Area 22 of the NTS. The NTS is approximately 105 km (65 mi) northwest of Las Vegas, Nevada (Figure 1-1) (DOE/NV, 1996a). The Fuel Storage Area (Figure 1-2) was used to store fuel and other petroleum products necessary for motorized operations at the historic Camp Desert Rock facility which was operational from 1951 to 1958 at the NTS. The site was dismantled after 1958 (DOE/NV, 1996a).

1.1 Purpose

This CAIP presents a plan to investigate the Fuel Storage Area. The purpose of the corrective action investigation described in this CAIP is to:

- Determine the vertical and lateral extent of the COPC.
- Provide sufficient information and data to determine the need for and develop and evaluate appropriate corrective actions for the Fuel Storage Area.

1.2 Scope

Existing information regarding the extent of contamination is insufficient to evaluate and select preferred corrective actions for this site. Therefore, the scope of the corrective action investigation for the Fuel Storage Area includes the following tasks:

- Biased sample locations will be selected to determine vertical and lateral extent of contamination.
 - Collect soil samples using rotary sonic drilling.

Figure 1-1
Nevada Test Site and CAU 321 Fuel Storage Area Location Map, Nevada

Figure 1-2
CAU 321 Fuel Storage Area Location Map, Nevada Test Site

- Utilize field-screening methods to determine the presence of the COPC and guide the investigation.
- Determine the extent of the COPC.
 - Identify the concentrations of the COPC through field and laboratory analytical methods and techniques.
 - If the COPC is found above field-screening or preliminary action levels, then the lateral and vertical extent will be determined through additional sampling as needed.

2.0 Objectives

2.1 Contaminant of Potential Concern

Based on process knowledge from previous investigations at the site TPH (diesel range) is the COPC at this site.

2.2 Preliminary Action Levels

The FSLs for on-site field-screening methods and PALs for off-site laboratory analytical results will be used to determine the presence of contamination.

2.2.1 Field-Screening Levels

The following FSLs will be used for on-site field-screening/surveying methods:

- Volatile organic compounds headspace is 20 ppm or 2.5 times background, whichever is greater, using a photoionization detector.
- Total petroleum hydrocarbons is 100 ppm using the PetroFLAG kit.

Concentrations exceeding FSLs will indicate potential contamination at that particular sample location. This information will be documented, and the investigation will be continued to delineate the extent of the contamination as necessary. Additionally, these field-screening data will be used to select discretionary samples to be submitted to the laboratory.

2.2.2 Chemical Preliminary Action Levels

Off-site laboratory analytical results will be compared to the following PALs to evaluate the need for possible corrective actions:

- The TPH concentration of 100 mg/kg per the NAC 445A.2272 (NAC, 1997)

Laboratory results will be compared to PALs in the CADD. Laboratory results above PALs indicate the presence of the COPC at levels that may require corrective action. The evaluation of potential corrective actions and the justification for a preferred action will be included in the CADD based on the results of this field investigation.

3.0 Field Investigation

This section of the CAIP contains the sampling approach for investigating the Fuel Storage Area. All sampling activities will be conducted in compliance with the Industrial Sites QAPP (DOE/NV, 1996b) and other applicable, approved procedures. Quality assurance and quality control requirements for field and laboratory environmental sampling are also contained in the Industrial Sites QAPP (DOE/NV, 1996b). Biased sampling locations will be selected at potential worst case areas and step-out locations. Field-screening techniques will be the primary investigation tool for determining if the COPC is present. Subsequent laboratory analyses will also be conducted for confirmation and verification of the field-screening results.

Field activities will be performed in accordance with an approved SSHASP which concurs with the DOE *Integrated Safety Management System* (DOE, 1996). Safety, health, and protection of workers and the environment take precedence over expediency and shortcuts. Site personnel will take every reasonable step to reduce the possibility of injury, illness, or accidents, and to protect the environment during all project activities. The following safety issues will be included and discussed in the SSHASP:

- Expected site hazards
- Personnel training to mitigate expected site hazards
- Engineering controls to mitigate site hazards, when feasible
- Work controls to reduce site hazards
- Monitoring will be performed for VOCs in order to minimize and/or control personnel exposures. Exposures will be kept as low as reasonably achievable.
- Emergency communication procedures

3.1 Sampling Strategy

The sampling investigation for CAU 321 is described in the following sections.

