UNCONTROLLED

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFACO) RECORD OF TECHNICAL CHANGE (ROTC)

Corrective Action Unit (CAU) Number: 262
CAU Description: Area 25 Septic Systems and UDP
CAU Owner: Industrial Sites - Environmental Restoration (ER)

ROTC No. DOE/NV--897-REV 1-ROTC 1 **Page** 1 of 21

Document Type Closure Report (CR) **Date** 06/29/2021

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

Tiffany Gamero
Requestor Name

Long-Term Monitoring Activity Lead
Requestor Title

Description of Change:

1. This ROTC replaces the Use Restriction (UR) information listed in the documentation for CAU 262.

   UR forms have been updated to list all UR requirements, including but not limited to: post-closure site controls (signs, fencing, etc.), inspection and maintenance requirements, and Geographic Information Systems (GIS) coordinate information. The UR requirements and form(s) included in this ROTC represent the current corrective action requirements for each Corrective Action Site (CAS) in this CAU and supersede information concerning corrective action and post-closure requirements in existing documentation.

2. The UR boundary coordinate values for CASs 25-02-06, 25-05-03, and 25-05-08 were changed due to conversion from North American Datum (NAD) 1927 to 1983.
3. Removed the requirement for fencing from CASs 25-05-03 and 25-05-08.

Justification:

1. Some changes in the UR requirements from those found in closure documents have been subsequently modified in letters, memos, and inspection reports. This has resulted in difficulty in determining current post-closure requirements. A review of the post-closure requirements for this CAU has been conducted to ensure that all requirements have been identified and documented on the new UR form. The new UR form was developed to be inclusive of all requirements for long-term monitoring and standardize information contained in the URs consistent with current protocols.
2. UR boundary coordinates need to be in one standardized coordinate system.
3. Fencing was used to hold UR signs. Signs will be secured using any means necessary (such as t-posts) to meet the requirement that signs

UNCONTROLLED

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFACO)
RECORD OF TECHNICAL CHANGE (ROTC)

Corrective Action Unit (CAU) Number: 262
CAU Description: Area 25 Septic Systems and UDP
CAU Owner: Industrial Sites - Environmental Restoration (ER)

ROTC No. DOE/NV--897-REV 1-ROTC 1 **Page** 2 of 21

Document Type Closure Report (CR) **Date** 06/29/2021

Description of Change:

Justification:

are present and legible. Also fencing is not needed to prevent inadvertent exposure to contamination as the surface of the site is not contaminated.

Schedule Impacts:

No impacts to schedule.

ROTC applies to the following document(s):

- U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2003. Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Rev. 1, DOE/NV--897-REV 1. Las Vegas, NV.

UNCONTROLLED

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFACO)
RECORD OF TECHNICAL CHANGE (ROTC)

Corrective Action Unit (CAU) Number: 262
CAU Description: Area 25 Septic Systems and UDP
CAU Owner: Industrial Sites - Environmental Restoration (ER)

ROTC No. DOE/NV--897-REV 1-ROTC 1 **Page** 3 of 21

Document Type Closure Report (CR) **Date** 06/29/2021

Approvals:

Tiffany A. Gamero Digitally signed by Tiffany A. Gamero Date: 2021.07.08 14:50:49 -07'00' Date

Tiffany Gamero
Activity Lead
Environmental Management (EM) Nevada Program

Bill R. Wilborn Digitally signed by Bill R. Wilborn Date: 2021.07.08 16:19:45 -07'00' Date

Bill Wilborn
Deputy Program Manager, Operations
Environmental Management (EM) Nevada Program

Christine Andres Digitally signed by Christine Andres Date: 2021.07.11 11:25:28 -07'00' Date

Christine Andres
Chief, Bureau of Federal Facilities
Nevada Division of Environmental Protection (NDEP)

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

General Information

Use Restriction (UR) Type(s): FFACO Only

Corrective Action Unit (CAU) Number & Description: 262 - Area 25 Septic Systems and UDP

Corrective Action Site (CAS) Number & Description: 25-02-06 - Underground Storage Tank

CAU/CAS Owner: Industrial Sites - ER

Note: N/A

Section I. *Federal Facility Agreement and Consent Order* (FFACO) UR

Basis for FFACO UR

Summary Statement: This FFACO UR is established to protect workers from inadvertent exposure to radiological and chemical contaminants that were released at this site. Radiological and chemical contaminants are assumed to be present that exceed final action levels under the Industrial Area (2,000 hours per year) exposure scenario.

FFACO UR Physical Description

Surveyed Area (UTM, Zone 11, NAD 83, meters):

UR Boundary	UR Point[1]	Easting[2]	Northing[2]
FFACO Boundary	1	561,996	4,073,501
	2	561,994	4,073,502
	3	561,997	4,073,517
	4	562,000	4,073,516
	5	561,996	4,073,501

[1]UR Points are listed clockwise beginning at the southernmost point. If multiple points share the southernmost Northing coordinate, the easternmost point is listed as Point 1.

[2]UR coordinate values presented herein were transformed from the North American Datum of 1927, and rounded to the nearest meter; resultant coordinates may not reflect the original precision of values contained within the source GIS data set.

Boundary Applies to: Subsurface

Depth is unknown.

Survey Source: Transit

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

FFACO UR Requirements

Site Controls:

This FFACO UR is recorded as described in **Section IV. Recordation Requirements** to restrict activities within the area by the coordinates listed above and depicted in the attached figure without prior notification of NDEP unless the activities are conducted under the provisions of 10 CFR, Part 835, Occupational Radiation Protection and 10 CFR, Part 851, Worker Safety and Health Program.

Control	Criteria
Signage	Present and legible.

Inspection Frequency: Annual

Additional Considerations:

Consideration	Criteria
None	None

Requirements Comments: None

Section II. Administrative UR

An Administrative UR is not identified for this site.

Section III. Supporting Documentation

UR Source Document(s)

ROTC 1 for CAU 262 CR (DOE/NV--897-REV 1), dated 06/29/2021.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2003. Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Rev. 1, DOE/NV--897-REV 1. Las Vegas, NV.

Attachments

- FFACO UR Boundary Map (UTM, Zone 11, NAD 83 meters)
- Supplemental Information Figure (UTM, Zone 11, NAD 83 meters)

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

Section IV. Recordation Requirements

Recordation:

The above UR(s) are recorded in the:

- FFACO Database
- NNSA M&O Contractor GIS
- EM Nevada Program CAU/CAS Files

Section V. EM Nevada Program Approval

Tiffany A. Gamero Digitally signed by Tiffany A. Gamero Date: 2021.07.08 14:51:46 -07'00'

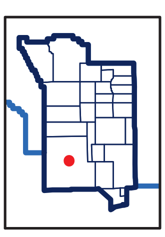
Date: ____________________

Tiffany Gamero

Activity Lead

EM Nevada Program

UR is effective upon acceptance by NDEP.



CAU 262, CAS 25-02-06
Underground Storage Tank
FFACO UR Boundary

Explanation

FFACO UR

Light Duty Road

0 5 10 20 Meters

0 15 30 60 Feet

N

Source: Navarro GIS, 2020

Coordinate System: NAD 1983 UTM Zone 11N, Meter

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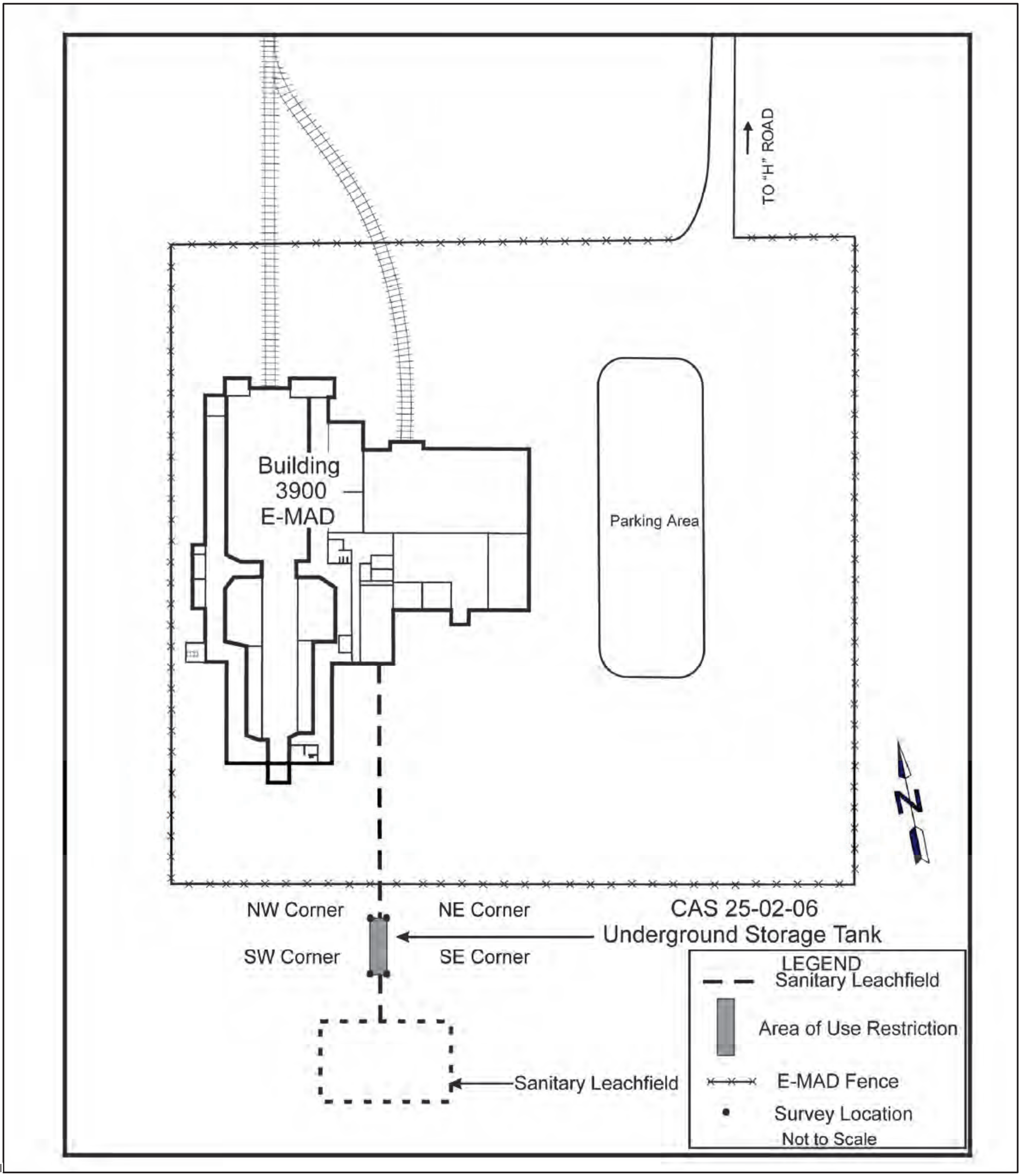
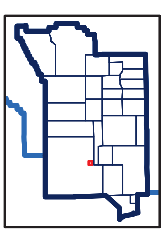
Supplemental Information Figure

The attached supplemental information figure(s) are included to capture site feature information that was available in previous iterations of this Use Restriction (UR) to prevent loss of that information.



H:\262\GPS\CAS25-02-06_SUPP.mxd - 3/2/2020



CAU 262, CAS 25-02-06
Underground Storage Tank
Supplemental Information
General Location of Site Features

Source: Navarro GIS, 2020

NOTE: Size and location of features are approximated
Coordinate System: NAD 1983 UTM Zone 11N, Meter

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

General Information

Use Restriction (UR) Type(s): FFACO Only

Corrective Action Unit (CAU) Number & Description: 262 - Area 25 Septic Systems and UDP

Corrective Action Site (CAS) Number & Description: 25-05-03 - Leachfield

CAU/CAS Owner: Industrial Sites - ER

Note: N/A

Section I. *Federal Facility Agreement and Consent Order* (FFACO) UR

Basis for FFACO UR

Summary Statement: This FFACO UR is established to protect workers from inadvertent exposure to radiological and chemical contaminants that were released at this site. Radiological and chemical contaminants are present that exceed final action levels under the Industrial Area (2,000 hours per year) exposure scenario.

FFACO UR Physical Description

Surveyed Area (UTM, Zone 11, NAD 83, meters):

UR Boundary	UR Point[1]	Easting[2]	Northing[2]
FFACO Boundary	1	567,908	4,074,207
	2	567,898	4,074,280
	3	567,974	4,074,291
	4	567,984	4,074,218
	5	567,908	4,074,207

[1]UR Points are listed clockwise beginning at the southernmost point. If multiple points share the southernmost Northing coordinate, the easternmost point is listed as Point 1.

[2]UR coordinate values presented herein were transformed from the North American Datum of 1927, and rounded to the nearest meter; resultant coordinates may not reflect the original precision of values contained within the source GIS data set.

Boundary Applies to: Subsurface

Starting Depth: 60

Ending Depth:

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

Depth Unit: Centimeters

Survey Source: Transit

FFACO UR Requirements

Site Controls:

This FFACO UR is recorded as described in **Section IV. Recordation Requirements** to restrict activities within the area by the coordinates listed above and depicted in the attached figure without prior notification of NDEP unless the activities are conducted under the provisions of 10 CFR, Part 835, Occupational Radiation Protection and 10 CFR, Part 851, Worker Safety and Health Program.

Control	Criteria
Signage	Present and legible.
Soil Cover	Must completely cover waste material.

Inspection Frequency: Annual

Additional Considerations:

Consideration	Criteria
None	None

Requirements Comments: Ending depth is unknown.

Section II. Administrative UR

An Administrative UR is not identified for this site.

Section III. Supporting Documentation

UR Source Document(s)

ROTC 1 for CAU 262 CR (DOE/NV--897-REV 1), dated 06/29/2021.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2003. Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Rev. 1, DOE/NV--897-REV 1. Las Vegas, NV.

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

Attachments

- FFACO UR Boundary Map (UTM, Zone 11, NAD 83 meters)
- Supplemental Information Figure (UTM, Zone 11, NAD 83 meters)

Section IV. Recordation Requirements

Recordation:

The above UR(s) are recorded in the:

- FFACO Database
- NNSA M&O Contractor GIS
- EM Nevada Program CAU/CAS Files

Section V. EM Nevada Program Approval

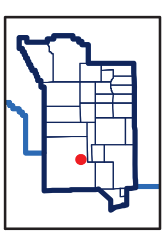
Tiffany A. Gamero Digitally signed by Tiffany A. Gamero
Date: 2021.07.08 14:52:19 -07'00'

Date: ____________________

Tiffany Gamero

Activity Lead

EM Nevada Program



CAU 262, CAS 25-05-03
Leachfield
FFACO UR Boundary

Explanation

FFACO UR

0 5 10 20 Meters

0 20 40 80 Feet

N

Source: Navarro GIS, 2020

Coordinate System: NAD 1983 UTM Zone 11N, Meter

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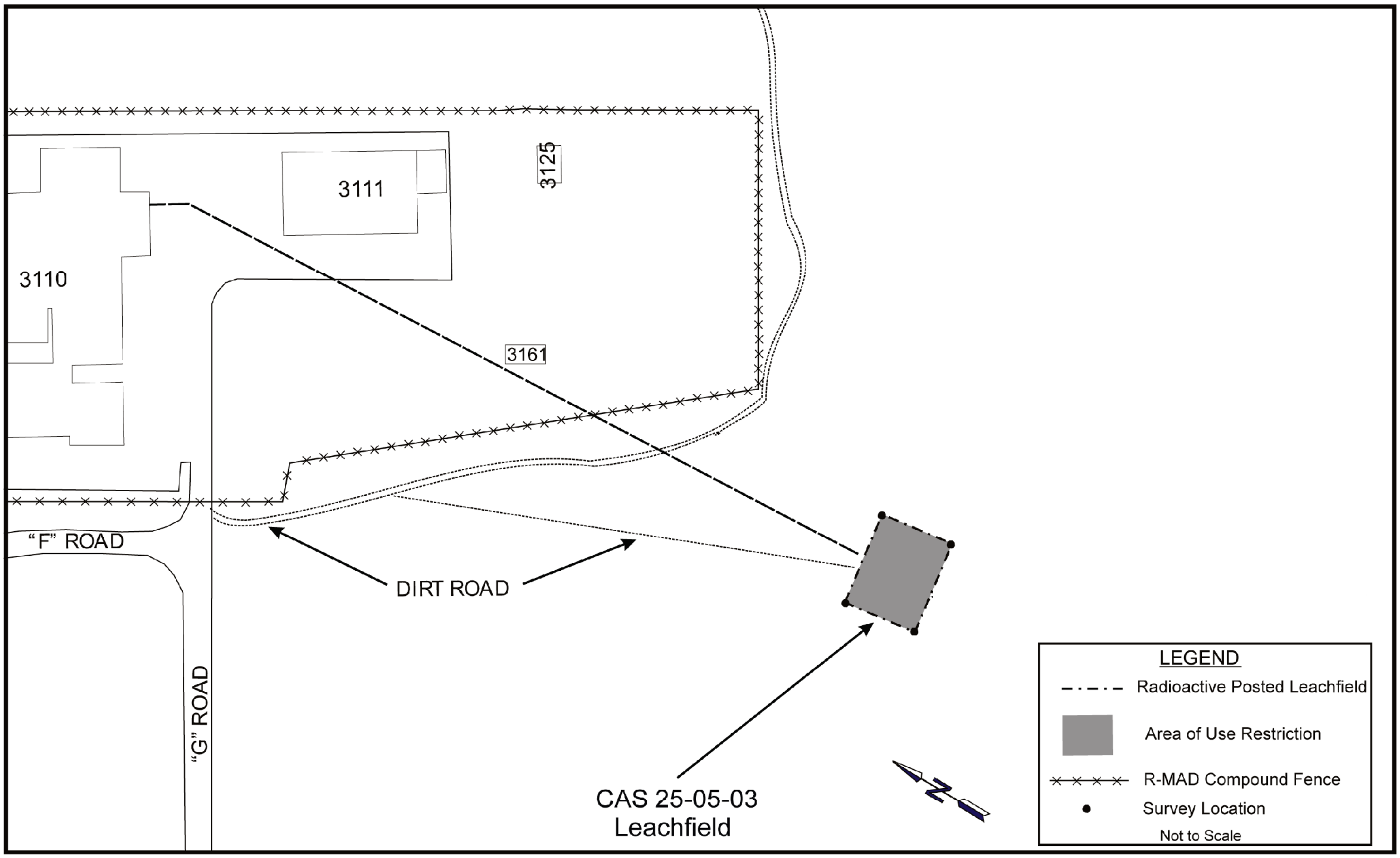
Supplemental Information Figure

The attached supplemental information figure(s) are included to capture site feature information that was available in previous iterations of this Use Restriction (UR) to prevent loss of that information.



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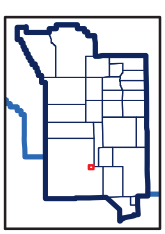


CAU 262, CAS 25-05-03
Leachfield
Supplemental Information
General Location of Site Features

Source: Navarro GIS, 2020

NOTE: Size and location of features are approximated

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

General Information

Use Restriction (UR) Type(s): FFACO Only

Corrective Action Unit (CAU) Number & Description: 262 - Area 25 Septic Systems and UDP

Corrective Action Site (CAS) Number & Description: 25-05-08 - Radioactive Leachfield

CAU/CAS Owner: Industrial Sites - ER

Note: N/A

Section I. *Federal Facility Agreement and Consent Order* (FFACO) UR

Basis for FFACO UR

Summary Statement: This FFACO UR is established to protect workers from inadvertent exposure to radiological contaminants that were released at this site. Radiological contaminants are present that exceed final action levels under the Industrial Area (2,000 hours) exposure scenario.

FFACO UR Physical Description

Surveyed Area (UTM, Zone 11, NAD 83, meters):

UR Boundary	UR Point[1]	Easting[2]	Northing[2]
FFACO Boundary	1	564,537	4,076,278
	2	564,520	4,076,292
	3	564,520	4,076,308
	4	564,532	4,076,325
	5	564,538	4,076,325
	6	564,560	4,076,306
	7	564,537	4,076,278

[1]UR Points are listed clockwise beginning at the southernmost point. If multiple points share the southernmost Northing coordinate, the easternmost point is listed as Point 1.

[2]UR coordinate values presented herein were transformed from the North American Datum of 1927, and rounded to the nearest meter; resultant coordinates may not reflect the original precision of values contained within the source GIS data set.

Boundary Applies to: Subsurface

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

Starting Depth: 60 **Ending Depth:**

Depth Unit: Centimeters

Survey Source: Transit

FFACO UR Requirements

Site Controls:

This FFACO UR is recorded as described in **Section IV. Recordation Requirements** to restrict activities within the area by the coordinates listed above and depicted in the attached figure without prior notification of NDEP unless the activities are conducted under the provisions of 10 CFR, Part 835, Occupational Radiation Protection and 10 CFR, Part 851, Worker Safety and Health Program.

Control	Criteria
Signage	Present and legible.
Soil Cover	Must completely cover waste material.

Inspection Frequency: Annual

Additional Considerations:

Consideration	Criteria
None	None

Requirements Comments: Ending depth is unknown.

Section II. Administrative UR

An Administrative UR is not identified for this site.

Section III. Supporting Documentation

UR Source Document(s)

ROTC 1 for CAU 262 CR (DOE/NV--897-REV 1), dated 06/29/2021.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2003. Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Rev. 1, DOE/NV--897-REV 1. Las Vegas, NV.

U.S. Department of Energy, Environmental Management Nevada Program
Use Restriction Information

Attachments

- FFACO UR Boundary Map (UTM, Zone 11, NAD 83 meters)
- Supplemental Information Figure (UTM, Zone 11, NAD 83 meters)

Section IV. Recordation Requirements

Recordation:

The above UR(s) are recorded in the:

- FFACO Database
- NNSA M&O Contractor GIS
- EM Nevada Program CAU/CAS Files

Section V. EM Nevada Program Approval

Tiffany A. Gamero Digitally signed by Tiffany A. Gamero
Date: 2021.07.08 14:53:17 -07'00'

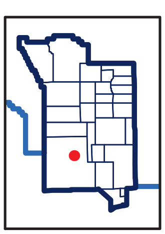
Date: ____________________

Tiffany Gamero

Activity Lead

EM Nevada Program

H:\262\GPS\CAS25-05-08_FFACOUR.mxd - 2/24/2020



Source: Navarro GIS, 2020

CAU 262, CAS 25-05-08
Radioactive Leachfield
FFACO UR Boundary

Explanation

FFACO UR

0 2.5 5 10 Meters

0 10 20 40 Feet

N

Coordinate System: NAD 1983 UTM Zone 11N, Meter

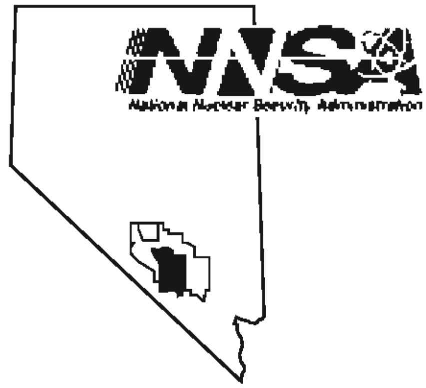
Supplemental Information Figure

The attached supplemental information figure(s) are included to capture site feature information that was available in previous iterations of this Use Restriction (UR) to prevent loss of that information.

CAU 262, CAS 25-05-08
Radioactive Leachfield
Supplemental Information
General Location of Site Features

Nevada
Environmental
Restoration
Project

DOE/NV--897-REV 1



Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada

Controlled Copy No.: UNCONTROLLED

Revision: 1

July 2003

Environmental Restoration
Division

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

DISCLAIMER STATEMENT

AVAILABILITY STATEMENT

Available for sale to the public from-

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E-mail: orders@ntis.gov
Online ordering: http://www.ntis.gov/ordering.htm

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E-mail: reports@adonis.osti.gov

DOE/NV--897-REV 1

CLOSURE REPORT
FOR CORRECTIVE ACTION UNIT 262:
AREA 25 SEPTIC SYSTEMS
AND
UNDERGROUND DISCHARGE POINT,
NEVADA TEST SITE, NEVADA

Prepared for:
U.S. Department of Energy
National Nuclear Security Administration
Nevada Site Office
Work Performed Under Contract No. DE-AC08-96NV11718

Controlled Copy No. ____UNCONTROLLED

Revision: 1

July 2003

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CLOSURE REPORT
FOR CORRECTIVE ACTION UNIT 262:
AREA 25 SEPTIC SYSTEMS
AND
UNDERGROUND DISCHARGE POINT,
NEVADA TEST SITE, NEVADA

Approved by: SIGNATURE APPROVED Date: 7/3/2003
Janet Appenzeller-Wing, Project Manager
Industrial Sites Project

Approved by: SIGNATURE APPROVED Date: 7/3/2003
Runore C. Wycoff, Director
Environmental Restoration Division

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TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

FIGURES

TABLES

APPENDICES

TABLE OF CONTENTS (continued)

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ACRONYMS AND ABBREVIATIONS

BN	Bechtel Nevada
CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAP	Corrective Action Plan
CAS(s)	Corrective Action Site(s)
CAU	Corrective Action Unit
COC	Contaminant(s) of Concern
CR	Closure Report
DOE/NV	U.S. Department of Energy, Nevada Operations Office
DQO	Data Quality Objective
E-MAD	Engine Maintenance, Assembly, and Disassembly
EPA	U.S. Environmental Protection Agency
ft	foot(feet)
FFACO	Federal Facility Agreement and Consent Order
in	inch(es)
kgs	kilograms
lbs	pounds
m	meter(s)
m^3	cubic meter
MDA	Minimum Detectable Activity
MDC	Minimum Detectable Concentration
mg/kg	milligram(s) per kilogram
mg/L	milligrams(s) per liter
MTL	Materials Testing Laboratory
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
NNSA/NV	U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office
NTS	Nevada Test Site
PCBs	Polychlorinated biphenyls
pCi/g	picoCuries per gram
pCi/L	picoCuries per liter
QA/QC	quality assurance/quality control

ACRONYMS AND ABBREVIATIONS (continued)

R-MAD	Reactor Maintenance, Assembly, and Disassembly
SWO	Solid Waste Operations
TCLP VOC	Toxicity Characteristic Leaching Procedure Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
µg/L	micrograms per liter
yd^3	cubic yard(s)

EXECUTIVE SUMMARY

Corrective Action Unit (CAU) 262 consists of nine Corrective Action Sites (CAS) located in Area 25 of the Nevada Test Site (NTS). The NTS is located approximately 105 kilometers (65 miles) northwest of Las Vegas, Nevada. CAU 262 is listed in the Federal Facility Agreement and Consent Order (FFACO, 1996) and consists of the following CASs:

CAS 25-02-06, Underground Storage tank
CAS 25-04-06, Septic Systems A and B
CAS 25-04-07, Septic System
CAS 25-05-03, Leachfield
CAS 25-05-05, Leachfield
CAS 25-05-06, Leachfield
CAS 25-05-08, Radioactive Leachfield
CAS 25-05-12, Leachfield
CAS 25-51-01, Dry Well

CAU 262 was closed in accordance with the FFACO and the Nevada Division of Environmental Protection-approved Corrective Action Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada (U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office, 2002a). CAU 262 was closed by implementing the following corrective actions:

Four CASs were closed in place with administrative controls.

CAS 25-02-06 is a septic tank which contains Total Petroleum Hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and sanitary waste. This site was closed in place by solidifying the tank contents and backfilling the tank with grout. A use restriction was implemented to control inadvertent intrusion or exposure to the tank contents.

CAS 25-05-03 is a leachfield which contains underground radiological constituents. This site was closed in place by constructing a 0.6 meter (m) (2 feet [ft]) thick soil cap over the leachfield footprint. Leachfield monitoring tubes were cut off at ground level and filled with grout. The distribution box and a diversion drum were filled with grout. The subsurface vaults and valve boxes were backfilled with clean fill. The existing chain link fence was repaired and a use restriction was implemented. Permanent warning signs were installed on the fence listing use restriction and point of contact information. As a best management practice, the two washes that transect the leachfield were graded and backfilled with rip rap to limit erosion potential. The upgradient portion of the wash was modified by construction of a diversion channel of native soil and rip rap to redirect flow away from the leachfield cap.

CAS 25-05-06 is a leachfield which contains underground radiological constituents. The site was closed in place. The existing wire fence was replaced by a 2.1 m (7 ft) high chain link security fence to restrict site access. The distribution box was filled with grout. Leachfield monitoring tubes were cut off at ground level and filled with grout. Permanent warning signs were installed on the fence listing use restriction and point of contact information.

CAS 25-05-08 is a leachfield which contains underground radiological constituents and was closed in place by constructing a 0.6-1.2 m (2-4 ft) thick soil cap over the leachfield footprint. Leachfield monitoring tubes were cut off at ground level and filled with grout. The leachfield distribution box was also filled with grout. Erosion protection was installed on the downgradient face of the soil cap. A 2.1 m (7 ft) chain link security fence was installed around the leachfield perimeter to restrict site access. Permanent warning signs were installed on the fence listing use restriction and point of contact information.

Four CASs were clean closed.

CAS 25-04-06 Systems A and B are septic systems that contained only sanitary waste. System A was closed by filling the empty septic tank, distribution box, and access points (manholes) with grout. System B was closed by pumping, solidifying, and disposing the tank contents. The septic tank, distribution box, and access points were filled with grout.

CAS 25-04-07 is a septic system in which the septic tank contained only sanitary waste. This site was clean closed by filling the dry, empty septic tank and distribution box with grout.

CAS 25-05 05 is a septic tank that contained TPH-impacted liquid and sludge. The site was clean closed by removing and disposing the tank contents. The tank was steam cleaned and verification samples of the rinseate were collected. The tank, distribution box, and all access points were filled with grout.

CAS 25-05-12 is a septic tank that contained TPH-impacted liquid and sludge. The site was clean closed by removing and disposing the tank contents. The tank was steam cleaned and verification samples of the rinseate were collected. The tank, distribution box, and all access points were filled with grout.

One CAS was closed by taking no further action

CAS 25-51-01 is an underground discharge point designed to receive sanitary waste. Characterization activities determined no contaminants of concern above action levels present; therefore, this site was closed by taking no further action.

1.0 INTRODUCTION

This Closure Report (CR) documents the activities undertaken to close Corrective Action Unit (CAU) 262: Area 25 Septic Systems and Underground Discharge Point, in accordance with the Federal Facility Agreement and Consent Order (FFACO) of 1996. Site closure was performed in accordance with the Nevada Division of Environmental Protection (NDEP)-approved Corrective Action Plan (CAP) for CAU 262 (U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office [NNSA/NV, 2002a]). CAU 262 is located at the Nevada Test Site (NTS) approximately 105 kilometers (65 miles) northwest of Las Vegas, Nevada (see Figure 1). CAU 262 consists of the following nine Corrective Action Sites (CASs) located in Area 25 of the NTS (see Figures 2 through 4):

CAS 25-02-06, Underground Storage tank
CAS 25-04-06, Septic Systems A and B
CAS 25-04-07, Septic System
CAS 25-05-03, Leachfield
CAS 25-05-05, Leachfield
CAS 25-05-06, Leachfield
CAS 25-05-08, Radioactive Leachfield
CAS 25-05-12, Leachfield
CAS 25-51-01, Dry Well

Copies of the analytical results for the site verification samples are included in Appendix B. Copies of the CAU Use Restriction Information forms are included in Appendix G.

1.1 PURPOSE

The purpose of this CR is to document that the closure of CAU 262 complied with all of the closure requirements detailed in the NDEP-approved CAP (NNSA/NV, 2002a) and to provide data confirming the clean closure. CAU 262 was investigated and closed using the FFACO complex process. Details of the investigation activities are documented in the CAU 262 Corrective Action Investigation Plan (CAIP) (U.S. Department of Energy, Nevada Operations Office)[DOE/NV, 2000]). Results of the investigation activities are presented in the Corrective Action Decision Document (CADD) for CAU 262 (NNSA/NV, 2001).

CAS 25-02-06 is a septic system that received sanitary effluent from Building 3900 at the Engine Maintenance, Assembly, and Disassembly (E-MAD) facility. The leachfield contains no contaminants of concern (COC) above action levels. The septic tank contains sanitary waste, Total Petroleum Hydrocarbons (TPH), and polychlorinated biphenyls (PCBs) above action levels. This site was closed in place by solidifying the septic tank contents and filling the remaining void space with grout. Access points were also filled with grout. Use restrictions were implemented to restrict access into the tank.

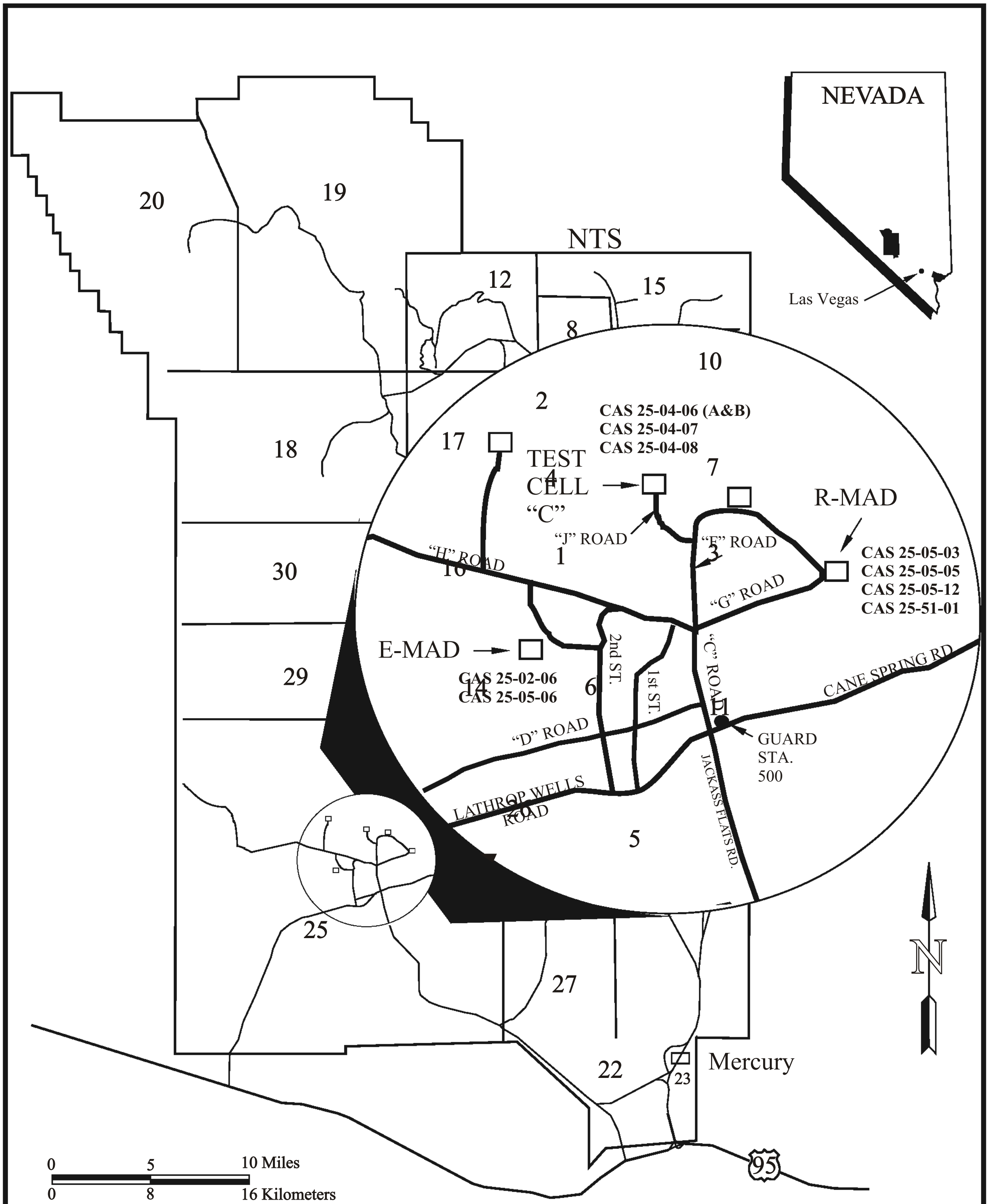

FIGURE 1 - CAU 262 LOCATION MAP

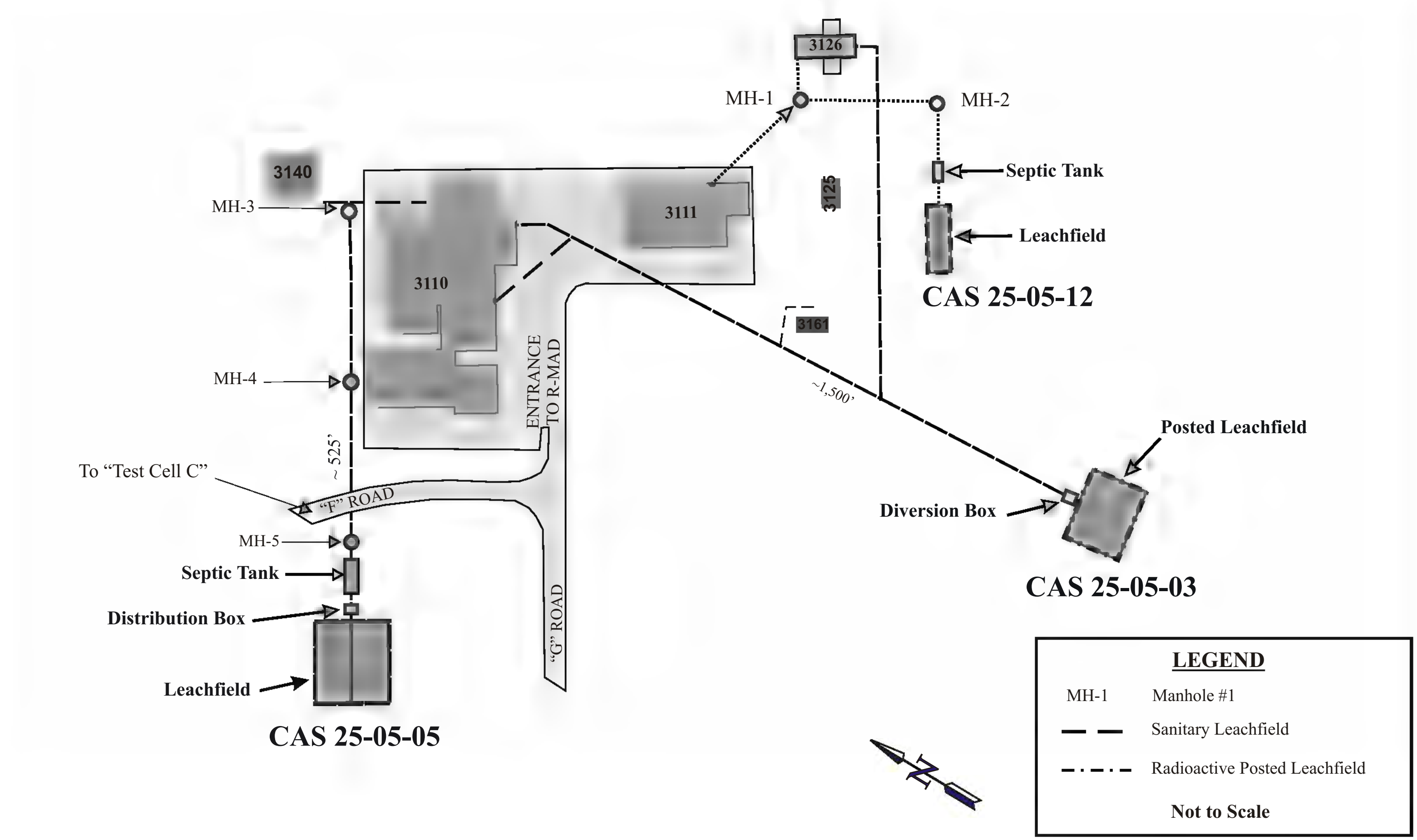

FIGURE 2 - CAU 262 R-MAD CASs

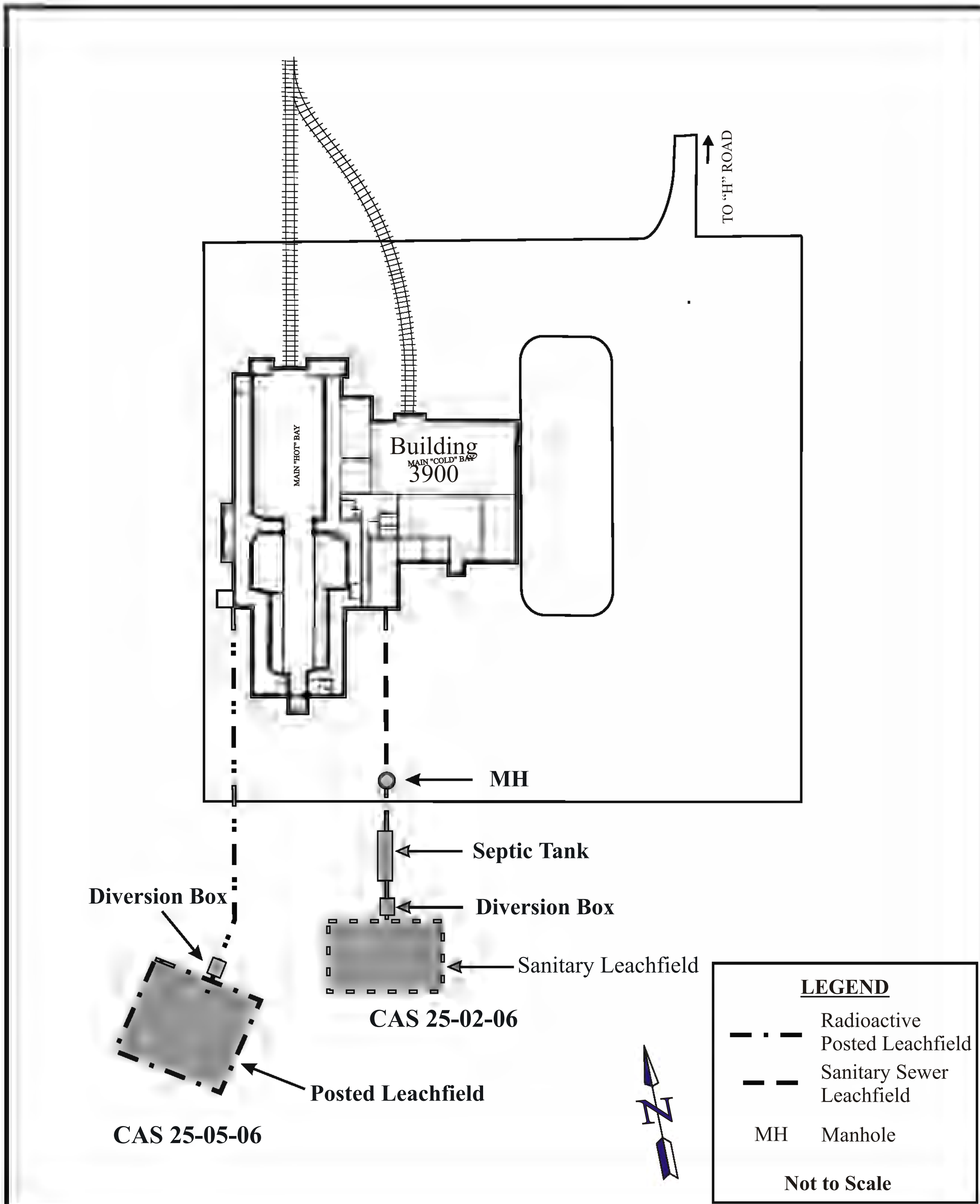

FIGURE 3 - CAU 262 E-MAD CASs

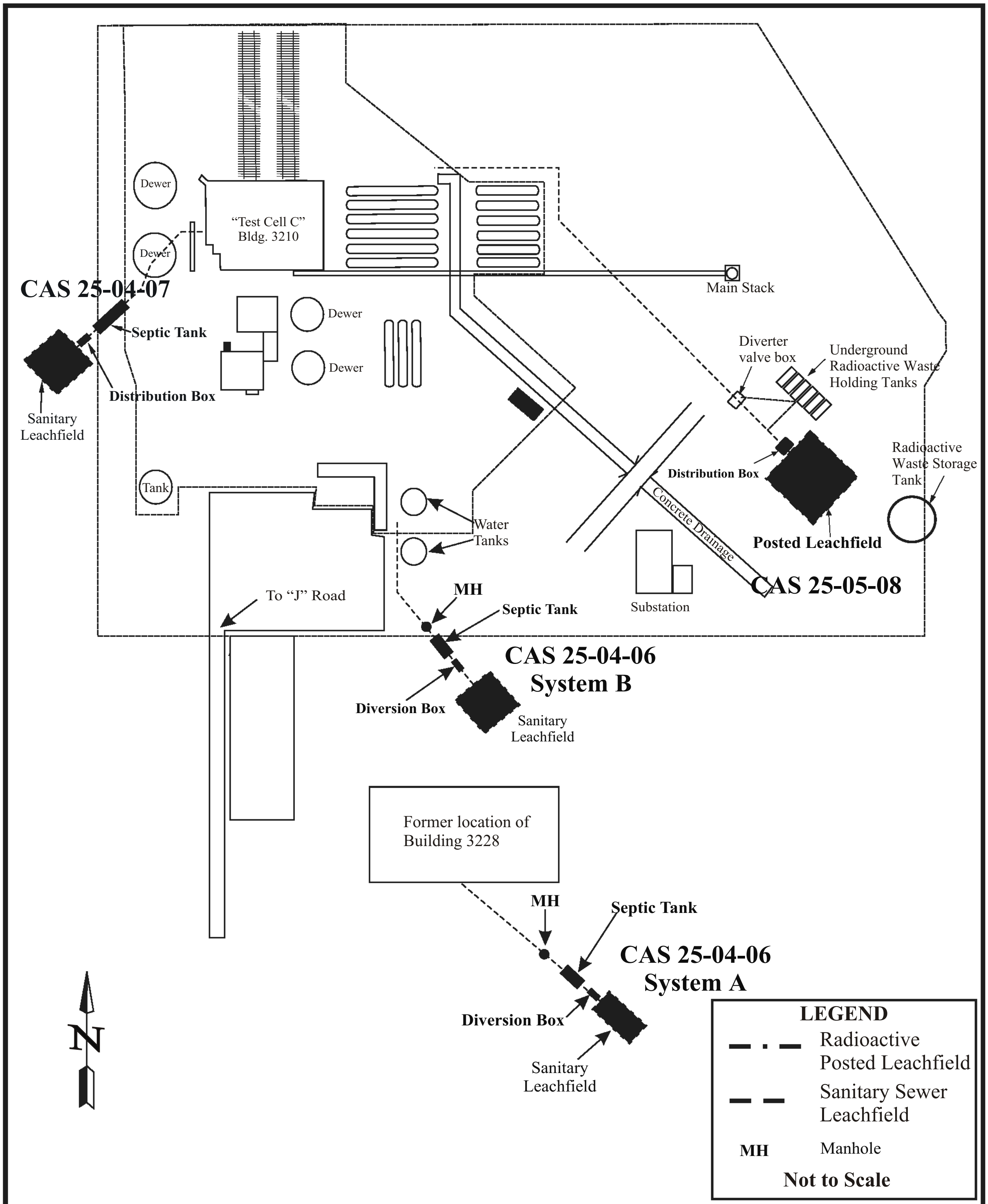

FIGURE 4 - CAU 262 TEST CELL C CASs

CAS 25-04-06 consists of two septic systems (A and B) which received sanitary effluent from Buildings 3228 and 3220, respectively at the Test Cell C facility. Results of characterization activities presented in the CADD for CAU 262 indicated the septic tanks and leachfields contained no COC, only sanitary waste (NNSA/NV, 2001). System A septic tank contained no liquid or sludge and was clean closed by filling the septic tank, distribution box, and upstream manhole with grout. System B was clean closed by removing and disposing the septic tank contents and filling the tank, distribution box, and upstream manhole with grout.