3.1.1 Sampling Locations

Biased sampling locations ([Figure 3-1](#)) will be selected for soil sampling at the Fuel Storage Area. The previous corrective action investigation and remedial activities have identified the presence of TPH contaminated soil in excess of State of Nevada action levels. The vertical and lateral extent of contamination will be determined using rotary-sonic drilling.

3.1.2 Soil Sampling

The investigation activities of CAU 321 will be as follows:

- Rotary-sonic drilling will be used to drill a borehole within the former excavation area. The borehole location will be in the approximate location where the highest contamination levels were identified during remedial activities. Soil samples will be collected for field screening and laboratory analyses.
- The vertical extent of contamination will be determined; maximum depth is expected to be limited to 50 ft bgs. The sample frequency will be at 10-ft intervals. The bottom of the excavation was approximately 16 ft bgs. The first sample will be collected at 20 ft bgs assumed to be from native material that was not disturbed during the remediation activities. The drilling will continue until two samples are collected with field-screening results less than FSLs or until a maximum depth of 50 ft bgs. If the contamination extends beyond 50 ft bgs, DOE/NV and NDEP will be notified and a determination for additional drilling requirements will be made.
- Boreholes to determine the lateral extent of contamination will be drilled as shown on [Figure 3-1](#). These boreholes will be drilled to the same maximum depth as the borehole in the center of the excavation.
- Field screen soil samples for the following:
 - Volatile organic compounds using a photoionization detector at 10-ft intervals.
 - Total petroleum hydrocarbons using the PetroFLAG test kit at 10-ft intervals.
- At each sample depth where the COPC is above the FSLs, the following will apply:
 - Continue field screening to the next depth. If field-screening results are less than FSLs at a target depth, continue drilling an additional 10 ft; resample and field screen until two consecutive samples are below FSLs or until a maximum depth of 50 ft. Additional depths may be field screened at the discretion of the Site Supervisor.

Figure 3-1
Soil Sampling Locations for the CAU 321 Fuel Storage Area

- Submit a minimum of two samples for laboratory analysis: the sample with the highest field-screening result and the first of two samples with results less than FSLs.
- If the COPC is below the field-screening results for all samples in a borehole, a minimum of two samples will be submitted for laboratory analyses. The samples will be selected based on FSLs, visual indicators, or as determined by the Site Supervisor. One of the selected samples will be from the maximum depth.
- Additional samples may be collected and submitted for analyses at the discretion of the Site Supervisor.
- Perform laboratory analyses for TPH as diesel-range organics.

3.1.3 Field Screening and Field Surveys

Field screening is considered an important part of the investigation for determining if the COPC is present and will be conducted at all sample locations. The PetroFLAG kit will be used to screen for TPH and a photoionization detector will be used to field screen for VOCs.

Field-screening data will serve three purposes. First, these data will provide semiquantitative measurement of the soil conditions. Second, these data will provide a mechanism for guiding the investigation. Third, these data will be used to aid in the selection of samples to be submitted for laboratory analysis.

3.1.4 Sample Selection for Laboratory Analyses

At each borehole location where field-screening results are above the FSLs, the sample with the highest field-screening result will be sent to the laboratory for analyses. Also from this sample location, the first sample of the two-consecutive samples with field-screening results below FSLs (see [Section 3.1.2](#)) collected below the sample interval with the highest field-screening result will be sent to the laboratory for analyses. Additional samples may be selected and sent to the laboratory for analyses at the discretion of the Site Supervisor. Samples selected for laboratory analysis will be analyzed for TPH diesel-range organics.

3.2 Sample Collection and Decontamination Procedures

All samples, including QA/QC samples, will be collected in accordance with approved procedures and the Industrial Sites QAPP (DOE/NV, 1996b). Records will be kept of the soil description, field-screening measurements, and all other relevant data. All pertinent and required sampling information (i.e., date, time, sample interval) will be documented. All samples will be accompanied by the appropriate chain of custody documentation to ensure the defensibility of these data.