CAS 25-04-07 is a septic system which received sanitary effluent from Building 3210 at the Test Cell C facility. Characterization results indicated the septic tank and leachfield contained only sanitary waste (NNSA/NV, 2001). However, during closure activities the septic tank and distribution box were found to contain no liquid or sludge and was clean closed by filling with grout.

CAS 25-05-03 is a leachfield that received radioactive effluent from the Reactor-Maintenance, Assembly, and Disassembly (R-MAD) facility. The leachfield contains underground radiological COC (NNSA/NV, 2001). The leachfield was closed in place by installing a 0.6 meter (m) (2 feet [ft]) thick cap over the leachfield. The cap was constructed of clean native soil in three 0.2 m (8 inch [in.]) thick lifts. Each lift was compacted to 90 percent of maximum density. Prior to installing the cap, all monitoring tubes were cut off at ground level and filled with grout. The distribution box and a diversion drum were filled with grout. Two valve boxes located within the leachfield were backfilled with clean fill. As a best management practice to control potential erosion, existing surface washes were graded and backfilled with rip-rap. A rip-rap lined channel was constructed along the upgradient side of the leachfield to divert overland flow away from the leachfield cap. The existing chain link security fence was repaired and permanent warning signs were affixed to the fence. A Use Restriction was implemented to restrict intrusive activity into or beneath the site.

CAS 25-05-05 is a septic tank that received sanitary effluent from Buildings 3110 and 3140 at the R-MAD facility. The tank contained TPH above the Nevada state action level of 100 milligrams per kilogram (mg/kg) [Nevada Administrative Code (NAC), 2002a], and sanitary waste (NNSA/NV, 2001). The tank was clean closed by removing, solidifying, and disposing the tank contents. The tank was pressure washed/steam cleaned and the rinseate was sampled to verify that no COC remained in the tank. The tank, distribution box and access points were filled with grout.

CAS 25-05-06 is a leachfield that received radioactive effluent from the E-MAD facility and contains underground radiological COC (NNSA/NV, 2001). The leachfield was closed in place by installing a 2.1 m (7 ft) high chain link security fence around the perimeter of the leachfield. Monitoring tubes within the leachfield were cut off at ground level and filled with grout. The existing fence was removed and disposed. Permanent warning signs were affixed to the new fence and a Use Restriction was implemented to restrict intrusive activity into the leachfield.

CAS 25-05-08 is a leachfield that received radioactive effluent from Building 3210 at the Test Cell C facility. The site was closed in place by installing a 0.6-1.2 m (2-4 ft) thick cap over the leachfield. The cap was constructed of clean native soil in six 0.2 m (8 in.) thick lifts. Each lift was compacted to 90 percent of maximum density. Prior to installing the cap, all monitoring tubes were cut off at the surface and filled with grout. The buried distribution box was exposed and filled with grout. The existing fence was removed and disposed and a new 2.1 m (7 ft) high chain link security fence was installed around the perimeter of the leachfield. As a best management practice to control potential erosion, a cellular confinement system filled with aggregate was installed on the downgradient south face of the cap. Permanent warning signs were affixed to the new fence and a Use Restriction was implemented to restrict intrusive activity into or beneath the site.

CAS 25-05-12 is a septic tank that received sanitary effluent from Buildings 3111 and 3126 at the R-MAD facility. The tank contained TPH above the state action level of 100 mg/kg (NAC, 2002a), and sanitary waste (NNSA/NV, 2001). The tank was clean closed by removing, solidifying, and disposing the tank contents. The tank was pressure washed/steam cleaned and the rinseate was sampled to verify that no COC remained in the tank. The tank, distribution box, and access points were filled with grout.

CAS 25-51-01 is an underground discharge point that received sanitary waste from Building 3125 at the R-MAD facility. Characterization indicated this CAS contained no COC (NNSA/NV, 2001) and was therefore closed by taking no further action.

1.2 SCOPE

The closure strategy for CAU 262 was specified in the NDEP-approved CAP for CAU 262 (NNSA/NV, 2002a). The nine CASs in CAU 262 were closed as follows:

CAS 25-02-06, Underground Storage tank - Closed in place with administrative controls
CAS 25-04-06, Septic Systems A and B - Clean closed
CAS 25-04-07, Septic System - Clean closed
CAS 25-05-03, Leachfield - Closed in place with administrative controls
CAS 25-05-05, Leachfield - Clean closed
CAS 25-05-06, Leachfield - Closed in place with administrative controls
CAS 25-05-08, Radioactive Leachfield - Closed in place with administrative controls
CAS 25-05-12, Leachfield - Clean closed
CAS 25-51-01, Dry Well - No further action

CASs 25-05-05 and 25-05-12 were the only CASs requiring verification data. The tank contents were removed, the tanks were rinsed, and the rinseate sampled to verify that all waste above the TPH action level was removed. The tanks were then filled with grout. CASs 25-04-06 and 25-04-07 did not contain COC above action levels and were closed by removing the sanitary waste as applicable and filling the tanks with grout. CAS 25-51-01 was closed by taking no further action. All other CASs were closed in place.

1.3 CLOSURE REPORT CONTENTS

This CR is divided into the following sections:

Section 1.0 - Introduction

Section 2.0 - Closure Activities

Section 3.0 - Waste Disposition

Section 4.0 - Closure Verification Results

Section 5.0 - Conclusions and Recommendations

Section 6.0 - References

Appendix A - Data Quality Objectives

Appendix B - Sample Analytical Results

Appendix C - Soil Compaction Test Results

Appendix D - Radiological Survey Reports

Appendix E - Waste Disposition Documentation

Appendix F - “As-Built Drawings

Appendix G - Use Restriction Documentation

Appendix H - Site Closure Photographs

Appendix I - Approved Records of Technical Change

Appendix J - “A Through K Evaluation

Distribution List

The following standard FFACO CR appendices are not included in this CR because they do not apply to closure of CAU 262.

Closure Certification - Not applicable.

Modifications to the Post-Closure Plan - Not applicable.

This report was developed using information and guidance from the following documents:

Corrective Action Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada (NNSA/NV, 2002a).

Field Management Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada. (Bechtel Nevada [BN], 2001a).

Site-Specific Health and Safety Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada (BN, 2001b).

Nevada Environmental Restoration Project, Industrial Sites Quality Assurance Project Plan, Nevada Test Site, Nevada, Revision 3 (NNSA/NV, 2002b).

1.3.1 Data Quality Objectives

The data quality objectives (DQOs) used for closure of CAU 262 were presented in Appendix A of the CAIP (DOE/NV, 2000), and are included as Appendix A of this report.

The general conceptual model as presented in the CAIP (DOE/NV, 2000) was applied to all the CASs in CAU 262 and assumed that any subsurface contamination was the result of both designed and accidental releases. The potential contamination would be restricted to those areas immediately beneath and adjacent to the system components. The extent of the potential contamination was dependent upon such variables as release volume, system design, geologic conditions, and nature of contaminants.

CAU 262 characterization activities determined that actual site conditions were in agreement with the conceptual model. This information is presented in the CADD (NNSA/NV, 2001). Closure activities also indicated the conceptual model was accurate.

Details of the DQO assessment are included in Section 4.1 of this report.

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2.0 CLOSURE ACTIVITIES

This section details the specific corrective action activities completed during the closure of CAU 262: Area 25 Septic Systems and Underground Discharge Point. Copies of the analytical data reports for all verification samples are included in Appendix B.

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

2.1.1 Preplanning and Site Preparation

Closure of CAU 262 was completed using the NDEP-approved CAP (NNSA/NV, 2002a). Prior to beginning site closure activities, the following pre-field activities were completed:

Preparation of National Environmental Policy Act documentation (checklist).

Preparation of the Field Management Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, (BN, 2001a).

Preparation of the Site-Specific Health and Safety Plan for Closure Activities at Corrective Action Unit 262: Nevada Test Site, Nevada, (BN, 2001b).

Preparation of a U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) Real Estate/Operations Permit.

Preparation of required BN work permits.

Preparation of BN work control packages

Preparation of engineering design specifications

The following is the scope of the closure actions implemented for CAU 262. Closure activities occurred from December 2002-April 2003.

2.1.2 CAS 25-02-06, Underground Storage Tank

This CAS was closed by closure in place with administrative controls. The tank contents were solidified by mixing with dry Portland Type II cement. Approximately 14 cubic meters (m^3) (18.5 cubic yards [yd^3]) of cement were used to solidify the tank contents. The remaining void spaces were filled with concrete. Approximately 42 m^3 (55 yd^3) of concrete were used to fill the tank, distribution box, and one upstream access point (manhole). A Use Restriction was implemented and signs were posted on "T posts to restrict access to the tank.

2.1.3 CAS 25-04-06, Septic Systems A and B

This CAS was closed by clean closure. The Septic System A tank was exposed using a backhoe. The tank was metal and extremely rusted. The top of the tank was removed with the backhoe. Visual observation showed the tank to be dry. Excavating to the tank bottom also showed the tank to be dry with no evidence of sludge. The distribution box and manhole were also found to be dry. The septic tank, distribution box, and manhole were completely filled with approximately 6 m^3 (8 yd^3) of grout. The excavation was then backfilled with clean soil.

Septic System B was closed by removing the sanitary liquid from the tank. The liquid was pumped from the tank using a vacuum truck. The tank was rinsed and the rinseate was also removed using a vacuum truck. The liquid was then pumped into a lined basin and solidified with clean soil. The septic tank, distribution box, and manhole were then filled with grout. Approximately 7 m^3 (9 yd^3) of grout was required to fill these structures. The solidified tank contents were disposed of in the NTS Area 23 Sanitary Landfill. Approximately 37 m^3 (48 yd^3) of waste was disposed. Per the request of BN Solid Waste Operations (SWO), the waste was sampled prior to disposal. The samples were analyzed for gross alpha/beta and gamma spectroscopy. The results indicated that the waste met landfill requirements for radiological constituents. The sample results are presented in Table 1 and the analytical data is included in Appendix B.

2.1.4 CAS 25-04-07, Septic System

This CAS was closed by clean closure. Access to the septic tank was achieved by removing part of a concrete slab that covered most of the tank. The tank was visually inspected and found to be empty and dry. Characterization results indicated that the tank contained only sanitary liquid. Since no liquid was present in the tank, closure was achieved by filling the septic tank and distribution box with grout. Approximately 5 m^3 (7 yd^3) of grout was used to completely fill the tank and distribution box. Clean soil was used to backfill the area to surface grade.

2.1.5 CAS 25-05-03, Leachfield

This CAS was closed by closure in place with administrative controls. A minimum 0.6 m (2 ft) thick soil cap was constructed over the leachfield footprint. The cap was constructed of three 0.2 m (8 in) lifts of clean, native soil. Each lift was compacted to at least 90 percent of the maximum density of the fill material. A minimum of four compaction tests were done per complete lift. Supplemental lifts (additional lifts required to compensate for variations in the leachfield topography) required a minimum of one compaction test. The compaction tests were conducted in the field by BN Material Testing Laboratory (MTL) personnel. The test results are included in Appendix C. The existing chain link security fence was retained and repaired where necessary.

Prior to installing the soil cover, all the leachfield monitoring tubes were cut off at ground level and filled with grout. The cut tubes were found not to be radiologically impacted and were disposed in the NTS Area 9 Construction Landfill. The radiological survey reports are included in Appendix D and Waste Disposition Records are presented in Appendix E.

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS

PARAMETER	SAMPLE ID	RESULT (mg/kg)[a]	REPORTING LIMIT (mg/kg)[a]
CAS 25-05-05			
TPH[b] Diesel	250505-Waste-1	<60	60
TPH Gasoline	250505-Waste-1	100	60
TPH Oil	250505-Waste-1	390	150
TPH Total	250505-Waste-1	490	60
TPH Diesel	250512-Waste-1	1100	60
TPH Gasoline	250512-Waste-1	83	60
TPH Oil	250512-Waste-1	<150	150
TPH Total	250512-Waste-1	1200	60
PARAMETER (TCLP VOC)[c]	**SAMPLE ID**	**RESULT (mg/L)[d]**	**REPORTING LIMIT (mg/L)[d]**
Benzene	250505-Waste-1	<0.10	0.10
Carbon Tetrachloride	250505-Waste-1	<0.10	0.10
Chlorobenzene	250505-Waste-1	<0.10	0.10
Chloroform	250505-Waste-1	<0.10	0.10
1,4-Dichlorobenzene	250505-Waste-1	<0.10	0.10
1,1-Dicholroethene	250505-Waste-1	<0.10	0.10
1,2-Dichloroethane	250505-Waste-1	<0.10	0.10
Methyl ethyl ketone	250505-Waste-1	<0.50	0.50
Tetrachloroethene	250505-Waste-1	<0.10	0.10
Trichloroethene	250505-Waste-1	<0.10	0.10
Vinyl chloride	250505-Waste-1	<0.10	0.10
1,1,1-Trichloroethane	250505-Waste-1	<0.10	0.10
Toluene	250505-Waste-1	<0.10	0.10
Ethylbenzene	250505-Waste-1	<0.10	0.10
Total Xylenes	250505-Waste-1	<0.20	0.20

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS (Continued)

PARAMETER	SAMPLE ID	RESULT(pCi/L)[e]	MDC[f] (pCi/L)[e]
Gross Alpha	250505-Waste-1	1.12E+03	2.98E+02
Gross Beta	250505-Waste-1	2.87E+03	3.65E+02
PARAMETER	**SAMPLE ID**	**RESULT(pCi/g)[g]**	**MDC[f] (pCi/g)[g]**
Gross Alpha	250505-Waste-2	3.60E+00	6.47E-01
Gross Beta	250505-Waste-2	3.96E+00	9.46E-01
CAS 25-04-06			
Gross Alpha	250406B-Waste-1	4.59E+00	3.53E-01
Gross Beta	250406B-Waste-1	4.55E+00	6.73E-01
CAS 25-05-12			
Gross Alpha	250512-Waste-1	1.22E+00	3.18E-01
Gross Beta	250512-Waste-1	1.72E+00	4.70E-01
Gross Alpha	250512-Waste-2	4.79E+00	1.12E+00
Gross Beta	250512-Waste-2	3.73E+00	1.77E+00
PARAMETER (GAMMA SPECTROSCOPY)	**SAMPLE ID**	**RESULT (pCi/L)[e]**	**MDC[f] (pCi/L)[e]**
CAS 25-05-05			
Actinium-228	250505-Waste-1	3.05E+01	3.35E+01
Americium- 241	250505-Waste-1	-2.92E+00	9.84E+00
Cerium-144	250505-Waste-1	-1.88E+01	3.38E+01
Cobalt-60	250505-Waste-1	-1.40E+00	1.02E+01
Cesium-134	250505-Waste-1	6.36E-01	8.77E+00
Cesium-137	250505-Waste-1	1.12E+02	8.52E+00
Europium-152	250505-Waste-1	-8.09E+00	5.26E+01
Europium-154	250505-Waste-1	5.50E+00	4.94E+01
Europium-155	250505-Waste-1	-2.84E+00	1.60E+01
Potassium-40	250505-Waste-1	2.96E+02	1.61E+02

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS (Continued)

PARAMETER (GAMMA SPECTROSCOPY)	SAMPLE ID	RESULT (pCi/L)[e]	MDC[f] (pCi/L)[e]
Lead-212	250505-Waste-1	3.12E+01	1.47E+01
Promethium-144	250505-Waste-1	3.97E+00	8.45E+00
Promethium-146	250505-Waste-1	-2.23E+00	1.08E+01
Ruthenium-106	250505-Waste-1	-1.97E+01	8.14E+01
Antimony-125	250505-Waste-1	2.64E+00	2.21E+01
Thorium-234	250505-Waste-1	8.65E+01	1.09E+02
Uranium-235	250505-Waste-1	3.16E+00	4.23E+01
Yttrium-88	250505-Waste-1	4.37E+00	8.59E+00
PARAMETER (GAMMA SPECTROSCOPY)	**SAMPLE ID**	**RESULT (pCi/g)[g]**	**MDC[f] (pCi/g)[g]**
Actinium-228	250505-Waste-2	1.05E+00	7.58E-01
Americium- 241	250505-Waste-2	3.28E-01	1.13E+00
Cerium-144	250505-Waste-2	-2.02E-02	6.64E-01
Cobalt-60	250505-Waste-2	-7.97E-02	2.57E-01
Cesium-134	250505-Waste-2	6.85E-03	1.68E-01
Cesium-137	250505-Waste-2	3.36E-02	1.64E-01
Europium-152	250505-Waste-2	5.22E-01	5.68E-01
Europium-154	250505-Waste-2	-1.13E-01	9.39E-01
Europium-155	250505-Waste-2	2.32E-01	3.97E-01
Potassium-40	250505-Waste-2	2.19E+01	1.97E+00
Lead-212	250505-Waste-2	1.19E+00	3.12E-01
Promethium-144	250505-Waste-2	-7.66E-03	1.80E-01
Promethium-146	250505-Waste-2	7.53E-02	1.91E-01
Ruthenium-106	250505-Waste-2	-2.81E-01	1.65E+00

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS (Continued)

PARAMETER (GAMMA SPECTROSCOPY)	SAMPLE ID	RESULT (pCi/g)[g]	MDC[f] (pCi/g)[g]
Antimony-125	250505-Waste-2	3.06E-02	4.26E-01
Thorium-234	250505-Waste-2	2.31E+00	2.79E+00
Uranium-235	250505-Waste-2	2.36E-01	6.59E-01
Yttrium-88	250505-Waste-2	3.90E-02	1.71E-01
CAS 25-04-06			
Actinium-228	250406B-Waste-1	1.96E+00	1.11E+00
Americium-241	250406B-Waste-1	5.01E-01	1.17E+00
Cerium-144	250406B-Waste-1	1.12E-01	9.43E-01
Cobalt-60	250406B-Waste-1	-8.34E-02	3.08E-01
Cesium-134	250406B-Waste-1	1.10E-02	2.09E-01
Cesium-137	250406B-Waste-1	-5.63E-02	2.65E-01
Europium-152	250406B-Waste-1	-3.50E-01	1.36E+00
Europium-154	250406B-Waste-1	6.87E-01	1.21E+00
Europium-155	250406B-Waste-1	3.90E-01	5.10E-01
Potassium-40	250406B-Waste-1	3.23E+01	3.36E+00
Lead-212	250406B-Waste-1	1.81E+00	3.26E-01
Promethium-144	250406B-Waste-1	1.13E-01	2.25E-01
Promethium-146	250406B-Waste-1	1.34E-02	2.84E-01
Ruthenium-106	250406B-Waste-1	-7.52E-01	2.53E+00
Antimony-125	250406B-Waste-1	0.00E+00	4.96E-01
Thorium-234	250406B-Waste-1	-1.56E-01	3.63E+00
Uranium-235	250406B-Waste-1	1.04E-04	1.02E+00
Yttrium-88	250406B-Waste-1	-1.83E-02	2.92E-01

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS (Continued)

PARAMETER (GAMMA SPECTROSCOPY)	SAMPLE ID	RESULT (pCi/g)[g]	MDC[f] (pCi/g)[g]
CAS 25-05-12			
Actinium-228	250512-Waste-1	8.09E-02	4.26E-01
Americium- 241	250512-Waste-1	5.20E-02	1.34E-01
Cerium-144	250512-Waste-1	1.19E-01	3.38E-01
Cobalt-60	250512-Waste-1	3.42E-02	9.57E-02
Cesium-134	250512-Waste-1	-1.12E-02	1.13E-01
Cesium-137	250512-Waste-1	1.13E+00	1.24E-01
Europium-152	250512-Waste-1	1.08E-01	5.00E-01
Europium-154	250512-Waste-1	-4.68E-02	7.03E-01
Europium-155	250512-Waste-1	7.05E-02	1.96E-01
Potassium-40	250512-Waste-1	7.02E-01	1.65E+00
Lead-212	250512-Waste-1	8.39E-02	1.70E-01
Promethium-144	250512-Waste-1	-3.77E-02	1.26E-01
Promethium-146	250512-Waste-1	4.92E-02	1.51E-01
Ruthenium-106	250512-Waste-1	3.45E-01	9.59E-01
Antimony-125	250512-Waste-1	9.27E-02	2.92E-01
Thorium-234	250512-Waste-1	1.98E-01	9.87E-01
Uranium-235	250512-Waste-1	1.38E-01	4.48E-01
Yttrium-88	250512-Waste-1	-1.21E-02	1.14E-01
Actinium-228	250512-Waste-2	1.31E+00	6.64E-01
Americium- 241	250512-Waste-2	-3.34E-01	5.44E-01
Cerium-144	250512-Waste-2	2.07E-01	5.89E-01
Cobalt-60	250512-Waste-2	-3.35E-02	1.53E-01
Cesium-134	250512-Waste-2	-1.01E-01	2.19E-01
Cesium-137	250512-Waste-2	2.13E-01	1.42E-01

TABLE 1 - WASTE CHARACTERIZATION SAMPLE RESULTS (Continued)

PARAMETER (GAMMA SPECTROSCOPY)	SAMPLE ID	RESULT (pCi/g)[g]	MDC[f] (pCi/g)[g]
Europium-152	250512-Waste-2	-1.91E-01	8.11E-01
Europium-154	250512-Waste-2	-8.14E-02	8.62E-01
Europium-155	250512-Waste-2	9.49E-02	3.57E-01
Potassium-40	250512-Waste-2	2.61E+01	2.42E+00
Lead-212	250512-Waste-2	1.26E+00	2.51E-01
Promethium-144	250512-Waste-2	1.07E-02	1.44E-01
Promethium-146	250512-Waste-2	6.35E-02	1.40E-01
Ruthenium-106	250512-Waste-2	-4.97E-01	1.35E+00
Antimony-125	250512-Waste-2	-8.62E-02	3.23E-01
Thorium-234	250512-Waste-2	6.17E-01	1.67E+00
Uranium-235	250512-Waste-2	4.69E-02	6.39E-01
Yttrium-88	250512-Waste-2	-7.28E-02	1.81E-01

[a] mg/kg - milligrams per kilogram
[b] TPH - Total Petroleum Hydrocarbons
[c] TCLP VOC - Toxicity Characteristic Leaching Procedure Volatile Organic Compounds (EPA, 1996)
[d] mg/L - milligrams per liter
[e] pCi/L - picoCuries per liter
[f] MDC - Minimum Detectable Concentration
[g] pCi/g - picoCuries per gram

The distribution box and a diversion drum were also filled with approximately 4.5 m^3 (6 yd^3) of grout. Two valve boxes and three subsurface vaults within the leachfield were backfilled with clean fill.

To limit erosion of the surface cap, existing surface washes on the southwest and northeast sides of the leachfield were graded and backfilled with geotextile fabric, graded sand, and a minimum of 0.3 m (1 ft) of rip rap. A rip-rap lined channel was constructed along the north upgradient side of the leachfield to divert overland flow away from the leachfield cap. As-built drawings of the site are presented in Appendix F. A Use Restriction was implemented to restrict intrusive activity into or beneath the site and warning signs were posted on all four sides of the fence. Use Restriction information is presented in Appendix G.

2.1.6 CAS 25-05-05, Leachfield

This site consists of a septic tank and was closed by clean closure. Prior to closure activities, waste characterization samples of the tank contents were collected to verify the COC present. The samples were analyzed for TPH full scan, Toxicity Characteristic Leaching Procedure volatile organic compounds (U.S. Environmental Protection Agency [EPA], 1996), gross alpha/beta, and gamma emitting radionuclides. The results indicated that the waste contained TPH above the action level (NAC, 2002a) (see Table 1). Analytical data is presented in Appendix B.

The tank was clean closed by removing, solidifying, and disposing of the tank contents. The contents were pumped out of the tank into a lined basin and solidified with clean soil. When pumping became ineffective due to the viscosity of the sludge, the top of the tank was exposed and opened and the sludge was solidified in place with clean soil. The solidified waste was removed from the tank using appropriate heavy equipment and placed in the lined basin. The tank was pressure washed/steam cleaned to remove any remaining residue in the tank. The final rinseate was sampled to verify that no COC remained in the tank. The rinseate was analyzed for TPH full scan and gross alpha/beta. The results indicated that no COC above action levels remained in the tank (see Table 2). Rinseate remaining in the tank was solidified in place with clean soil and the remaining void space was filled with grout. The excavation was then backfilled with clean fill. In addition, the distribution box and three manholes were also filled with grout. Approximately 25 m^3 (33 yd^3) of grout was used to fill these structures.

The solidified tank contents were disposed in the NTS Area 6 Hydrocarbon Landfill. Approximately 122 m^3 (160 yd^3) of waste was disposed. Per the request of BN SWO, the waste was sampled prior to disposal. The samples were analyzed for gross alpha/beta and gamma emitting radionuclides. The results indicated that the waste met landfill requirements for radiological constituents. The sample results are presented in Table 1 and the analytical data is included in Appendix B.

TABLE 2 - VERIFICATION SAMPLE RESULTS

PARAMETER	SAMPLE ID	RESULT (µg/L)[a]	REPORTING LIMIT (µg/L)[a]
CAS 25-05-05			
TPH[b] Diesel	250505-V1	340	300
TPH Gasoline	250505-V1	<30	30
TPH Oil	250505-V1	590	300
CAS 25-05-12			
TPH Diesel	250512-V1	300	300
TPH Gasoline	250512-V1	<30	30
TPH Oil	250512-V1	340	300
TPH Diesel	250512-V2[c]	300	300
TPH Gasoline	250512-V2	<30	30
TPH Oil	250512-V2	300	300
PARAMETER	**SAMPLE ID**	**RESULT (pCi/L)[d]**	**MDA[e] (pCi/L)[d]**
CAS 25-05-05			
Gross alpha	250505-V1	3.30	3.78
Gross beta	250505-V1	5.42	1.50

[a] µg/L - micrograms per liter
[b] TPH - Total Petroleum Hydrocarbons
[c] duplicate of 250512-V1
[d] pCi/L - picoCuries per liter
[e] MDA - Minimum Detectable Activity

2.1.7 CAS 25-05-06, Leachfield

This CAS is comprised of a leachfield that contains underground radiological COC (NNSA/NV, 2001). The leachfield was closed by closure in place with administrative controls. Closure activities began with filling the distribution box with approximately 7.5 m^3 (10 yd^3) of grout. The leachfield monitoring tubes were cut off at ground level and filled with grout.

The cut tubes were found not to be radiologically impacted and were disposed in the NTS Area 9 Construction Landfill. The radiological survey reports are included in Appendix D and Waste Disposition Records are presented in Appendix E. After the tubes were cut and filled a 2.1 m (7 ft) high chain link security fence was installed around the perimeter of the leachfield. The existing fence was removed and disposed in the NTS Area 9 Construction Landfill. A Use Restriction was implemented to restrict intrusive activity into or beneath the leachfield site and warning signs posted on all four sides of the fence. Use Restriction information is presented in Appendix G.

2.1.8 CAS 25-05-08, Radioactive Leachfield

This CAS was closed by closure in place with administrative controls. A 0.6-1.2 m (2-4 ft) thick soil cap was constructed over the leachfield footprint. The cap was constructed of six 0.2 m (8 in.) lifts of clean, native soil. Each lift was compacted to at least 90 percent of the maximum density of the fill material. A minimum of four compaction tests were done per lift. Supplemental lifts required a minimum of one compaction test. The compaction tests were conducted in the field by BN MTL personnel and the results are included in Appendix C.

Prior to installing the soil cap, all the leachfield monitoring tubes were cut off at ground level and filled with grout. The cut tubes were found to be radiologically impacted and were co-packaged with the CAU 113 waste stream for disposal as low level waste. This was done with the approval of BN Waste Generator Services. The radiological survey reports are presented in Appendix D and Waste Disposition Records are presented in Appendix E.

The buried distribution box was exposed and filled with approximately 4 m^3 (5 yd^3) of grout. The distribution box excavation was backfilled prior to installing the leachfield cap.

To protect the downgradient southern face of the cap from erosion, a cellular confinement system was installed along the downgradient face of the cap. The cells were anchored to the cap with "J hooks and then filled with graded aggregate. After the soil cap was completed, a 2.1 m (7 ft) high chain link security fence was installed around the perimeter of the leachfield. The existing rope fence was removed and disposed in the NTS Area 9 Construction Landfill. As-built drawings for the cover and fence are presented in Appendix F. A Use Restriction was implemented to restrict intrusive activity into or beneath the site and warning signs were posted on all four sides of the fence. Use restriction information is presented in Appendix G.

2.1.9 CAS 25-05-12, Leachfield

This site consists of a septic tank and was closed by clean closure. Prior to closure activities, waste characterization samples of the tank contents were collected to verify the COC present. The samples were analyzed for TPH full scan, gross alpha/beta, and gamma emitting radionuclides. The results indicated that the waste contained TPH above the action level (NAC, 2002a) (see Table 1). Analytical data is presented in Appendix B.

The tank was clean closed by removing, solidifying, and disposing of the tank contents. The contents were pumped out of the tank into a lined basin and solidified with clean soil. When pumping became ineffective due to the viscosity of the sludge, the top of the tank was exposed and opened, and the sludge was solidified in place with clean soil. The solidified waste was removed from the tank and placed in the lined basin using appropriate heavy equipment. The tank was pressure washed/steam cleaned to remove any remaining residue in the tank. The final rinseate was sampled to verify that no COC remained in the tank. The rinseate was analyzed for TPH full scan. The results indicated no COC above action levels remained in the tank (see Table 2). Rinseate remaining in the tank was solidified in place with clean soil and the remaining void space was filled with grout. The excavation was then backfilled with clean fill. In addition, two system manholes were also filled with grout. Approximately 20 m^3 (26 yd^3) of grout was used to fill the septic tank and two manholes.

The solidified tank contents were disposed in the NTS Area 6 Hydrocarbon Landfill. Approximately 111 m^3 (145 yd^3) of waste was disposed. Per the request of BN SWO, the waste was sampled prior to disposal. The samples were analyzed for gross alpha/beta and gamma emitting radionuclides. The results indicated that the waste met landfill requirements for radiological constituents. The sample results are presented in Table 1 and the analytical data is included in Appendix B.

2.1.10 CAS 25-51-01, Dry Well

No COC were identified for this CAS (NNSA/NV, 2001); therefore, this CAS was closed by taking no further action.

2.2 DEVIATIONS FROM CORRECTIVE ACTION PLAN AS APPROVED

The NDEP-approved CAP (NNSA/NV, 2002a) was modified before and during field activities to adjust to unexpected conditions and simplify activities. The following deviations occurred from the approved scope of work as presented in the NDEP-approved CAP (NNSA/NV, 2002a). Approved Records of Technical Change are included in Appendix I.

CAS 25-02-06, Underground Storage Tank:

> The CAP calls for the removal of the tank lid to allow access. It was determined in the field that the tank was constructed in place and no removable lid was present. Access to the tank interior was sufficient through the existing four manholes. Because no lid was removed, there was no need to construct a reinforced concrete pad over the tank footprint.

CAS 25-04-06, Septic System B

The tank contents were to be pumped out of the tank and into the NTS Area 23 Sewage Treatment Facility. Because of BN SWO concerns of depositing excess liquid/sediment into the sewage lagoon, the tank contents were pumped into a lined basin and solidified with clean soil. The solidified material was then disposed in the NTS Area 23 Sanitary Landfill.

CAS 25-04-06, Septic System A and CAS 25-04-07, Septic System

The contents of these septic tanks were to be removed and disposed. It was determined in the field that no liquid or sludge were present in either tank; therefore, the tanks were closed by filling with concrete.

CAS 25-05-03, Leachfield

The CAP indicated that the existing security fence around the leachfield was to be replaced. A pre-field inspection determined that the fence was in good condition and replacement was not necessary. Only minor repairs were required for the fence to meet specifications.

CAS 25-05-05, Leachfield and CAS 25-05-12, Leachfield

Because of the configuration of the septic tanks, it was not possible to mix and remove the tank contents by pumping as specified in the CAP. Therefore the tank tops were opened and the contents were solidified in place with clean fill and then removed using appropriate equipment. The tanks were then pressure washed/steam cleaned. The final rinse water was sampled from the tank rather than pumped out into drums for sampling. When sample results indicated that no COC above action levels remained in the tanks, the remaining rinse water was solidified in place with clean fill material. The remaining void spaces were then filled with concrete.

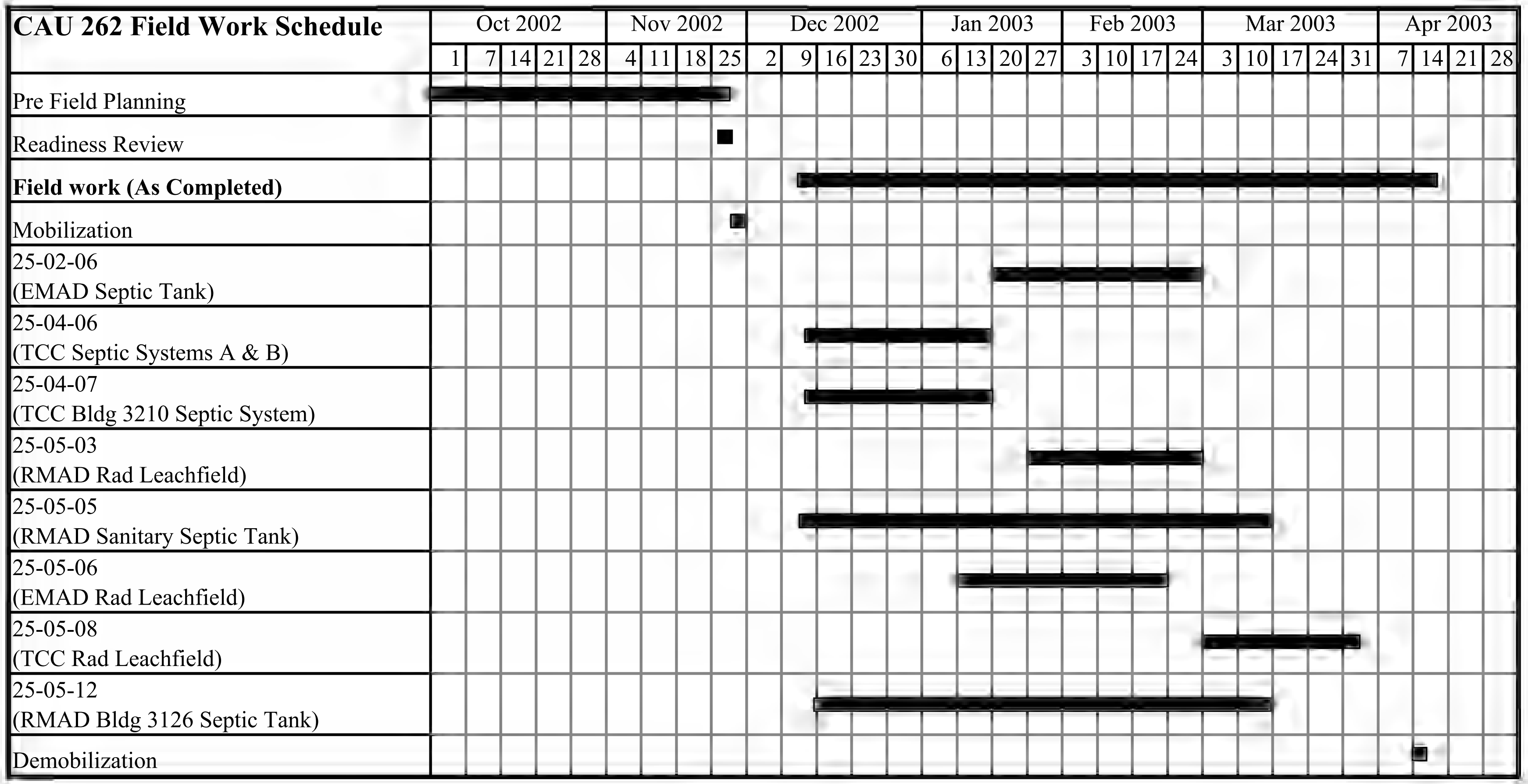
2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED

The corrective action field activities began in December 2002 and were completed in April 2003. Details of the closure field activities schedule are provided in Table 3.

2.4 SITE PLAN/SURVEY PLAT

CAS 25-02-06, 25-05-03, 25-05-06, and 25-05-08 were closed in place with administrative controls (i.e., Use Restrictions). Figures listing the site coordinates for the Use Restrictions are provided in Appendix G. Engineered construction was required for CAS 25-05-03 and 25-05-08. As-built drawings of these CASs are provided in Appendix F.

TABLE 3 - CORRECTIVE ACTION SCHEDULE AS COMPLETED



3.0 WASTE DISPOSITION

The following types of waste were produced at CAU 262 during closure activities: hydrocarbon-impacted soil and debris, radiologically-impacted pipe, sanitary waste, and construction debris. All waste was managed in accordance with state and federal regulations, DOE orders, and BN procedures.

During closure activities at CAS 25-05-05, approximately 145 m^3 (190 yd^3) of TPH-impacted soil and debris was removed from the site. This is equivalent to approximately 207,541 kilograms (kgs) (457,550 pounds [lbs]) of waste. All of the waste removed from the site was transported and disposed of at the NTS Area 6 Hydrocarbon Landfill and included the solidified septic tank contents, debris, and the solidification basin liner. Waste documentation is provided in Appendix E.

During closure activities at CAS 25-05-12, approximately 111 m^3 (145 yd^3) of TPH-impacted soil and debris was removed from the site. This is equivalent to approximately 143,589 kgs (316,560 lbs) of waste. All of the waste removed from the site was transported and disposed of at the NTS Area 6 Hydrocarbon Landfill and included the solidified septic tank contents, debris, and the solidification basin liner. Waste documentation is provided in Appendix E.

CAS 25-04-06 closure generated approximately 37 m^3 (48 yd^3) of sanitary waste. This is equivalent to approximately 48,367 kgs (106,630 lbs) of waste. The waste was disposed in the NTS Area 23 Sanitary Landfill and included solidified septic tank contents and the solidification basin liner. Waste documentation is provided in Appendix E.

Closure of CAS 25-05-08 generated radiologically-impacted waste. The waste was the leachfield monitoring tubes that were cut off at ground level prior to installing the soil cover. Six 0.6 m (2 ft) sections of pipe were disposed of. Waste also included hot line trash. Approximately 0.11 m^3 (0.15 yd^3) of waste was generated. This is equivalent to approximately 22.5 kgs (50 lbs) of waste. The cut tubes and hot line trash was co-packaged with the CAU 113 waste stream for disposal as low level radioactive waste. This was done with the approval of BN Waste Generator Services. Waste documentation is provided in Appendix E.

Closure activities at all the CASs generated various miscellaneous construction debris including existing leachfield fence, scrap wood, metal debris, and vegetation. All debris was radiologically surveyed prior to disposal. All debris was found to be free of radiological contamination and was disposed in the NTS Area 9 Construction landfill. Salvageable material such as T-posts were saved for reuse.

A description of the type and quantity of waste generated during CAU 262 closure activities is provided in Table 4. Waste disposition records are included in Appendix E.

TABLE 4 - WASTE GENERATED DURING CAU 262 CLOSURE ACTIVITIES

WASTE TYPE	APPROX. WASTE QUANTITY (mass)	APPROX. WASTE QUANTITY (volume)
CAS 25-05-05		
Petroleum Hydrocarbon	207,541 kgs[a] (457,550 lbs[b])	145 m^3[c] (190 yd^3)[d]
CAS 25-05-12		
Petroleum Hydrocarbon	143,589 kgs (316,560 lbs)	111 m^3 (145 yd^3)
CAS 25-04-06		
Sanitary	48,367 kgs (106,630 lbs)	37 m^3 (48 yd^3)
CAS 25-05-08		
Low-level Radioactive	22.5 kgs (50 lbs)	0.11 m^3 (0.15 yd^3)
All CASs		
Construction Debris	31,470 kgs (69,380 lbs)	37 m^3 (48 yd^3)

[a] kgs - kilograms
[b] lbs - pounds
[c] m^3 - cubic meters
[d] yd^3 - cubic yards

4.0 CLOSURE VERIFICATION RESULTS

CAU 262 closure was verified by:

CAS 25-02-06: Closure was accomplished by filling the septic tank, distribution box, and manhole with grout. Because this CAS was closed by closure in place with administrative controls, no verification samples were required.

CAS 25-05-06: Closure in place with administrative controls was completed by installing a 2.1 m (7 ft) chain link security fence around the leachfield. The distribution box and monitoring tubes were filled with grout.

CAS 25-05-05: A verification sample of the final rinse water was collected from the septic tank. The sample was analyzed for TPH full scan and gross alpha/beta emitting radionuclides. Verification sample results showed no COC present in the tank above regulatory limits. Sample results are shown in Table 2 and the laboratory data packages are presented in Appendix B. Closure was completed by filling the septic tank, distribution box, and three manholes with grout.

CAS 25-05-12: A verification sample of the final rinse water was collected from the septic tank. The sample was analyzed for TPH full scan. Verification sample results showed no COC present in the tank above regulatory limits. Sample results are shown in Table 2 and the laboratory data packages are presented in Appendix B. Closure was completed by filling the septic tank and two manholes with grout.

CAS 25-04-06 System B: Closure was accomplished by removing and disposing the tank contents. Because the contents were sanitary waste only, no verification samples were required. The septic tank, distribution box, and manhole were filled with grout.

CAS 25-04-06 System A: Because no contents were present in the tank, closure was achieved by filling the septic tank, distribution box, and manhole with grout.

CAS 25-04-07: Because no contents were present in the tank, closure was achieved by filling the septic tank, distribution box, and manhole with grout.

CAS 25-05-03 and 25-05-08: Construction of the soil covers and erosion control structures as designed were verified by As-built drawings. (Appendix F).

CAS 25-51-01: No COC were identified for this CAS (NNSA/NV, 2001); therefore, this CAS was closed by taking no further action.

All verification samples were collected with disposable polyethylene dippers and placed in appropriately labeled sample containers secured with custody seals. All samples were labeled with a unique sample number, placed on ice in coolers, and transported under chain-of-custody to an off-site laboratory. All samples were analyzed for TPH full scan.

During collection of all verification samples, standard quality assurance/quality control (QA/QC) samples were also collected; e.g., one field duplicate per 20 samples submitted blind to the analytical laboratory for analysis. Also, the analytical laboratory followed standard QA/QC procedures during sample analysis. This included matrix spike/matrix spike duplicate and spiked surrogate percent recovery analysis (Appendix B).

4.1 DATA QUALITY ASSESSMENT

CAU 262 closure activities were performed to the criteria specified in the NDEP-approved CAP (NNSA/NV, 2002a) and CADD (NNSA/NV, 2001). The approved correction action alternatives as implemented did not result in any deviations with the conceptual model as presented in the CAIP (DOE/NV, 2000) and included in Appendix A of this report.

The closure in place with administrative controls alternative included constructing engineered soil covers and filling septic tanks with grout. No verification data were required, therefore, agreement with the conceptual model was determined by the results of characterization activities (NNSA/NV, 2001).

Clean closure of the septic tanks at CAS 25-05-05 and 25-05-12 required removal of the tank contents. Verification samples were required at these CASs because the septic tanks contained COC above action levels. Verification samples were limited to the tank interiors and not the surrounding soil. However, during removal of the tank contents, visual inspections did not indicate any cracks, holes, or other structural defects. This qualitative data coincides with data gathered during characterization, which indicated no contamination in the soil caused by a septic tank breach.