All equipment that contacts the soil will be decontaminated between samples in accordance with approved procedures to minimize the potential for cross-contamination between samples.

3.2.1 Quality Control Samples

Quality control samples will be collected as required by the Industrial Sites QAPP (DOE/NV, 1996b). These samples will include equipment blanks, field blanks, field duplicates, and MS/MSD samples. The QC samples will be collected according to the QAPP and approved procedures. Additional QC samples may be submitted at the discretion of the Site Supervisor.

4.0 Waste Management

Management of investigation-derived waste (IDW) will be based on regulatory requirements, field observations, process knowledge, and the results of laboratory analysis of the fuel storage area investigation samples.

There is no process knowledge that indicates that any “listed” hazardous waste was disposed at this site. Therefore, if hazardous waste constituents are present, they will be considered “characteristic” rather than “listed.”

Sanitary, low-level, hydrocarbon, hazardous, and mixed waste (if generated) will be managed and disposed of in accordance with DOE Orders, DOT regulations, RCRA regulations, *Nevada Revised Statutes*, and agreements and permits between the DOE and NDEP.

4.1 Waste Minimization

Corrective action investigation activities have been planned to minimize IDW generation.

Decontamination activities will only use as much water as necessary to decontaminate equipment and personnel and at the same time minimize the amount of rinsate generated. Waste, such as disposable sampling equipment, decontamination rinsate, and PPE will be segregated to the greatest extent possible to minimize the generation of any waste.

4.2 Potential Waste Streams

Historical records and process knowledge indicate that the Fuel Storage Area was used to store petroleum fuels. The COPC at this site, if present, would be related to petroleum products (see [Section 2.1](#)). Waste generated during the investigation activities will include but is not limited to the following:

- Potentially contaminated disposable sampling equipment (such as plastic, paper, sample containers, aluminum foil, spoons, scoops, and bowls) and PPE
- Decontamination rinsate
- PetroFLAG kit waste (methanol, water/soil mixture, and contaminated PPE)

The waste will be managed in three distinct waste streams; additional segregation will occur within each waste stream based on sample location. Waste will be traceable to its source and to individual samples; this information will be recorded in the waste management logbook. Excess soil may be returned to the sample location and will be addressed through the CADD and corrective action process.

4.3 Investigation-Derived Waste Management

Management requirements for sanitary, low-level, hydrocarbon, hazardous, and mixed waste are discussed further in the following sections. Soil and IDW generated by sampling activities will be managed as potentially hazardous waste until laboratory results indicate either the presence or absence of RCRA regulated constituents.

Waste associated with the PetroFLAG kit will be managed as hazardous waste upon generation. Additional waste that is generated is classified as contaminated waste only by virtue of contact with potentially contaminated media. Therefore, direct sampling of the IDW stream will not be required. The data generated as a result of site characterization and process knowledge will be used to assign the appropriate waste type (i.e., sanitary, low-level, hydrocarbon, hazardous, mixed) to the IDW.

4.3.1 Sanitary Waste

Sanitary wastes not directly associated with sampling activities typically consist of plastic, food, and paper products. This waste will be contained in plastic bags and will be transported to an approved solid waste management unit.

4.3.2 Hydrocarbon Waste

The action level for soil contaminated with hydrocarbons is 100 mg/kg in the State of Nevada (NAC, 1997). Soils and associated IDW with TPH levels above 100 mg/kg which contain RCRA regulated constituents below regulatory limits shall be managed as hydrocarbon waste and shall be disposed of in accordance with all applicable regulations in a hydrocarbon landfill.

4.3.3 Hazardous Waste

Hazardous waste will be managed in accordance with RCRA and State of Nevada hazardous waste management regulations, interpreted as follows. Suspected hazardous waste will be placed in 55-gallon drums that meet DOT specifications 49 CFR 172 (CFR, 1998j) which will be locked or fitted with TIDs. The IDW containers will comply with 40 CFR 265.1087 (CFR, 1998i) and shall be compatible with the waste (CFR, 1998e). No incompatible waste are expected to be generated; however, if incompatible waste is encountered in the field, it will be managed in accordance with 40 CFR 265.177 (CFR, 1998h) (i.e., shall not be placed in the same container and shall be separated so that in the event of a spill, leak, or release, incompatible wastes shall not contact one another). Drums shall be handled and inspected in accordance with the requirements of 40 CFR 265.173 and 174, respectively (CFR, 1998f; CFR, 1998g).

Hazardous waste will be characterized in accordance with the requirements of 40 CFR 261 (CFR, 1998a). Characterization will be based on analytical results and process knowledge (CFR, 1998b). Drums containing IDW pending characterization will be marked with the words "Hazardous Waste Pending Analysis" until its regulatory status can be determined through interpretation and evaluation of laboratory results. The IDW shall be traceable to its source and/or samples considered analogous to the IDW (such as PPE associated with a sample). Traceability shall be maintained by assigning unique waste tracking numbers to each container and by maintaining records that trace the IDW back to the samples. After receipt of analytical results and if hazardous waste is identified, it will be labeled and marked in accordance with the requirements of 40 CFR 262.32 (CFR, 1998c) and State of Nevada requirements.

Hazardous waste management methods including the establishment of satellite accumulation areas or a 90-day HWAA will be employed to temporarily accumulate IDW pending characterization. These methods will be appropriate for the amount of waste being accumulated and in compliance with applicable State of Nevada and federal requirements.

Suspected hazardous waste temporarily stored in a 90-day HWAA will be accumulated at or near the site of generation in accordance with 40 CFR 262.34 (CFR, 1998d). Prior to or on the ninetieth day of accumulation, hazardous waste will be shipped by a licensed/permitted hazardous waste transporter to a permitted treatment storage and disposal facility. If hazardous waste must remain

on-site for longer than 90 days due to unforeseen, temporary, and uncontrollable circumstances, a letter requesting an extension for up to 30 days will be sent to the NDEP in accordance with 40 CFR Part 262.34(b) (CFR, 1998d). A copy of the uniform hazardous waste manifest shall be provided to the State of Nevada.

4.3.4 Mixed Waste Management

No mixed waste is expected to be generated at this site. However, if mixed waste is generated, the waste shall be managed in accordance with state and federal hazardous waste regulations as well as DOE requirements for radioactive waste, interpreted as follows.

Where there is a conflict in regulations or requirements, the most stringent shall apply. For example, the 90-day accumulation time limit and weekly inspections per RCRA regulations will be applied to mixed waste even though it is not required for radioactive waste. Conversely, while RCRA does not require documented traceability, the waste acceptance program for low-level radioactive waste does; therefore, traceability shall be documented. In general, mixed waste shall be managed in the same manner as hazardous waste, with added mandatory radioactive waste management program requirements. Suspected mixed waste will be managed in accordance with applicable regulations and requirements and will be marked with "Awaiting Analysis" stickers pending characterization and confirmation of the regulatory status. However, mixed waste shall be transported to the NTS transuranic waste storage pad for storage pending treatment or disposal. Mixed waste with hazardous waste constituents below land disposal restrictions may be disposed of at the NTS Area 5 Radioactive Waste Management Site. Mixed waste not meeting land disposal restrictions will remain in Area 5 and require development of a treatment plan under the requirements of the Mutual Consent Order between DOE and the State of Nevada (NDEP, 1995).

5.0 Duration and Records Availability

5.1 Duration

The following is a tentative schedule of activities (in calendar days) that will be initiated after the submittal of the CAIP Addendum for CAU 321 to the NDEP.

- Day 0: Field work preparation begins.
- Day 30: Field work, including field screening and sampling begins.
- Day 45: Field work is complete and samples have been shipped to the laboratory for analyses.
- Day 150: The quality-assured laboratory analytical sample data is available for review.

5.2 Records Availability

This document is available in the DOE public reading rooms located in Las Vegas and Carson City, Nevada, or by contacting the DOE/NV Project Manager. The NDEP maintains the official Administrative Record for all activities conducted under the auspices of the FFACO.

6.0 References

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U.S. Department of Energy, Nevada Operations Office. 1996b. *Industrial Sites Quality Assurance Project Plan*, DOE/NV--372. Las Vegas, NV.

Distribution

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