4.2 USE RESTRICTIONS

Use restrictions have been implemented at the following four CASs: 25-02-06, 25-05-03, 25-05-06, and 25-05-08. CASs 25-04-06, 25-04-07, 25-05-05, and 25-05-12 have been clean-closed; use of the areas associated with these sites is unrestricted. CAS 25-51-01 was closed by taking no further action; future use of this area is unrestricted. Use Restriction information is provided in Appendix G.

A risk assessment for the following four CASs was made based on the "A through K evaluation as presented in NAC Section 445A.227 (NAC, 2002b). The results of the "A through K evaluation are found in the CADD (NNSA/NV, 2001) and are included in Appendix J of this report.

4.2.1 CAS 25-02-06, Underground Storage Tank Use Restriction

COC associated with this CAS are confined within the septic tank; therefore, the use restriction was implemented as the boundaries of the tank itself. Two Use Restriction warning signs were erected in the area as specified in the CAP (NNSA/NV, 2002a).

The Use Restriction Information form and a figure showing the location of the corner points for the area at CAS 25-02-06 are contained in Appendix G.

4.2.2 CAS 25-05-03, Leachfield Use Restriction

This site contains underground radioactive material. Closure activities included the installation of a 2.1 m (7 ft) security fence; therefore, the Use Restriction area is delineated by the security fence. Survey located the four corner fence posts bounding the leachfield. The Use Restriction Information form and figure showing the location of the corner points for CAS 25-05-03 is contained in Appendix G.

4.2.3 CAS 25-05-06, Leachfield Use Restriction

This site contains underground radioactive material. Closure activities included the installation of a 2.1 m (7 ft) security fence; therefore, the Use Restriction area is delineated by the security fence. Survey located the four corner fence posts bounding the leachfield. The Use Restriction Information form and figure showing the location of the corner points for CAS 25-05-06 is contained in Appendix G.

4.2.4 CAS 25-05-08, Radioactive Leachfield

This site contains underground radioactive material. Closure activities included the installation of a 2.1 m (7 ft) security fence; therefore, the Use Restriction area is delineated by the security fence. Survey located the corner fence posts bounding the leachfield. The Use Restriction Information form and figure showing the location of the corner points for CAS 25-05-08 is contained in Appendix G.

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5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The following site closure activities were performed at CAU 262 and are documented in this CR.

CAS 25-02-06 was closed in place by solidifying the septic tank contents and filling the remaining void space with grout. Access points were also filled with grout. A use restriction was implemented to restrict access into the tank.

CAS 25-04-06 consists of two septic systems (A and B). System A septic tank contained no liquid or sludge and was clean closed by filling the septic tank, distribution box, and upstream manhole with grout. System B was clean closed by removing and disposing the septic tank contents, and the tank, distribution box, and upstream manhole were filled with grout.

CAS 25-04-07 septic tank and distribution box contained no liquid or sludge and was clean closed by filling with grout.

CAS 25-05-03 is a leachfield which was closed in place with administrative controls by installing a 0.6 m (2ft) thick soil cap over the leachfield. As a best management practice to control potential erosion, existing surface washes were graded and backfilled with rip rap. A rip-rap lined channel was constructed along the upgradient side of the leachfield to divert overland flow away from the leachfield cap. The existing chain link fence was repaired and permanent warning signs were affixed to the fence. A use restriction was implemented to restrict intrusive activity into or beneath the site.

CAS 25-05-05 septic tank was clean closed by removing, solidifying, and disposing the tank contents. The tank was pressure washed/steam cleaned and the rinseate was sampled to verify that no COC remained in the tank. The tank, distribution box, and access points were filled with grout and the excavation was backfilled with clean fill material.

CAS 25-05-06 is a leachfield that was closed in place with administrative controls by installing a 2.1 m (7 ft) high chain link security fence around the perimeter of the leachfield. Permanent warning signs were affixed to the fence and a Use Restriction was implemented to restrict intrusive activity into the leachfield.

CAS 25-05-08 is a leachfield that was closed in place with administrative controls installing a 1.2 m (4 ft) thick soil cap over the leachfield. The existing fence was removed and disposed and a new 2.1 m (7 ft) high chain link security fence was installed around the perimeter of the leachfield. As a best management practice to control potential erosion, a cellular confinement system filled with aggregate was installed on the downgradient face of the cap. Permanent warning signs were affixed to the new fence and a use restriction was implemented to restrict intrusive activity into or beneath the site.

CAS 25-05-12 septic tank was clean closed by removing, solidifying, and disposing the tank contents. The tank was pressure washed/steam cleaned and the rinseate was sampled to verify that no COC remained in the tank. The tank, distribution box and access points were filled with grout and the excavation was backfilled with clean fill material.

CAS 25-51-01 is an underground discharge point that was closed by taking no further action.

5.2 POST-CLOSURE MONITORING REQUIREMENTS

Details of the CAU 262 post-closure monitoring plan are provided below:

5.2.1 Inspections

5.2.1.1 CAS 25-02-06

The inspection will be performed on an annual basis and will consist of visual observations to verify that the proper signs are in place and readable, and that the use restriction is maintained. If any maintenance and repair requirements are identified, funding will be requested and the repairs scheduled. Any repairs will be documented in writing at the time of repair.

5.2.1.2 CAS 25-05-03

The inspection will be performed on an annual basis and will consist of visual observations to verify that the fence is in good condition, proper signs are in place and readable, the soil cover is intact, and the use restriction is maintained. If any maintenance and repair requirements are identified, funding will be requested and the repairs scheduled. Any repairs will be documented in writing at the time of repair.

5.2.1.3 CAS 25-05-06

The inspection will be performed on an annual basis and will consist of visual observations to verify that the fence is in good condition, proper signs are in place and readable, and the use restriction is maintained. If any maintenance and repair requirements are identified, funding will be requested and the repairs scheduled. Any repairs will be documented in writing at the time of repair.

5.2.1.4 CAS 25-05-08

The inspection will be performed on an annual basis and will consist of visual observations to verify that the fence is in good condition, proper signs are in place and readable, the soil cover is intact, and the use restriction is maintained. If any maintenance and repair requirements are identified, funding will be requested and the repairs scheduled. Any repairs will be documented in writing at the time of repair.

The post-closure inspections will consist of detailed inspections of the fence, soil covers as applicable, and postings. Inspection results will be documented in a single annual letter report. The letter report will include a discussion of observations and provide a record of maintenance activities. A copy of each annual letter report will be submitted to the NDEP.

The proposed date for the first post-closure inspection is May 2004 and the proposed due date for the post-closure monitoring report is approximately one year after the NDEP approves the final CAU 262 CR.

5.3 RECOMMENDATIONS

Based on completion of site closure activities as documented by this CR, it is requested that a Notice of Completion be provided by the NDEP for CAU 262. Upon closure approval, CAU 262 will be promoted from Appendix III to Appendix IV of the FFACO (1996), “Closed Corrective Action Units.

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6.0 REFERENCES

BN, see Bechtel Nevada.

Bechtel Nevada, 2001a. Field Management Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Las Vegas, NV.

Bechtel Nevada, 2001b. Site-Specific Health and Safety Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, Las Vegas, NV.

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

EPA, see U.S. Environmental Protection Agency

FFACO, see Federal Facility Agreement and Consent Order.

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

NAC, see Nevada Administrative Code.

Nevada Administrative Code. 2002a. Section 445A.2272, "Contamination of Soil: Establishment of Action Levels. Carson City, NV.

Nevada Administrative Code. 2002b. Section 445A.227, "Contamination of Soil: Order by Director for Corrective Action; Factors to be Considered in Determining Whether Corrective Action is Required. Carson City, NV.

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

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U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office Nevada Operations Office, 2002b. Nevada Environmental Restoration Project, Industrial Sites Quality Assurance Project Plan, Nevada Test Site, Nevada, DOE/NV--372-Rev. 3, Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office Nevada Operations Office, 2001. Corrective Action Decision Document for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada; Revision 1, DOE/NV--744, Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office, 2000. Corrective Action Investigation Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada; Revision 0, DOE/NV 629, Las Vegas, NV.

U.S. Environmental Protection Agency. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, Third Edition. Washington, D.C.

APPENDIX A

DATA QUALITY OBJECTIVES FOR CAU 262*

* As presented and published in the approved Corrective Action Investigation Plan for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, July 2000, DOE/NV--629, Rev. 0. Las Vegas, NV.

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ACRONYMS AND ABBREVIATIONS

bgs	Below ground surface
BMEC	Burns & McDonnell Engineering Company
BN	Bechtel Nevada
CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAS	Corrective Action Site(s)
CAU	Corrective Action Unit(s)
COPC	Contaminant(s) of potential concern
CR	Closure Report
CV	Coefficient of variation
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operation Office
DQO	Data Quality Objective(s)
E-MAD	Engine-Maintenance Assembly and Disassembly
EPA	U.S. Environmental Protection Agency
e_r	percent error
FFACO	Federal Facility Agreement and Consent Order
FSL	Field-screening levels
ft	Foot (feet)
FMBF	Flatow, More, Bryan and Fairburn
in.	Inch(es)
IT	International Technology Corporation
LASL	Los Alamos Scientific Laboratory
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NRDS	Nuclear Rocket Development Station
NTS	Nevada Test Site
PAL	Preliminary action level(s)
PCB	Polychlorinated biphenyl(s)
ppm	parts per million
PRG	Preliminary Remediation Goal(s)
QA/QC	Quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
REECo	Reynolds Electrical & Engineering Co., Inc.
R-MAD	Reactor-Maintenance Assembly and Disassembly
SAIC	Science Application International Corporation
SVOC	Semivolatile organic compound(s)
TCC	Test Cell C
TPH	Total petroleum hydrocarbons
UDP	Underground Discharge Point
VEC	Vitro Engineering Company
VOC	Volatile organic compound(s)

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A.1.0 Introduction

A.1.1 Problem Statement

Potentially hazardous and radioactive wastes were discharged to several leachfields and an UDP in Area 25 addressed as CAU 262, Area 25 Septic Systems and UDP. Corrective Action Sites at the R-MAD, TCC, and E-MAD facilities are included. The four CASs associated with the R-MAD facility are 25-05-03 (Radioactive Leachfield), 25-05-05 (Leachfield), 25-05-12 (Leachfield), and 25-51-01 (Dry Well). The three CASs associated with the Test Cell C facility are 25-04-06 (Septic Systems A and B), 25-04-07 (Septic System), and 25-05-08 (Radioactive Leachfield). The two CASs associated with the E-MAD facility are 25-02-06 (Underground Storage Tank) and 25-05-06 (Leachfield). Existing information about the nature and extent of contamination is insufficient to evaluate and select preferred corrective actions for these sites.

These leachfield systems will be investigated based on DQOs developed by representatives of NDEP and DOE/NV. This investigation will determine if COPCs are present and if concentrations in soils underlying the leachfields and surrounding the leachfield system components exceed regulatory levels. If COPCs are detected, the lateral and vertical extent of contamination will be determined. This investigation will focus on collection of data adequate to close the site under NDEP, RCRA, and DOE requirements.

A.1.2 DQO Kickoff Meeting

Table A.1-1 lists the participants present at the FFACO-required DQO Kickoff Meeting and any subsequent meetings. The goal of the DQO process is to establish the quantity and quality of environmental data required to support corrective action decisions for the CAU. The process ensures that the information collected will provide sufficient and reliable information to identify, evaluate, and technically defend the chosen corrective action. Unless otherwise required by the results of this DQO and stated in the CAIP, this investigation will adhere to the *Industrial Sites Quality Assurance Project Plan* (DOE/NV, 1996) and the *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada* (DOE/NV, 1998b), hereafter referred to as the Leachfield Work Plan.

Table A.1-1
DQO Kickoff Meeting Participants

Proposed Participants	Affiliation	Meeting Date	
		Kickoff Meeting 2/1/00	Pipe Characterization Meeting[a] 3/28/00
Lydia Coleman	SAIC	√	
Sabine Curtis	DOE/NV	√	√
Bruce Dionne	IT	√	
Cindy Dutro	IT	√	
Thomas Fitzmaurice	BN	√	
Dennis Gustafson	BN	√	
Juliana Herrington	SAIC	√	
Syl Hersh	IT	√	
Mark Holmes	IT	√	
Mike McKinnon	NDEP	√	√
Jason Moore	SAIC	√	
Charles Orchard	SAIC	√	
Barbara Quinn	BN	√	
Greg Rabb	NDEP		√
Milinka Watson-Garrett	IT	√	
Jeanne Wightman	MACTEC	√	
Dustin Wilson	SAIC	√	√
John Wong	NDEP	√	

[a]The pipe characterization meeting was conducted to establish Data Quality Objectives for the limited characterization of collection system piping. The results of this meeting have been integrated into this document.

BN - Bechtel Nevada
DOE/NV - U.S. Department of Energy, Nevada Operations Office
IT - IT Corporation
NDEP - Nevada Division of Environmental Protection
SAIC - Science Applications International Corporation

A.2.0 Conceptual Model

The CAU 262 Leachfields and UDP received various combinations of sanitary effluent, process effluent and radioactive effluent primarily from operations conducted within associated Area 25 facilities. Dates of leachfield activity are variable and poorly constrained, but the Area 25 facilities were most active between 1959 and 1973. All of the leachfields addressed by CAU 262 are currently inactive or abandoned but some leachfields may still receive effluent from passive generation (i.e., open pad drains, floor drains, and equipment drains).

Within this document, "effluent" is generally applied to all liquid waste disposed of in leachfield systems without regard to toxic, hazardous, or radioactive properties. Effluent discharged to the CAU 262 leachfields is considered potentially contaminated with various constituents but the probabilities of actual contamination are highly variable. "Sanitary effluent" is considered equivalent to domestic sewage and potentially toxic, "process effluent" is considered potentially hazardous and "radioactive effluent" is considered potentially radioactive and hazardous. The three leachfields in CASs 25-05-03, 25-05-06, and 25-05-08 are posted as underground radiological materials areas. "Posted Leachfields" are considered radioactively contaminated.

For each leachfield system, effluent was discharged from source buildings and routed through the collection system to a septic tank and/or distribution box. Subsequent discharge to the leachfield via distribution lines allowed effluent to percolate into the underlying soil for disposal. Effluent contaminants were transported by relatively large volumes of water. This conceptual model is consistent with the general conceptual model for leachfield CAUs provided in Section 3.1 of the Leachfield Work Plan.

An outline of CAU-specific and CAS-specific elements of the conceptual model for CAU 262 is provided in Table A.2-1 and Table A.2-2.

Table A.2-1
General CAU 262 Conceptual Model
(Page 1 of 2)

Conceptual Model Element	Assumptions	Source
System dynamics, waste inventories, release information	Infiltration and concentration of contaminants in the form of liquid waste into the soil directly below the distribution pipes and within the leachfields may have occurred.	Knowledge of similar sites, Leachfield Work Plan (DOE/NV, 1998b)
	Groundwater contamination is unlikely due to environmental conditions at the sites, such as an arid climate, low permeabilities, and depth to groundwater	Knowledge of similar sites, Leachfield Work Plan (DOE/NV, 1998b)
	Driving forces restricted to infiltration of limited precipitation subsequent to cessation of facility operations and redirection of generated effluent to alternative disposal systems.	Knowledge of similar sites, Leachfield Work Plan (DOE/NV, 1998b)
Lateral extent of potential contaminants	Subsurface effects limited by low mobility of constituents.	Process knowledge and similar site investigations (i.e., CAUs 261/266/500 [DOE/NV, 1999; 2000a, 2000b])
	The potential lateral migration of contaminants is unknown, but if migration has occurred, it will likely be confined within the boundaries of the leachfield.	Process knowledge and similar site investigations (i.e., CAUs 261/266/500 [DOE/NV, 1999; 2000a; 2000b])
Vertical extent of potential contaminants	The vertical extent of potential contamination is unknown, but if present, will be primarily adjacent to and below the distribution lines. Potential contamination is probably concentrated at the native soil/leachfield material interface. Vertical extent should be limited by low mobility of COPCs and limited driving force.	Process knowledge and similar site investigations (i.e., CAUs 261/266/500 [DOE/NV, 1999; 2000a, 2000b])
Physical and practical constraints	Radiological control access requirements to posted areas surrounding posted leachfields (CASs 25-05-03, -08, and -06). Current posting of these leachfields is “Underground Radioactive Materials Area.” Additional constraints include Yucca Mountain Project activities; activities of other Area 25 users (i.e., DoD) nearby utilities; facility constrains including fencing, buildings, and concrete pads; adverse weather conditions; restricted access; heavy equipment and resource availability; health and safety concerns; approval of the CAIP.	Site knowledge; site visits

Table A.2-1
General CAU 262 Conceptual Model
(Page 2 of 2)

Conceptual Model Element	Assumptions	Source
Future use	Leachfield systems are contained within restricted use zones classified as either “Research Test and Experiment Zone” or “Yucca Mountain Site Characterization Zone”. The Research Test and Experiment Zone is designated for small-scale research and development projects and demonstrations; pilot projects; outdoor tests; and experiments for development, quality assurance, or reliability of material and equipment under controlled conditions. This includes compatible nondefense research, development and testing projects and activities. CASs 25-02-06 and 25-05-06 are contained within the zone designated for Yucca Mountain Site Characterization.	Record of Decision Land Use Zones as defined in NTS Resource Management Plan, (DOE/NV, 1998a)
Potential exposures	Ingestion, inhalation, external exposure to radiation, or dermal contact (absorption) of COPCs in the soil due to exposure during investigation.	Process knowledge
Waste management	Waste will be evaluated against characteristic criteria unless contrary information is discovered during the investigation. The following constituents will be considered listed if identified in samples associated with CAS 25-05-03: Carbon tetrachloride, Trichloroethylene, 1,1,1-Trichloroethane, 1,1,2-Tricloro-1,2,2-triflouroethane, and Tetrachloroethylene.	Process knowledge

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 1 of 9)

Conceptual Model Element	Assumptions	Source
	CAS Facility Association: R-MAD	
	CAS 25-05-03	
System dynamics, waste inventories, release information	Radioactive effluent generated within Buildings 3110, 3126, 3161, and a radiochemistry trailer was discharged to this leachfield. The leachfield is located south of the R-MAD facility and is composed of two distribution manifolds supplied by a diversion box. Twenty-five 100-ft long distribution lines are connected to each distribution manifold on 8-ft centers. The distribution lines are 6-in. diameter open joint tiles installed in an 18-in. wide by 18-in. high gravel-filled trench and are approximately 1 ft bgs.	Engineering drawings including 25-R-MAD-C1 (REECo, 1983b), and 3102-SW-6.1 Sheet 8 (BMEC, 1959)
Source location	Sources within Building 3110: Darkroom sink, drain trench, hatch frame drain line, laboratory sink, open drains, floor drains, and showers.	Engineering drawings
	Sources within Building 3126: Acid drains, service sinks, floor sink, and decontamination sink with filter hood and exhaust fan.	
	Sources within Building 3161: Chemistry sink, floor drain, safety shower, and sink.	
	Sources within radiochemistry trailer: Unknown.	
Contaminants of Potential Concern	Process and radioactive effluent associated with assembly, maintenance, and disassembly of nuclear reactors tested at the NRDS. Additional work after termination of NRDS program may also have contributed effluent to this leachfield.	Process knowledge
	Building 3110 potentially hazardous COPCs identified during preliminary assessment include: Ethyl alcohol, ethanol, Freon, PCBs, trichloroethene, and trichloroethylene. Radiological COPCs include: Barium-137 m, cesium-137, cobalt-60, europium-152, niobium-94, plutonium-239/240, radium-226, strontium-90, uranium-234, uranium-235, and uranium-238.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 2 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Building 3126 potentially hazardous COPCs identified during preliminary assessment include: Carbon tetrachloride, dilute acid, powdered citric acid in water, trichloroethene, TPH and unidentified RCRA metals, VOCs, and SVOCs. Radiological COPCs include: Barium-137 m, cesium-137, plutonium isotopes, strontium-90, depleted uranium, uranium-234, and yttrium-90.	Process knowledge
	Building 3161 potentially hazardous COPCs identified during preliminary assessment include: Fuming nitric acid, perchloric acid, sulfuric acid, and mercury. Radiological COPCs include: Barium-137m, cesium-137, cobalt-60, niobium-94, plutonium-239/240, uranium-234, uranium 238, and yttrium-90.	
	COPCs associated with the radiochemistry trailer are unknown, but potentially hazardous and radioactive.	
CAS 25-05-05		
System dynamics, waste inventories, release information	Sanitary and process effluent generated within Buildings 3110 and 3140 was discharged to this leachfield. The leachfield is located west of the R-MAD facility and is composed of two distribution manifolds supplied by a septic tank and diversion box. Fifteen 100-ft long distribution lines are connected to each distribution manifold on 8-ft centers. The distribution lines are 6-in. diameter open joint tiles installed in an 18-in. wide by 12- to 18-in. high gravel-filled trench and are approximately 1 ft bgs.	Engineering drawings including 25-R-MAD-C1 (REECo, 1983b), 3102-SW-7.1 (BMEC, 1957a), and 3102-SW-8.1 (BMEC, 1957b)
Source location	Sources within Building 3110: Emergency showers, equipment drains, floor drains, hoist well drain, laboratory sinks, service sinks, sinks, toilets, and urinal.	Engineering drawings
	Sources within Building 3140: Floor drains, toilet, sink, and service sink.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 3 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Contaminants associated with sanitary effluent produced by activities conducted within Buildings 3110 and 3140. Potential contamination was most likely produced by use of floor drains within the source buildings.	Process knowledge
	Building 3110 potentially hazardous COPCs identified during preliminary assessment include: chemicals and degreasers. No specific radiological COPCs were identified. Significant contribution of radiological contaminants unlikely, but possible.	
	Building 3140 potentially hazardous COPCs identified during preliminary assessment include material related to paint shop activities (i.e., paints, solvents, and lubricants). No specific radiological COPCs were identified. Significant contribution of radiological contaminants unlikely, but possible.	
CAS 25-05-12		
System dynamics, waste inventories, release information	Sanitary effluent generated within Buildings 3111 and 3126 was discharged to this leachfield. The leachfield is located in the south-southeast area of the R-MAD facility and is composed of two distribution manifolds supplied by a septic tank. Three, 80-ft long distribution lines are connected to each distribution manifold on 6-ft centers. The distribution lines are 4-in. diameter perforated VCP installed in a 5-ft wide by 2-ft high gravel-filled trench and are approximately 1.7 ft bgs.	Engineering drawings including 25-R-MAD-C1 (REECo, 1983b) and FMBF-2 (FMBF, 1962)
Source location	Sources within Building 3111: Deluge shower, drinking fountain, floor sinks, sinks, service sink, toilets, and urinal.	Engineering drawings
	Sources within Building 3126: Floor sinks, service sinks, shower, sink, toilet, and urinal.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 4 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Contaminants associated with sanitary effluent produced by activities conducted within Buildings 3111 and 3126. Potential contamination was most likely produced by use of floor drains/sinks within the source buildings.	Process knowledge
	Building 3111 potentially hazardous COPCs identified during preliminary assessment include: solvents and degreasers. No specific radiological COPCs were identified. Significant contribution of radiological contaminants unlikely, but possible.	
	Building 3126 potentially hazardous COPCs identified during preliminary assessment include: Freon, dilute acid, Tide washing soap, Turco cleaner, powdered citric acid in water, alcohol, and trichloroethene. Radiological COPCs include: Barium-137m, cesium-137, plutonium, strontium-90, depleted uranium, uranium-234, uranium, and yttrium-90. Based on sources, it is unlikely that potentially hazardous or radioactive COPCs were discharged to this leachfield.	
CAS 25-51-01		
System dynamics, waste inventories, release information	Sanitary effluent generated within Building 3125 was discharged to this UDP. The UDP is located in the southeast area of the R-MAD facility and is composed of a gravel sump supplied by a discharge line. The UDP is a 5-ft diameter by 5-ft deep gravel dry well.	Engineering drawings including 25-R-MAD-C1 (REECo, 1983b)
	In addition to the UDP, this CAS includes a potential leachfield identified only by surface expression (grading with small berms to prevent run-on) and inconclusive geophysics.	Site visits, (IT 1999a), Geophysics (IT, 1999b)
Source location	Sources within Building 3125: Floor drains. A service sink may have been added to the system.	Engineering drawings
	No sources have been identified for the potential leachfield.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 5 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Contribution of potentially hazardous effluent from Building 3125 unlikely, but possible. Fluids associated with maintenance of the Beetle vehicle may have been discharged to the floor drains. No specific radiological COPCs were identified. Significant contribution of radiological contaminants unlikely, but possible. Beetle vehicle was exposed to radioactive source but is assumed not to have been contaminated or to have been decontaminated prior to its return to Building 3125.	Process knowledge
	No specific potentially hazardous COPCs were identified for the potential leachfield as no source has been determined. Significant contribution of radiological contaminants unlikely, but possible. No specific radiological COPCs were identified. Significant contribution of radiological contaminants unlikely, but possible.	
CAS Facility Association: Test Cell C		
CAS 25-05-08		
System dynamics, waste inventories, release information	Radioactive effluent generated within Building 3210 was discharged to this leachfield. The leachfield is located south of the Test Cell C facility and is composed of two distribution manifolds supplied by a diversion box. Fifteen, 60-ft long distribution lines are connected to each distribution manifold on 2-ft centers. The distribution lines are 6-in. diameter perforated VCP installed in an 2-ft wide by 2-ft high gravel-filled trench and are approximately 5 ft bgs.	Engineering drawings including 25-TC-C-C1 (REECo, 1984), 3222-PD-201 (LASL, 1969a), and 3222-PD-202 (LASL, 1969b)
Source location	The leachfield was apparently installed to receive radioactive effluent generated by decontamination activities at Test Cell C.	Engineering drawing 3222-PD-201 (LASL, 1969a)
	The collection system was modified to incorporate the leachfield into the Nuclear Furnace exhaust scrubbing system. Radioactive material produced by reactor tests was removed from associated exhaust using a water and filter system. The water was disposed of in this leachfield.	Engineering drawing 25-TC-C-C1 (REECo, 1984), LASL, 1973

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 6 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Potentially hazardous and radioactive effluent associated with Test Cell C decontamination and Nuclear Furnace exhaust scrubbing was discharged to this leachfield.	Process knowledge
	No potentially hazardous COPCs were identified during preliminary assessment. Potentially hazardous COPCs may be present based on process knowledge of Test Cell C activities. Radiological COPCs include: Antimony-125, cadmium-109, cesium-137, europium-155, potassium-40, radium-226, thorium-228, and thorium-232.	
CAS 25-04-06		
System dynamics, waste inventories, release information	Sanitary effluent generated within Building 3228 was discharged to Leachfield A. The leachfield is located south of the Test Cell C facility. The leachfield design is poorly constrained, but a septic tank and distribution box are present. Approximately six distribution lines within a 270 square ft area are shown on facility drawings.	Engineering drawing 25-TC-C-C1 (REECo, 1984)
	Sanitary effluent generated within Building 3220 was discharged to Leachfield B. The leachfield is located south of the Test Cell C facility. The leachfield design is poorly constrained, but a septic tank and distribution box are present. Approximately 6 distribution lines within a 2,115 square ft area are shown on facility drawings.	
Source location	Sources within Building 3228: Water closets, urinals, floor drains, clean-out drain, and wash fountain.	Engineering drawings
	Sources within Building 3220: Equipment drains, floor drain, sink with peg board, acid sink with fume hood, sink drain.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 7 of 9)

Conceptual Model Element	Assumptions	Source
Contaminants of Potential Concern	Contaminants associated with effluent produced by activities conducted within Buildings 3228 and 3220. Potential contamination was most likely produced by use of floor drains within the source buildings or the acid sink in Building 3220.	Process knowledge
	Building 3228 potentially hazardous COPCs identified during preliminary assessment include: 1,2-dichlorethene, trichloroethene, 1,4-dichlorobenzene, 4-methylphenol, tetrachloroethylene, oil. Radiological COPCs include: Actinium-228, bismuth-212, bismuth-214, cesium-137, europium-152, lead-212, potassium-40, plutonium-238, plutonium-239, radium-226, strontium-90, thallium-208, thorium-228, thorium-232, and tritium.	
	No potentially hazardous COPCs for Building 3220 were identified during preliminary assessment. Potentially hazardous COPCs may be present based on process knowledge. Radiological COPCs include: Potassium-40, plutonium-238, plutonium-239, radium-226, thorium-228, thorium-232, and tritium.	
CAS 25-04-07		
System dynamics, waste inventories, release information	Sanitary effluent generated within Building 3210 was discharged to this leachfield. The leachfield is located west of the Test Cell C facility. The leachfield design is poorly constrained, but a septic tank and distribution box are present. Approximately 8 distribution lines within an 1,800 square ft area are shown on facility drawings.	Engineering drawings including 25-TC-C-C1 (REECo, 1984)
Source location	Sources within Building 3210: Water closet, urinal, hand sink, and floor drain.	Engineering drawings
Contaminants of Potential Concern	Contaminants associated with sanitary effluent produced by activities conducted within Building 3210. Potential contamination may have been produced by use of floor drains within the source building.	Process knowledge
	Building 3210 potentially hazardous COPCs identified during preliminary assessment include tetrachloroethylene. Radiological COPCs include europium-152 detected in a background soil sample associated with leachfield sampling.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 8 of 9)

Conceptual Model Element	Assumptions	Source
CAS Facility Association: E-MAD		
CAS 25-05-06		
System dynamics, waste inventories, release information	Radioactive effluent generated within Building 3900, a metallurgical trailer, and at the train decontamination area and Building 3900 process effluent was discharged to this leachfield. The leachfield is located south of the E-MAD facility and is composed of two distribution manifolds supplied by a diversion box. Twenty-four approximately 70-ft long distribution lines are connected to each distribution manifold on 8-ft centers. The distribution lines are 6-in. diameter open joint tiles installed in an 24-in. wide by 18-in. high gravel-filled trench and are approximately 6 ft bgs.	Engineering drawings including 25-E-MAD-C1.1 (REECo, 1983a) and 1425-C-403 (VEC, 1963)
Source location	Sources of radioactive effluent within Building 3900: All shielded area floors including hot bay and hot cells.	Engineering drawings
	Sources of process effluent within Building 3900: Operating gallery floor, maintenance and machine shop, instrument shop, “cold” change room, boiler room, and cold bay.	
	The heating, ventilation, and air conditioning stacks are an additional radioactive effluent source.	
	The Metallurgical Trailer is an additional process and radioactive effluent source.	
	The Train Decontamination Area is an additional process and radioactive effluent source.	
Contaminants of Potential Concern	Potentially hazardous and radioactive effluent associated with assembly, maintenance, and disassembly of nuclear reactors and rocket engines tested at the NRDS. Additional work after termination of NRDS program may also have contributed effluent to this leachfield.	Process knowledge
	E-MAD facility potentially hazardous COPCs identified during preliminary assessment include: Solvents and degreasers, metallurgical process waste, and process water stabilization additives (i.e., ethylene glycol). Radiological COPCs include: Cesium-137, cobalt-60, plutonium-239/240, strontium-90, uranium-235, uranium-238.	
	COPCs associated with the metallurgical trailer are unknown, but potentially hazardous and radioactive.	

Table A.2-2
CAS-Specific CAU 262 Conceptual Model
(Page 9 of 9)

Conceptual Model Element	Assumptions	Source
CAS 25-02-06		
System dynamics, waste inventories, release information	Sanitary effluent generated within Buildings 3900 was discharged to this leachfield. The leachfield is located south of the E-MAD facility and is composed of two distribution manifolds supplied by a septic tank and diversion box. Fifteen, 100-ft long distribution lines are connected to each distribution manifold on 8-ft centers. The distribution lines are 6-in. diameter open joint tiles installed in an 18-in. wide by 12- to 18-in. high gravel-filled trench and are approximately 1 ft bgs.	Engineering drawings including 25-E-MAD-C1.1 (REECo, 1983a) and 1425-C-8 (VEC, 1965)
Source location	Sources within Building 3900: Restrooms, janitor rooms, water closets, sinks, showers, drinking fountains, and floor drains.	Engineering drawings
	Note that the hot change room restrooms drained to this leachfield.	
Contaminants of Potential Concern	No previous sampling results have been identified for this leachfield system.	Process knowledge
	Significant contribution of radiological or potentially hazardous contaminants unlikely, but possible.	

A.3.0 Potential Contaminants

Additional information on the COPCs for CAU 262, including PALs and quality assurance/quality control (QA/QC) requirements are provided in Section 3.0 of either the Leachfield Work Plan or the CAIP.

Previous sampling efforts and process knowledge identify the following potential contaminants:

- Radioactive and Chemical COPCs - These leachfields serviced buildings that were used for a variety of reactor testing and support activities. Activities within these buildings that likely contributed chemical effluents to one or more of the leachfields include film processing, decontamination/degreasing, radiochemistry, and reactor assembly and disassembly. In general, the contaminants that may be present are associated with organic solvents, hydrocarbons, paint, film processing agents, and activation and fission products.

- Previous sampling activities at the R-MAD posted leachfield identified significant concentrations of cesium-137 and cobalt-60. High beta/gamma activity was identified at the “pit/sump/drum.”

- Previous sampling activities at the Test Cell C leachfields identified significant concentrations of cesium-137 at the posted leachfield; low concentrations of hydrocarbons and PCBs at CAS 25-04-07; a low concentration of gasoline-range TPH at Septic System B; and a high concentration of oil-range TPH and low concentrations of VOCs, SVOCs, and PCBs at Septic System A.

- Previous sampling activities associated with the E-MAD posted leachfield identified SVOCs, diesel-range TPH, RCRA metals, PCBs, gamma-emitting radionuclides, plutonium, uranium, and strontium at CAU 135. Previous sampling activities at the E-MAD posted leachfield identified gamma emitting radionuclides within the typical range of background.

Samples submitted for laboratory analysis will be analyzed for the following chemical COPCs to determine if potentially hazardous or hydrocarbon materials are present:

- VOCs
- SVOCs
- RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver)
- TPH (diesel-range organics)
- PCBs (CASs 25-04-07 and 25-05-06)

At least 25 percent (100 percent for CASs 25-05-03, 25-05-06, and 25-05-08) of samples submitted for laboratory analysis will be analyzed for the following COPCs to determine if radioactive materials are present:

- Gamma-emitting radionuclides
- Isotopic uranium
- Isotopic plutonium
- Strontium-90

All laboratory analyses will be conducted according to Table 3-1 of the Leachfield Work Plan or as specified in the CAIP.

A.4.0 Decisions and Inputs

A.4.1 Decisions

Decisions to be resolved by the investigation include:

- Determine if COPCs are present at the sites.
- Determine if COPC concentrations exceed FSLs.
- Determine if COPC concentrations exceed PALs.
- Determine the nature and extent of contamination with enough certainty to develop and evaluate a range of potential corrective actions, including closure in place and clean closure.

A.4.2 Inputs and Strategy

Inputs to the decisions include those elements of information used to support the decisions in addressing the identified problem. A list of information inputs, existing data, identified data gaps, and brief strategies are discussed in Table A.4-1.

Table A.4-1
Decisions, Inputs, and General Strategies
(Page 1 of 3)

Decision	Input	Existing Data	Data Gap	Strategy
Are COPCs present above PALs at site?	Potential contaminant identification	Previous sampling efforts (See Table A.2-1 for COPCs generated by CAS-specific sampling efforts when applicable)	Exact COPCs Not all leachfield systems sampled	Collect laboratory samples; analyze for COPCs
	Potential contaminant concentration	Previous sampling efforts (See Table A.2-1 for COPCs generated by CAS-specific sampling efforts when applicable)	Unsampled components and leachfield systems; do concentrations exceed PALs?	Collect samples from unsampled components and soil; perform field screening; submit samples for laboratory analysis from biased or biased and random locations that represent worst case for contamination and confirmatory clean locations; compare results to FSLs or to PALs
	Potential contaminant distribution	Locations of leachfield systems components are known with some degree of certainty; vertical and lateral extent limited by removal of source and limited driving force, mobility of COPCs	Vertical and lateral extent of COPCs	Excavation to investigate collection system, septic tank, and distribution box piping as needed; collect samples at and from inside septic tanks and distribution boxes; collect samples from leachfields. Use excavation or drilling to establish worst case depth of COPCs; collect additional samples from excavations or drill step-out borings as required to determine lateral extent if COPCs are detected near leachfield boundaries; collect laboratory samples to confirm extent

Table A.4-1
Decisions, Inputs, and General Strategies
(Page 2 of 3)

Decision	Input	Existing Data	Data Gap	Strategy
Are potential contaminants migrating?	Meteorologic data	Data on annual precipitation, evapotranspiration, and weather	None identified	No specific meteorological data collection anticipated; general weather and wind speed and direction noted on daily field logs
	Geologic/hydrologic data	General geologic/hydrologic characteristics of site; specific geologic conditions of nearby sites (i.e., CAUs 261/266/500)	Existence and characteristics of differing permeability zones	Field log representative soil by qualified geologist; collect and analyze geotechnical sample for each leachfield
	Biological degradation factors	Potential hydrocarbons release	Presence of biomass; biological parameters to evaluate natural biological process	No specific data collection anticipated; bioassessment samples may be collected based on site conditions
	Radioactive decay	Radionuclides were intentionally discharged to the CAS 25-05-03, -06, and -08 leachfields. Previous sampling efforts and deactivation and decontamination operations identified radioactive COPCs for these leachfields. Partial record of radioactivity discharged to CAS 25-05-03 leachfield located. Significant radioactive decay of short-lived radionuclides has occurred.	Presence and type of radionuclides	Establish background; field screen for radiation using alpha/beta scintillometer (i.e., Electra) to guide collection of samples for radiological COPCs analysis based on field-screening results; additional measurement techniques may be employed as feasible

Table A.4-1
Decisions, Inputs, and General Strategies
(Page 3 of 3)

Decision	Input	Existing Data	Data Gap	Strategy
Data sufficient to support closure options?	No further action	Historical evidence that COPCs were released to the environment at several CASs; assume no actions	Presence, concentration, and extent of COPCs	Insufficient evidence to proceed without investigation; collect field and laboratory samples; compare results to PALs; if no COPCs above PALs, prepare CADD/Closure Report
	Closure in place	Potential for radiological, RCRA, and/or TPH constituents; PALs are isotope specific maximum background radioactivity levels, Industrial PRGs, 100 parts per million (ppm) TPH per NAC 445A (NAC, 1998); assume use restrictions	Presence, concentration, and extent of COPCs	Collect field and laboratory samples; compare results to PALs; if no COPCs above PALs, prepare CADD/Closure Report; otherwise prepare CADD
	In situ bioremediation	Potential for radiological, RCRA, and TPH constituents; PALs are isotope-specific maximum background radioactivity levels, Industrial PRGs and 100 ppm TPH per NAC 445A (NAC, 1998)	Presence, concentration, and extent of COPCs; biodegradation parameters	Collect field and laboratory samples; compare results to PALs; if no COPCs above PALs, prepare CADD/Closure Report; otherwise prepare CADD
	Clean closure by contaminant removal	Potential for radiological, RCRA, and TPH constituents; PALs are isotope-specific maximum background radioactivity levels, Industrial PRGs and 100 ppm TPH per NAC 445A (NAC, 1998)	Presence, concentration, and extent of COPCs; volume of contaminated material above PALs	Collect field and laboratory samples; compare results to PALs; if no COPCs above PALs, prepare CADD/Closure Report; otherwise prepare CADD

A.5.0 Investigation Strategy

The CAU 262 Leachfields will be investigated using the basic technical approach provided in the Leachfield Work Plan with site-specific modifications as required.

All soil and sediment/sludge samples will be field screened for VOCs and radioactivity. Samples will be analyzed according to Section A.3.0. Samples will be collected from septic tanks and distribution structures (if appropriate, accessible, and adequate material is present) and from soil underlying the leachrock/native soil interface. Contents of previously sampled septic tanks will not be collected if previous sample results are adequate for waste management requirements. Contrary to the leachfield work plan, integrity samples will be collected from proximal and distal end soil at the base of septic tanks and from the distal end soil at the base of distribution structures.

The CAS-specific investigation strategy is dependent on the COPCs and the leachfield design. Complex leachfields with a high likelihood of radiological contamination will be investigated using an initial phase of *in situ* radiation measurement followed by biased and random sample collection using drilling. Complex leachfields that are not expected to contain significant radiological contamination will be investigated by biased and random sampling using excavation. Simple leachfields will be investigated by biased sampling using excavation. Drilling may be used to augment excavation throughout the investigation if required to determine the maximum vertical extent of potential contamination. This sampling strategy will ensure that contamination in the soil has been adequately located, identified, and quantified.

A.5.1 Sampling at Radiologically Posted Leachfields

Based on preliminary assessment, the leachfields addressed by CASs 25-05-03, 25-05-06, and 25-05-08 may contain significant radiological contamination. The radioactivity of soil to be sampled may be determined using *in situ* radiation measurements if feasible. Sample collection from these leachfields is contingent upon the radioactivity of the soil to be sampled. Samples that are too radioactive to practically handle, transport, or submit for analysis may not be collected.

The total number of samples submitted for off-site quantitative analysis may be significantly reduced based on these considerations.

Drilling will be the primary sampling method. Biased and random sampling will be conducted during the field investigation to assess the extent of COPCs and determine if COPC concentrations exceed PALs for the site.

Boreholes will be located based on system dynamics and statistical analysis. Biased boreholes will be drilled at the initial discharge points in the two proximal distribution lines, the area between the distribution manifold ends, the four corners, and center of each leachfield. Additional boreholes will be located at the center of each half of the leachfields. Due to the extreme slope of the CAS 25-05-06 leachfield, four of the biased borehole locations will be at different locations. For this leachfield, boreholes will be drilled at the initial discharge points in the two distribution lines approximately at the proximal end of the distal one-third of the leachfield and the center of the distal two-thirds of each half of the leachfield. Additional locations will be selected randomly within the area of the leachfield to ensure adequate sampling locations have been considered. The number of random locations are addressed in Section A.7.0.

A.5.2 Sampling at R-MAD and E-MAD Complex Sanitary Leachfields

Excavation will be the primary sampling method for leachfields in CASs 25-05-05 and 25-05-06. Biased and random sampling will be conducted during the field investigation to assess the extent of COPCs and determine if COPC concentrations exceed PALs for the site. Drilling will be conducted if excavation sampling fails to determine the maximum vertical extent of potential contamination.

Excavations will be located based on system dynamics and statistical analysis. Biased excavations will be located at the initial discharge points in the two proximal distribution lines, the area between the distribution manifold ends, the four corners and center of each leachfield. Additional excavations will be located at the center of each half of the leachfields. Additional locations will be selected randomly within the area of the leachfield to ensure adequate sampling locations have been considered. The number of random locations are addressed in Section A.7.0.

A.5.3 Sampling at Remaining Leachfields and UDP

Samples will be collected from the leachfields addressed by CASs 25-04-06, 25-04-07, 25-05-12, and 25-51-01 according to the Leachfield Work Plan using excavation. A biased and random sampling approach, as described in Section A.5.2, may be required if more distribution lines than expected are located (see Section A.6.0). Drilling will be conducted if excavation sampling fails to determine the maximum vertical extent of potential contamination.

A leachfield and UDP are addressed by CAS 25-51-01. It is unlikely that the leachfield addressed by CAS 25-51-01 exists. This potential leachfield will be investigated by excavating a single trench across a graded area with small berms and perpendicular to the lineations identified by an inconclusive geophysical survey. If distribution lines are located, samples will be collected using continued excavation or drilling depending on field-screening results. The UDP will be investigated by drilling a borehole at the center of the feature and collecting soil samples beginning at the native soil/leachrock interface. Three stepout borings will be drilled in a roughly triangular pattern approximately 15 ft from the UDP if FSLs are exceeded.

A.5.4 Limited Collection System Pipe Inspections

The collection systems will be inspected using one of four CAS-specific strategies:

- Portions of the posted leachfield collection systems will be inspected using a video survey and *in situ* radiation measurements as described in Section 4.1.1.4 of the Leachfield Work Plan. The *in situ* radiation measurements are designed to determine if the pipes meet free-release criteria.

- A portion of the CAS 25-04-07 collection system will be inspected using a video survey. Access to most of the collection system piping is limited by extensive concrete cover and no attempt will be made to collect sediment samples from the pipes. Contamination associated with the sampled leachfield system components will be attributed to the sediment within the collection system if significant sediment is present in the piping.

- The CAS 25-04-06 collection systems will be excavated at a point between the source buildings and the leachfields. System A will be inspected at the nominal midpoint of the collection system piping and System B will be inspected adjacent to (outside) the Test Cell C security fence. If sediment is present at the inspection locations, it will be sampled and analyzed for the chemical and radiological parameters provided in Section A.3.0.

- The remaining collection systems will be inspected via manholes. If manholes cannot be located, the investigation strategy will be consistent with that used for CAS 25-04-06. If sediment is present at the inspection locations, it will be sampled and analyzed for the chemical and radiological parameters provided in Section A.3.0.

A.5.5 Additional Sampling

Bioassessment samples may be collected according to the Leachfield Work Plan at the Site Supervisor's discretion. Need for bioassessment samples will be based on the nature of contamination established during the field investigation (i.e., extensive VOC contamination).

At least one geotechnical sample will be collected from soil underlying the leachfields according to Section 3.2.1 of the Leachfield Work Plan. Additional samples may be collected at the discretion of the Site Supervisor. Geotechnical samples will be analyzed using the methods in Table 3-2 of the Leachfield Work Plan to measure the following parameters:

- Initial moisture content
- Dry bulk density
- Calculated porosity
- Moisture retention characteristics
- Particle size distribution
- Saturated and unsaturated hydraulic conductivity

A.6.0 Decision Rules

The following decision rules will be used to guide the investigation and subsequent data evaluation for CAU 262:

- If, in the course of the investigation, either of the following occur, then the investigation will be halted and rescoped as necessary:
  - The conceptual model fails to such a degree that rescoping is required.
  - Sufficient data are collected to support evaluation of corrective actions.
- If field screening indicates no COPCs above FSLs, then a sample at the next prescribed subsurface location will be field screened. If no COPCs are indicated, a confirmatory laboratory sample will be submitted.
- If field screening indicates the presence of COPCs above FSLs, then the investigation will continue to determine extent of COPCs a sample with field-screening results below FSLs is obtained for laboratory submittal. Sample depth may be limited by maximum practicable excavation or drilling depth. A sample will also be submitted for laboratory analysis from the subsurface interval that represents the worst-case, field-screening result and at the discretion of the Site Supervisor. Some worst-case samples may not be submitted due to transportation or laboratory limitations. Additional samples may be required for waste management purposes.
- If laboratory results indicate the presence of contaminants of concern above PALs, then a CADD will be prepared. Potential corrective actions may be CAS-specific.
- If no COPCs are identified above PALs, then a CADD/Closure Report will be prepared according to the outline agreed upon by NDEP and DOE/NV. This type of CADD incorporates the elements of the regular CADD and the corrective action plan and serves as the closure report for the site. Recommendations of no further action may be CAS-specific.

Table A.6-1 provides additional decision points and rules.

Table A.6-1
Activity-Specific Decision Points and Rules
(Page 1 of 2)

Investigation Activity	Decision Point	Decision Result	Decision Rule
Survey and Exploration	Are caps at CAS 25-05-06 distribution box and CAS 25-02-06 Manhole #3 in place?	Yes	No additional exploration required.
		No	Attempt to determine outlet of unexpected pipe. Conduct exploratory excavation if required. NDEP notification and rescoping will be required.
Sampling	Can required samples be recovered?	Yes	Collect samples as required.
		No	Justification omissions will be provided in the CADD.
	Are field data above FSLs?	Yes	Submit samples with highest field-screening values for laboratory analysis. Submit samples from each sampling location (highest FSL and confirmatory clean sample) to laboratory for confirmation as required. Collect additional samples from greater depths or using stepouts as required.
		No	Submit at least one sample from each sampling location to laboratory for confirmation as required.
	Is sample too radioactive for feasible transportation or analysis?	Yes	Collect similar sample that can be feasibly transported and analyzed. Note field-screening measurements.
		No	Submit sample to laboratory as planned.
	Do COPCs exceed PALs?	Yes	Prepare CADD. Additional sampling may be required. Potential corrective actions may be CAS-specific.
		No	Prepare CADD/CR. Recommendations of no further action may be CAS-specific.

Table A.6-1
Activity-Specific Decision Points and Rules
(Page 2 of 2)

Investigation Activity	Decision Point	Decision Result	Decision Rule
Leachfield Investigation	Can the leachfield be located?	Yes	Sample soil underlying leachfield via excavation (drilling for CASs 25-05-03, -06, -08). Modifications to the Leachfield Work Plan generic strategy include reducing the number of sampling locations due to the large number of closely spaced distribution pipes except at CASs 25-04-06, 25-04-07, and 25-05-12.
		In Part	Configuration or dimensions are not as anticipated. Sample soil underlying known leachfield. Also, conduct intrusive investigation (excavation or drilling as required) at known or assumed leachfield perimeter to visually confirm absence/presence of installed leachfield material.
		No	Leachfield may never have existed. Resume intrusive investigation, as required, if existence of leachfield is confirmed and configuration and dimensions are established.
Collection System Pipe Investigation	Do posted leachfield collection system pipes meet free-release criteria?	Yes	Discuss rationale for free-release determination in CADD.
		No	Continued free-release determination unnecessary for portions of collection system known to exceed free-release criteria. Disposition of pipes will be addressed in CADD.
	Is significant sediment present in pipes?	Yes	Collect sediment samples for non-posted leachfield collection systems. Posted leachfield collection systems will be characterized using *in situ* radiation measurements.
		No	Do not collect sediment samples.
	Is pipe sediment sample collection practical?	Yes	Collect sediment samples.
		No	COPCs detected in the septic tank, distribution structure, or leachfield will be attributed to the piping.

A.7.0 Decision Error

As described in Section A.5.0, biased or a combination of random and biased sampling strategy will be employed for CAU 262 leachfields. Biased sampling is appropriate because the system component locations are known, will be located through exploratory surveys, or can be reasonably assumed. Random sampling will also be conducted for leachfields with large numbers of distribution lines to reduce redundant sampling results while maximizing confidence that the leachfields have been adequately investigated.

Table A.6-1 describes actions if specific component locations cannot be identified.

A.7.1 Biased Sampling Strategies

The biased sampling strategies either require samples associated with all distribution lines or target the worst-case contamination by concentrating leachfield system sampling at points with highest potential for contamination. Biased sampling ensures that the extent of the contamination has been adequately located and identified. At least one sample with field-screening results below FSLs will be obtained from the predetermined sampling locations to define the lower limit of the impact (if any) on soils produced by effluent disposal. Field-screening results will be confirmed by off-site laboratory analysis of these samples.

A.7.2 Random Sampling Strategy

Systematic random sampling will be employed for investigation of the several leachfields addressed by CAU 262 (see Section A.5.0). This approach will ensure coverage of the potentially contaminated areas at leachfields where soil samples are not directly associated with each distribution pipe. The number of samples required to characterize the sites to a predetermined level of confidence will be calculated using Equation 8 from Chapter 9 of SW-846 (EPA, 1996), with a confidence level and acceptable sampling error agreed to by the DOE/NV and the NDEP.

Equation 8 from Chapter 9 of SW-846 gives the number of samples required to determine the mean value of a given parameter to within a specified percent error, e_r, with a confidence limit of 90 percent, using an analytical method with a specified coefficient of variation (CV), as:

$$n = \left(t_{0.90,\, n-1}\frac{CV}{e_r}\right)^2$$

where “t” is the one-tailed 90 percent Student's “t” value for the appropriate number of degrees of freedom (n-1).

The CV in the above equation refers to the variability of the specific parameter in the medium being sampled. Its value cannot be determined until sufficient samples from the site have been analyzed. However, in the absence of data regarding the soil variability of the COPCs at CAU 262, some assumptions must be made:

- The variability of the analytical method may be used as a first approximation of the variability of the contaminant distribution in the soil. This is probably a reasonable assumption for chemical contaminants, which are likely to have been deposited from a solution, thus leading to a somewhat uniform distribution.

- Table A.7-1 shows the average CVs for several chemical methods, as determined from the individual procedures in SW-846. Pesticides and PCBs are included, although neither of these are COPCs at CAU262.

- For radiological contaminants, higher average CVs should be considered. Radiological contaminants are typically particulate in nature and are thus likely to be less uniformly distributed in the medium under investigation, leading to high variability.

For CAU 262, a CV of 50 percent will be assumed. This figure represents a compromise between the very high CVs of the pesticides and the extremely low CVs of the VOCs and SVOCs. It is an acceptable starting point for the purposes of Equation 8.

Table A.7-1
Average Coefficients of Variation

SW-846 Method	Parameter Measured	% CV
6010B	Metals	21.3
7470A/7471A	Mercury	69.5
8260B	VOCs	7.5
8270C	SVOCs	9.1
8081A	Pesticides	70.1
8082	PCBs	29.7

A relative error of 10 to 20 percent from the true mean at a confidence limit of 90 percent is considered acceptable for planned removal and remedial response studies (EPA, 1989). A relative error of 15 percent will be specified for this site. Substituting the appropriate values for "t" (Taylor, 1990), CV (50 percent) and e_r (15 percent) into this equation and iterating the equation several times gives n = 20. Twenty random sample locations will be sampled in addition to nine biased sample locations.

A.8.0 References

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U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, CD ROM, PB97-501928GEI (CD ROM includes revisions to 1986, 1992, and 1994). Washington, DC.

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APPENDIX B

SAMPLE ANALYTICAL RESULTS

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NEL LABORATORIES

Corporate Headquarters / Reno Laboratory
4750 Longley Lane, Suite 106
Reno, NV 89502
Phone: 775.348.2522
Fax: 775.348.2546

Las Vegas Laboratory
4208 Arcata Way, Suite A
Las Vegas, NV 89030
Phone: 702.657.1010
Fax: 702.657.1577

Ted Redding
Bechtel Nevada
P.O. Box 98521, M/S NTS273
Las Vegas, NV 89193-8521

TEL: 702-295-7220

RE Project: **CAU 262** Order No.: **L0210354**

Dear Ted Redding:

NEL Laboratories, Las Vegas received 3 samples on 10/22/02 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications unless noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

/s/ Rod T. Miller

Rod T. Miller
Laboratory Director

11/14/02 (Revision)
Date

Certifications:

Arizona	AZ0518
California	2002
Idaho	Certified
Montana	Certified
Nevada	NV052
New Mexico	Certified

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NEL Laboratories, Las Vegas

Date: *14-Nov-02*

CLIENT: Bechtel Nevada
Project: CAU 262
Lab Order: L0210354

CASE NARRATIVE

Attached are the analytical results for samples in support of the above referenced project.

The samples submitted for this project were not sampled by NEL. Should you have any questions or comments, please feel free to contact our Client Services Department.

Analytical Comments:
TPH Analysis:
F1: Hydrocarbon pattern atypical of gasoline.
F3: Hydrocarbon pattern atypical of diesel.
S6: Surrogate recovery was below laboratory and method limits. Reextraction and reanalysis confirm low recovery caused by matrix effects.

At the request of the client, samples 250505-waste-1 and 250512-waste-1 were reextracted and reanalyzed for TPH analysis in order to achieve a lower reporting limit.

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Bechtel Nevada

DATA VALIDATION COVER SHEET

Section I

MEF Number: (CAU 262) (V1746) Sample Request Number: ____________

Contract Laboratory: NEL Laboratories Organization: BN ER

Validation Procedure/Instruction, including revision number: 01-2151.303 Rev. 3

Analysis Requested (check all that apply):

- [x] Volatile Organics
- [ ] Semi Volatile Organics
- [ ] Inorganics
- [ ] Organochlorine Pesticides/Polychlorinated Biphenals (PCBs)
- [ ] Radiochemistry
- [x] TPH (ORO)

Section II

1. [x] Chain-of-Custody Form
2. [x] Case Narrative
3. [x] Sample Results Forms
4. [x] Field Forms
5. [x] Quality Control Forms

Identify any samples that are missing:

Comments/Problems: (Include information about requests for further information submitted to the contract laboratory and agreed upon date of resolution and contract laboratory point of contact):

TPH only had problems. Hydrocarbon patterns were atypical for all analytes. Surrogate recovery was zero. Reextraction and reanalysis obtained the same results, indicating a matrix. Client requested lower reporting limit for 250505-[illegible]-1 and 250512-[illegible]-1 as the samples were reextracted and reanalyzed

Validator Name: Kraig Knapp

Validator Signature: /s/ Kraig Knapp Date: 4/08/03

Retention Code: [illegible]

BN-[illegible]

Bechtel Nevada

DATA VALIDATION CHECKLIST

Analyses Reviewed: TPH **Date:** 4/8/03

DATA REVIEW

	Yes	No	N/A
1. Requested analyses were performed on all samples.	☑	☐	☐
2. Samples were extracted, prepared, and analyzed within holding times.	☑	☐	☐
3. Cooler temperature was recorded upon receipt.	☑	☐	☐
4. Proper preservation / pH was used for each matrix and analysis.	☑	☐	☐
5. The laboratory sample identification corresponds to the client sample identification.	☑	☐	☐
6. Background checks were performed at the proper frequency and were acceptable.	☐	☐	☑
7. efficiency checks were performed at the proper frequency and were acceptable.	☐	☐	☑
8. Method blanks were analyzed and were acceptable.	☑	☐	☐
9. All MDAs were less than the RDLs.	☐	☐	☑
10. LCSs were analyzed at the proper frequency and recoveries were acceptable.	☑	☐	☐
11. MS were analyzed at the proper frequency and recoveries were acceptable.	☑	☐	☐
12. Lab duplicates were analyzed the proper frequency and RPDs were acceptable.	☐	☐	☑
13. QC batches correspond clearly with analytical batches.	☑	☐	☐
14. Sample activity/concentration units are reported accurately.	☑	☐	☐
15. Dilutions were properly noted and calculated.	☐	☐	☑
16. Sample detection limits were properly adjusted for dilutions.	☐	☐	☑
17. Detection limits meet project requirements.	☑	☐	☐

QUALIFIERS

QC Result	Qualifier	Associated Sample Results	
Preparation Blank:	U	250505-wash-1,	250512-wash-1
Lab Control Sample:	none	"	"
Matrix Spike:	none	"	"
Duplicate Sample:	none	"	"

Validator Name: Kraig Knapp

Signature: /s/ Kraig Knapp Date: 4/8/03

Bechtel Nevada

DATA VALIDATION CHECKLIST

Analyses Reviewed: VOC **Date:** 4/8/03

DATA REVIEW	Yes	No	N/A
1. Requested analyses were performed on all samples.	☑	☐	☐
2. Samples were extracted, prepared, and analyzed within holding times.	☑	☐	☐
3. Cooler temperature was recorded upon receipt.	☑	☐	☐
4. Proper preservation / pH was used for each matrix and analysis.	☑	☐	☐
5. The laboratory sample identification corresponds to the client sample identification	☑	☐	☐
6. Background checks were performed at the proper frequency and were acceptable.	☑	☐	☐
7. efficiency checks were performed at the proper frequency and were acceptable.	☐	☐	☑
8. Method blanks were analyzed and were acceptable.	☑	☐	~~☑~~ KK
9. All MDAs were less than the RDLs.	☐	☐	☑
10. LCSs were analyzed at the proper frequency and recoveries were acceptable.	☑	☐	☐
11. MS were analyzed at the proper frequency and recoveries were acceptable.	☑	☐	☐
12. Lab duplicates were analyzed the proper frequency and RPDs were acceptable.	☑	☐	☐
13. QC batches correspond clearly with analytical batches.	☑	☐	☐
14. Sample activity/concentration units are reported accurately.	☑	☐	☐
15. Dilutions were properly noted and calculated.	☐	☐	☑
16. Sample detection limits were properly adjusted for dilutions.	☐	☐	☑
17. Detection limits meet project requirements.	☑	☐	☐

QUALIFIERS

QC Result	Qualifier	Associated Sample Results	
Preparation Blank	U	250505-Wsh-1,	TAN266-TB1
Lab Control Sample:	none	"	"
Matrix Spike:	none	"	"
Duplicate Sample:	none	"	"

Validator Name: Kraig Knapp

Signature: /s/ Kraig Knapp Date: 4/8/03

BN-1082 (11/00)

Bechtel Nevada

DATA CONFIDENCE STATEMENT

MEF Number: CAU 262 SDG V1746 Analyses: VOC, TPH

☒ Field and QA/QC sample data have been generated in accordance with method requirements and within quality control. Requirements of the SOW have been met.

Comments: VOC analysis

☒ QA/QC problems were encountered during analysis of the samples. Usability is not affected, data are acceptable.

Comments: Difficulty c matrix effects for TPH analysis
TPH

☐ Significant QA/QC problems were encountered during analysis of the samples.

Data for the following samples is rejected:

Summary:

Validator Name: Kraig Knapp

Validator Signature: /s/ Kraig Knapp Date: 4/8/03

BN-1085 (11/00)

TIER I REVIEW

GENERAL INFORMATION

1. Project Name and/or Sample Delivery Group (SDG): V1746

2. Date Samples taken: 10/21/02

SAMPLE NUMBER	DATE RECEIVED	DATE ANALYZED	
CA4262 TB-1	10/22/02	VOC 10/26	VOC
250505-Waste-1	↓	TPH 11/04, 11/06 VOC 10/24, 10/25	DRO TCLP VOC
250512-Waste-1	↓	TPH 11/04, 11/06	DRO

TCLP VOLATILE ORGANIC COMPOUNDS (VOCs)

PARAMETER	EXTRACTION HOLD TIME	ANALYSIS HOLD TIME	DAYS HELD	PASS Y/N	SAMPLES NOT PASSING
TCLP VOCs EPA Method 8260	Liquids - 7 days	NA	5	Y	
TCLP VOCs EPA Method 8260	NA	Liquids - 40 days			
Comments:					

Were extractions done within the hold time limit? ☒ Yes ☐ No

Were analyses run within the hold time limit? ☒ Yes ☐ No

A. TCLP VOCs reported as: ☐ mg/L or ☒ ug/L (liquids) Other:

B. Hits above detection level found in laboratory blank (LB), reagent blank surrogate (RBS), field blank (FB), rinse blank (RB), or other QA samples? ☐ Yes ☒ No
If yes, explain:

C. Did laboratory report indicate any problems? ☒ Yes ☐ No
If 'yes,' explain: Only for TPH, not VOC.

D. Were other VOC results reported besides TCLP VOC target compounds? ☐ Yes ☒ No

TOTAL PETROLEUM HYDROCARBONS (TPH)

PARAMETER	EXTRACTION HOLD TIME	ANALYSIS HOLD TIME	DAYS HELD	PASS Y/N	SAMPLES NOT PASSING
Total TPH EPA Method 8015M or 8015B	Liquids - 14 days Soils - 14 days Oil - 14 days	NA	14	Y	
Total TPH EPA Method 8015M or 8015B	NA	Liquids - 40 days Soils - 40 days Oil - 40 days	2	Y	

Comments:

Was TPH digestion done within the hold time limit? ☒ Yes ☐ No

Were analyses run within the hold time limit? ☒ Yes ☐ No

A. TPH reported as: ☒ mg/Kg or ☐ ug/Kg Other:

B. Hits above detection level found in LB, RBS, FB, RB, or other QA samples? ☐ Yes ☒ No
If 'yes,' explain:

C. Did laboratory report indicate any problems? ☒ Yes ☐ No
If 'yes,' explain: Hydrocarbon patterns were atypical for all analytes. Surrogate recovery was poor. Reextraction and reanalysis obtained the same results, indicating a matrix.
Client requested lower reporting limit for 250505-wo5k-1 and 250512-wo5k-1 so the samples were reextracted and reanalyzed

LEVEL 4 11/11 L0210357

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project: CAU 262 | BN Org #: 8502
Charge Number: 5E0328B12
Project Manager: BRAD JACKSON
5-0331 Phone | 5-7761 Fax | NS 306 M/S

REPORT & TURNAROUND INFORMATION

Send Report to: DAN TOBIASON
Phone: 5-4119 | Fax: 5-7761 | M/S: NTS 306
Turnaround: ☐ Standard - 14 days (IH), 28 days Non-rad Env, 45 Days Rad Env. ☒ Rush. Preliminary by: ____ (IH)
☐ 1 ☐ 2 ☐ 7 ☒ 14 (Non-Rad Env) ☐ 1 ☐ 7 ☐ 14 ☐ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 25-05-05, 25-05-12
The samples submitted contain (check):
☐ Hazardous (list) - TPH DIESEL
☐ Radioactive (list) -
☐ Unknown contamination
If known, identify contaminants.
This information will require compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ________ (IH) V0746 (Non-Rad Env) ________ (Rad Env)
Samples submitted are associated with a signed Project SOW: ☒ Yes ☐ No
Analyses entered here agree with the SOW: ☒ Yes ☐ No ☐ N/A
If not, identify the variation: ________
Subcontract Lab(s) used for this work: NEL

	ID/DESCRIPTION	Sampling DATE	Sampling TIME	MATRIX	Container #	Container Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	VOLATILES 8260	TPH DIESEL 8015M	TCLP VOLATILES 1311, 8260
01	CAU 262 TB-1	10/21/02	0900	WATER	*3	40ml				H_2SO_4	X		
02	250505-WASTE-1	↓	1210	SLUDGE	1	250ml				4°C		X	
	250505-WASTE-1		1230	SLUDGE	2	125ml				4°C			X
03	250512-WASTE-1	↓	1300	SLUDGE	1	250ml				4°C		X	
	LAST ITEM												

* 1-sample < Pea Size air bubble

Custody Seal Intact? Y N None Temp. 4°
Condition when received: good

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DANIEL S TOBIASON	/s/ Signature on file	10-21-02/1622	JERRY DIAS	/s/ Signature on file	10-21-02/1638
C.A. CASTANEDA A. JJD	/s/ Signature on file	10-22-02 @ 1300	BN. COURIER	/s/ Signature on file	10-22-02 @ 1300

NEL LABORATORIES

CLIENT:	Bechtel Nevada	**CLIENT ID:**	**CAU 262 TB-1**
PROJECT ID:	CAU 262	**DATE SAMPLED:**	10/21/02
PROJECT #:	B502	**NEL SAMPLE ID:**	L0210354-001A
MATRIX:	AQUEOUS		

Parameter	Result	Units	Reporting Limit	DF	Method	Prep Date	Analyzed	Analyst
1,1,1,2-Tetrachloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1,1-Trichloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1,2,2-Tetrachloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1,2-Trichloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1-Dichloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1-Dichloroethene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,1-Dichloropropene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2,3-Trichlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2,3-Trichloropropane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2,4-Trichlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2,4-Trimethylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2-Dibromo-3-chloropropane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2-Dibromoethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2-Dichlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2-Dichloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,2-Dichloropropane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,3,5-Trimethylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,3-Dichlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,3-Dichloropropane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
1,4-Dichlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
2,2-Dichloropropane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
2-Butanone	ND	µg/L	25	1	SW8260B		10/26/02	DRM-LV
2-Chloroethyl vinyl ether	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
2-Chlorotoluene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
2-Hexanone	ND	µg/L	25	1	SW8260B		10/26/02	DRM-LV
4-Chlorotoluene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
4-Methyl-2-pentanone	ND	µg/L	25	1	SW8260B		10/26/02	DRM-LV
Acetone	ND	µg/L	25	1	SW8260B		10/26/02	DRM-LV
Benzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Bromobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Bromochloromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Bromodichloromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Bromoform	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Bromomethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Carbon disulfide	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Carbon tetrachloride	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Chlorobenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Chloroethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Chloroform	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Chloromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
cis-1,2-Dichloroethene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
cis-1,3-Dichloropropene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Cyclohexane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Dibromochloromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV

ND - Not Detected at the Reporting Limit

DF – Dilution Factor

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

Date: *14-Nov-02*

NEL Laboratories

CLIENT:	Bechtel Nevada		**CLIENT ID:**	**CAU 262 TB-1**
PROJECT ID:	CAU 262		**DATE SAMPLED:**	10/21/02
PROJECT #:	B502		**NEL SAMPLE ID:**	L0210354-001A
MATRIX:	AQUEOUS			

Parameter	Result	Units	Reporting Limit	DF	Method	Prep Date	Analyzed	Analyst
Dibromomethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Dichlorodifluoromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Diisopropyl ether (DIPE)	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Ethyl t-butyl ether (ETBE)	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Ethylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Hexachlorobutadiene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Hexane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Iodomethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Isopropylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
m,p-Xylene	ND	µg/L	10	1	SW8260B		10/26/02	DRM-LV
Methyl t-butyl ether (MTBE)	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Methylene chloride	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
n-Butylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
n-Propylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Naphthalene	ND	µg/L	10	1	SW8260B		10/26/02	DRM-LV
o-Xylene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
p-Isopropyltoluene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
sec-Butylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Styrene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
t-Amyl methyl ether (TAME)	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
t-Butyl alcohol (TBA)	ND	µg/L	50	1	SW8260B		10/26/02	DRM-LV
tert-Butylbenzene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Tetrachloroethene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Toluene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Total THM	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
trans-1,2-Dichloroethene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
trans-1,3-Dichloropropene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Trichloroethene	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Trichlorofluoromethane	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Vinyl acetate	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Vinyl chloride	ND	µg/L	5.0	1	SW8260B		10/26/02	DRM-LV
Surr: 4-Bromofluorobenzene	**86.1**	**%REC**	71.7-120	1	SW8260B		10/26/02	DRM-LV
Surr: Dibromofluoromethane	**90.2**	**%REC**	80.2-106	1	SW8260B		10/26/02	DRM-LV
Surr: Toluene-d8	**99.3**	**%REC**	75.5-105	1	SW8260B		10/26/02	DRM-LV

ND - Not Detected at the Reporting Limit

DF - Dilution Factor

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

Date: *14-Nov-02*

NEL LABORATORIES

CLIENT:	Bechtel Nevada		**CLIENT ID:**	**250505-Waste-1**
PROJECT ID:	CAU 262		**DATE SAMPLED:**	10/21/02
PROJECT #:	B502		**NEL SAMPLE ID:**	L0210354-002A
MATRIX:	SLUDGE			

Parameter	Result	Units		Reporting Limit	DF	Method	Prep Date	Analyzed	Analyst
Diesel Range Organics (C12-C22)	ND	mg/Kg		60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Gasoline Range Organics (C8-C12)	**100**	**mg/Kg**		60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Oil Range Organics (C22-C34)	**390**	**mg/Kg**		150	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Total Petroleum Hydrocarbons	**490**	**mg/Kg**		60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Surr: n-Octacosane	**34.0**	**%REC**	S6	55-130	1	SW8015Ext	11/04/02	11/06/02	COP-LV

ND - Not Detected at the Reporting Limit

DF - Dilution Factor

Date: *14-Nov-02*

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

NEL Laboratories

CLIENT:	Bechtel Nevada	**CLIENT ID:**	**250505-Waste-1**
PROJECT ID:	CAU 262	**DATE SAMPLED:**	10/21/02
PROJECT #:	B502	**NEL SAMPLE ID:**	L0210354-002B
MATRIX:	SLUDGE		

Parameter	Result	Units	Reporting Limit	DF	Method	Prep Date	Analyzed	Analyst
Benzene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Carbon tetrachloride	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Chlorobenzene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Chloroform	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
1,4-Dichlorobenzene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
1,1-Dichloroethene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
1,2-Dichloroethane	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Methyl ethyl ketone	ND	mg/L	0.50	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Tetrachloroethene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Trichloroethene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Vinyl chloride	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
1,1,1-Trichloroethane	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Toluene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Ethylbenzene	ND	mg/L	0.10	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Total Xylenes	ND	mg/L	0.20	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Surr: Dibromofluoromethane	**87.6**	**%REC**	74.3-132	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Surr: Toluene-d8	**99.6**	**%REC**	81.3-138	20	TCLP 8260	10/24/02	10/25/02	DRM-LV
Surr: 4-Bromofluorobenzene	**82.0**	**%REC**	58.4-154	20	TCLP 8260	10/24/02	10/25/02	DRM-LV

ND - Not Detected at the Reporting Limit

DF - Dilution Factor

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

Date: *14-Nov-02*

NEL LABORATORIES

CLIENT:	Bechtel Nevada		**CLIENT ID:**	**250512-Waste-1**
PROJECT ID:	CAU 262		**DATE SAMPLED:**	10/21/02
PROJECT #:	B502		**NEL SAMPLE ID:**	L0210354-003A
MATRIX:	SLUDGE			

Parameter	Result	Units		Reporting Limit	DF	Method	Prep Date	Analyzed	Analyst
Diesel Range Organics (C12-C22)	**1100**	**mg/Kg**	F3	60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Gasoline Range Organics (C8-C12)	**83**	**mg/Kg**	F1	60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Oil Range Organics (C22-C34)	ND	mg/Kg		150	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Total Petroleum Hydrocarbons	**1200**	**mg/Kg**		60	1	SW8015Ext	11/04/02	11/06/02	COP-LV
Surr: n-Octacosane	**62.1**	**%REC**		55-130	1	SW8015Ext	11/04/02	11/06/02	COP-LV

ND - Not Detected at the Reporting Limit

DF - Dilution Factor

Date: *14-Nov-02*

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

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PARAGON ANALYTICS, INC.
225 Commerce Drive * Fort Collins, CO 80524 * (800) 443-1511 * (970) 490-1511 * FAX (970) 490-1522

November 15, 2002

Mr. Ted Redding
Bechtel Nevada
US DOE Zone 1, Bldg. 652
Rm. 2, M/S NTS273
Mercury, NV 89023

RE: Paragon Workorder: 02-10-144
Client Project Name: CAU 262
Client Project Number: V1747

Dear Mr. Redding

One liquid and sludge sample was received from Bechtel Nevada on October 25, 2002. The sample was scheduled for the following analyses:

Gross Alpha/Beta	pages 1-241
Gamma Spectroscopy-liquid	pages 1-104
Gamma Spectroscopy-sludge	pages 1-96

The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions please call.

Sincerely,

/s/ Ken Campbell

Paragon Analytics, Inc.
Ken Campbell
Project Manager

KDC/hc
Enclosure: Report

0210144

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project: CAU 262 | RN Doc #: B306
Charge Number: SB03PBIN
Project Manager: BRAD JACKSON
Phone: 5-0331 | Fax: 5-7761 | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: DAN TOBIASON
Phone: 5-6169 | Fax: 5-7761 | M/S: NTS 306
Turnaround: ☐ Standard - 14 days IH, 28 days Non-rad Env, 45 Days Rad Env. ☒ Rush: Preliminary by ____ (IH) ☐1 ☐2 ☐7 ☐14 (non-Rad Env) ☐1 ☐7 ☒14 ☐28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 25-05-05, 25-05-12
The samples submitted contain (check):
☐ Hazardous (list) -
☐ Radioactive (list) -
☐ Unknown contamination
If known, identify contaminants.
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ____ (IH) ____ (Non-Rad Env) V1747 (Rad Env)
Samples submitted are associated with a signed Project SOW ☒ Yes ☐ No
Analyses entered here agree with the SOW ☒ Yes ☐ No ☐ N/A
If not, identify the variation: ____
Subcontract Lab(s) used for this work: PARAGON

Pay Item, Analysis, Method

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	GAMMA SPEC	GROSS ALPHA/BETA						
250505-WASTE-1	10/21/02	1230	LIQUID	2	1 L				4°C	X	X						
250512-WASTE-1	10/21/02	1330	SLUDGE	2	500 mL				4°C	X	X						
LAST ITEM																	

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DANIEL S. TOBIASON	/s/ Signature on file	10-21-02/1630	JERRY DUCAS	/s/ Signature on file	10-21-02/1630
[illegible] for [illegible]	/s/ Signature on file	10-22-02 1300	Fed Ex	8622850 10004784	10-22-02 1300
Fed Ex	/s/ Signature on file	10/23/02 1300	Amy Wolf	/s/ Signature on file	10/23/02 1300

Position Code: 1/WV-A(1)

BN-0732 (04/02)

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gross Alpha/Beta

Bechtel Nevada

CAU 262 / V1747

PAI WO 0210144

1. This report consists of one liquid sample and sludge sample received by Paragon on 10/25/02.
2. Sample 250505-WASTE-1 (PAI ID 0210144-1) was received with a pH of 7. Due to the high levels of suspended solids, acidification was not attempted prior to analyses. Please refer to QASS 246103.
3. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP702R15.
4. The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP724R7. The analyses were completed on 11/08/02. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to $^{90}Sr/Y$.
5. The analysis results for the sludge sample are reported on a dry weight basis in units of pCi/gram.
6. The analysis results for the liquid sample are reported in units of pCi/L. The sample was not filtered prior to analysis.
7. The sludge sample was flamed, as prescribed in EPA Methods 900.0 and 9310 for samples which demonstrate hygroscopicity. This could reduce the beta activity if the samples contained ^{137}Cs, or other beta emitters, that may be volatile under the conditions associated with flaming.
8. Following an extended count the requested MDC for gross alpha/beta for sample 250505-WASTE-1 and its duplicate (PAI ID 0210144-1 and -1-D1) were not achieved due to the presence of elevated levels of dissolved / suspended solids native to the sample. The requested method limits the amount of sample solids residue taken for analysis to 5 mg/cm^2. These samples are identified with an "M" flag on the Gross AlphaBeta Raw Data Report, which can be found in Section 4, "Raw Data" of this report. The reported gross alpha/beta activity for theses samples exceeds the achieved MDC.

9. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.

10. No further anomalous situations were noted during the preparation and analysis of these samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file

Julie Ellingson
Radiochemistry Instrument Technician

11/13/02
Date

/s/ Signature on file

Radiochemistry Final Data Review

11/14/02
Date

Sample Results Summary

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1747

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0210144

Reported on: Friday, November 08, 2002 13:34:06

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0210144-1	250505-WASTE-1	RD_GAB	GrAlpha	1.12E+03 +/- 2.80E+02	2.98E+02	pCi/L	Liquid	AB00667	11/6/02	
0210144-1	250505-WASTE-1	RD_GAB	GrBeta	2.87E+03 +/- 4.70E+02	3.65E+02	pCi/L	Liquid	AB00667	11/6/02	
0210144-2	250512-WASTE-1	RD_GAB	GrAlpha	1.22E+00 +/- 3.80E-01	3.18E-01	pCi/g	Sludge	AB00668	11/5/02	LT
0210144-2	250512-WASTE-1	RD_GAB	GrBeta	1.72E+00 +/- 4.27E-01	4.70E-01	pCi/g	Sludge	AB00668	11/5/02	LT

Comments:

Data Package ID: *AB0210144-1*

Qualifiers/Flags:

- Result is less than the sample specific MDC.
- Result is less than Requested MDC, greater than sample specific MDC.
- Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gamma Spectroscopy

Bechtel Nevada

CAU 262 / V1747

Paragon Work Order 0210144

1. This report consists of analysis results for one sludge sample received by Paragon on 10/25/02. The analysis results for this sample are reported on an "as received" basis in units of pCi/gram.

2. This sample was prepared according to Paragon Analytics, Inc. procedure PAI SOP739R5.

3. The sample was analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics, Inc. procedure PAI SOP713R7. The analyses were completed on 10/29/02.

4. The sample was analyzed using Seeker Version 2.2, which is a product of Vertechs Software Solutions, Inc.

5. Sample volumes were insufficient to allow preparation of a duplicate. A duplicate analysis of sample 250512-WASTE-1 (PAI ID 0210144-2) was performed in lieu of a preparation duplicate.

6. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.

7. The efficiencies used in the activity calculations for these samples were obtained using a NIST traceable mixed gamma source spiked into 500g of sand. Due to differences between the calibration standard and the samples, the analytical results may be biased.

8. There are cases where the magnitude of the negative activity is greater than the 2 sigma TPU. The analyst's review of the data does not indicate a problem with the instrument data or the subsequent reporting systems. The data quality is not believed to be affected and the results are submitted without qualification. Under typical conditions, where background level sample data is normally distributed and analyzed by paired observations, this event is likely to occur at least 2.5% of the time.

9. No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file
Radiochemistry Instrument Technician

11-8-02
Date

/s/ Signature on file
Radiochemistry Final Data Review

11/8/02
Date

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Thursday, November 07, 2002 15:42:40

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1747

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0210144

Field ID: 250505-WASTE-1
Lab ID: 0210144-1

Sample Matrix: Liquid
Date Prepared: 29-Oct-02
Prep SOP: PAI 739R6
Prep Batch: GS01753

Date Collected: 21-Oct-02
Date Analyzed: 30-Oct-02
Analytical SOP: PAI 713R7
Spectrum Code: 021146D07A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 300
Library: GAM-A-001 LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	3.05E+01 +/- 2.21E+01	3.35E+01	pCi/L	U
Am-241	-2.92E+00 +/- 5.64E+00	9.84E+00	pCi/L	U
Ce-144	-1.88E+01 +/- 1.92E+01	3.38E+01	pCi/L	U
Co-60	-1.40E+00 +/- 5.53E+00	1.02E+01	pCi/L	U
Cs-134	6.38E-01 +/- 5.11E+00	8.77E+00	pCi/L	U
Cs-137	1.12E+02 +/- 2.13E+01	8.52E+00	pCi/L	
Eu-152	-8.09E+00 +/- 2.84E+01	5.26E+01	pCi/L	U
Eu-154	5.50E+00 +/- 2.83E+01	4.94E+01	pCi/L	U
Eu-155	-2.84E+00 +/- 9.23E+00	1.60E+01	pCi/L	U
K-40	2.96E+02 +/- 1.21E+02	1.51E+02	pCi/L	
Pb-212	3.12E+01 +/- 1.10E+01	1.47E+01	pCi/L	
Pm-144	3.97E+00 +/- 5.17E+00	6.45E+00	pCi/L	U
Pm-146	-2.23E+00 +/- 6.12E+00	1.06E+01	pCi/L	U
Ru-106	-1.97E+01 +/- 4.55E+01	6.14E+01	pCi/L	U
Sb-125	2.64E+00 +/- 1.30E+01	2.21E+01	pCi/L	U
Th-234	8.65E+01 +/- 8.84E+01	1.09E+02	pCi/L	U
U-235	3.16E+00 +/- 2.51E+01	4.23E+01	pCi/L	U
Y-88	4.37E+00 +/- 5.30E+00	8.58E+00	pCi/L	U

Data Package ID: *GSW0210144-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Thursday, November 07, 2002 15:42:40

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1747

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0210144

Field ID: 250505-WASTE-1
Lab ID: 0210144-1

Sample Matrix:	Liquid	Date Collected:	21-Oct-02	Final Aliquot:	1.000 L
Date Prepared:	29-Oct-02	Date Analyzed:	30-Oct-02	Report Basis:	As Received
Prep SOP:	PAI 739R5	Analytical SOP:	PAI 713R7	Count Time (min.):	300
Prep Batch:	GS01753	Spectrum Code:	021146D07A	Library:	GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSW0210144-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Friday, November 08, 2002 09:11:21

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1747

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0210144

Field ID: 250512-WASTE-1
Lab ID: 0210144-2

Sample Matrix: Sludge
Date Prepared: 29-Oct-02
Prep SOP: PAI 739R5
Prep Batch: GS01754

Date Collected: 21-Oct-02
Date Analyzed: 29-Oct-02
Analytical SOP: PAI 713R7
Spectrum Code: 021141D07A

Final Aliquot: 347.1 g
Report Basis: As Received
Count Time (min.): 30
Library: GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	8.90E-02 +/- 2.34E-01	4.26E-01	pCi/g	U
Am-241	5.20E-02 +/- 6.04E-02	1.34E-01	pCi/g	U
Ce-144	1.19E-01 +/- 2.00E-01	3.38E-01	pCi/g	U
Co-60	3.42E-02 +/- 5.61E-02	9.57E-02	pCi/g	U
Cs-134	-1.12E-02 +/- 5.71E-02	1.13E-01	pCi/g	U
Cs-137	1.13E+00 +/- 2.65E-01	1.24E-01	pCi/g	
Eu-152	1.06E-01 +/- 2.64E-01	5.00E-01	pCi/g	U
Eu-154	-4.88E-02 +/- 3.39E-01	7.03E-01	pCi/g	U
Eu-155	7.05E-02 +/- 1.17E-01	1.96E-01	pCi/g	U
K-40	7.02E-01 +/- 9.98E-01	1.65E+00	pCi/g	U
Pb-212	8.39E-02 +/- 1.05E-01	1.70E-01	pCi/g	U
Pm-144	-3.77E-02 +/- 5.93E-02	1.26E-01	pCi/g	U
Pm-146	4.92E-02 +/- 8.68E-02	1.51E-01	pCi/g	U
Ru-106	3.45E-01 +/- 5.66E-01	9.59E-01	pCi/g	U
Sb-125	9.27E-02 +/- 1.72E-01	2.92E-01	pCi/g	U
Th-234	1.98E-01 +/- 5.69E-01	9.67E-01	pCi/g	U
U-235	1.38E-01 +/- 2.64E-01	4.48E-01	pCi/g	U
Y-88	-1.21E-02 +/- 5.13E-02	1.14E-01	pCi/g	U

Data Package ID: *GSS0210144-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Friday, November 08, 2002 09:11:21

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1747

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0210144

Field ID: 250512-WASTE-1
Lab ID: 0210144-2

Sample Matrix: Sludge
Date Prepared: 29-Oct-02
Prep SOP: PAI 739R5
Prep Batch: GS01754

Date Collected: 21-Oct-02
Date Analyzed: 29-Oct-02
Analytical SOP: PAI 713R7
Spectrum Code: 021141D07A

Final Aliquot: 347.1 g
Report Basis: As Received
Count Time (min.): 30
Library: GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
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SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0210144-1*

LvLI
LIONVILLE LABORATORY INC

Analytical Report

Client: BECHTEL-NEVADA V1898
LVL #: 0302L786

W.O. #: 60052-001-001-0001-00
Date Received: 02-20-2003

DIESEL RANGE ORGANICS

Three (3) water samples were collected on 02-18-2003.

The samples and their associated QC samples were extracted on 02-21-2003 and analyzed according to Lionville Laboratory OPs on 02-25-2003. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8015B for Diesel Range Petroleum Hydrocarbons.

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

2. The required holding time for extraction and analysis has been met.

3. The method blank was below the reporting limits for all target compounds.

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recovery was within acceptance criteria.

6. The matrix spike recoveries were within EPA QC limits.

7. All initial calibrations associated with this data set were within acceptance criteria.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

/s/ Iain Daniels

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

[illegible]
[illegible]

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Bechtel Nevada

DATA VALIDATION COVER SHEET

Section I

MEF Number: CAU 262 SDG V1898 Sample Request Number: ____________

Contract Laboratory: Granville Lab Inc. Organization: BN ER

Validation Procedure/Instruction, including revision number: ____________

Analysis Requested (check all that apply):

- [ ] Volatile Organics
- [ ] Semi Volatile Organics
- [ ] Inorganics
- [ ] Organochlorine Pesticides/Polychlorinated Biphenals (PCBs)
- [ ] Radiochemistry

☑ TPH full

Section II

1. [x] Chain-of-Custody Form
2. [x] Case Narrative
3. [x] Sample Results Forms
4. [x] Field Forms
5. [x] Quality Control Forms

Identify any samples that are missing:

Comments/Problems: (include information about requests for further information submitted to the contract laboratory and agreed upon date of resolution and contract laboratory point of contact):

Validator Name: Kraig Knapp

Validator Signature: /s/ Kraig Knapp Date: 4/9/03

Bechtel Nevada

DATA VALIDATION CHECKLIST

Analyses Reviewed: TPH (GRO) **Date:** 4/9/03

DATA REVIEW

		Yes	No	N/A
1.	Requested analyses were performed on all samples.	X		
2.	Samples were extracted, prepared, and analyzed within holding times.	X		
3.	Cooler temperature was recorded upon receipt.	X		
4.	Proper preservation / pH was used for each matrix and analysis.			X
5.	The laboratory sample identification corresponds to the client sample identification.	X		
6.	Background checks were performed at the proper frequency and were acceptable.	X		
7.	efficiency checks were performed at the proper frequency and were acceptable.			X
8.	Method blanks were analyzed and were acceptable.	X		
9.	All MDAs were less than the RDLs.			X
10.	LCSs were analyzed at the proper frequency and recoveries were acceptable.			X
11.	MS were analyzed at the proper frequency and recoveries were acceptable.		X	
12.	Lab duplicates were analyzed the proper frequency and RPDs were acceptable.			X
13.	QC batches correspond clearly with analytical batches.	X		
14.	Sample activity/concentration units are reported accurately.	X		
15.	Dilutions were properly noted and calculated.			X
16.	Sample detection limits were properly adjusted for dilutions.			X
17.	Detection limits meet project requirements.	X		

QUALIFIERS

QC Result	Qualifier	Associated Sample Results				
Preparation Blank:	U	250505-V1,	250512-V1,	250512-V2,	250512-V2	MS/MSD
~~Lab Control Sample:~~		"	"	"	"	"
Matrix Spike:	none	"	"	"	"	"
~~Duplicate Sample:~~						

Validator Name: Kraig Knapp

Signature: /s/ Kraig Knapp Date: 4/9/03

SH-2066 (11/00)

Bechtel Nevada

DATA VALIDATION CHECKLIST

Analyses Reviewed: TPH (ORO) **Date:** 4/9/03

DATA REVIEW

	Yes	No	N/A
1. Requested analyses were performed on all samples.	☑	☐	☐
2. Samples were extracted, prepared, and analyzed within holding times.	☑	☐	☐
3. Cooler temperature was recorded upon receipt.	☑	☐	☐
4. Proper preservation / pH was used for each matrix and analysis.	☐	☐	☑
5. The laboratory sample identification corresponds to the client sample identification.	☑	☐	☐
6. Background checks were performed at the proper frequency and were acceptable.	☐	☐	☑
7. efficiency checks were performed at the proper frequency and were acceptable.	☐	☐	☑
8. Method blanks were analyzed and were acceptable.	☑	☐	☐
9. All MDAs were less than the RDLs.	☐	☐	☑
10. LCSs were analyzed at the proper frequency and recoveries were acceptable.	☐	☐	☑
11. MS were analyzed at the proper frequency and recoveries were acceptable.	☑	☐	☐
12. Lab duplicates were analyzed the proper frequency and RPDs were acceptable.	☐	☐	☑
13. QC batches correspond clearly with analytical batches.	☑	☐	☐
14. Sample activity/concentration units are reported accurately.	☑	☐	☐
15. Dilutions were properly noted and calculated.	☐	☐	☑
16. Sample detection limits were properly adjusted for dilutions.	☐	☐	☑
17. Detection limits meet project requirements.	☑	☐	☐

QUALIFIERS

QC Result	Qualifier	Associated Sample Results			
Preparation Blank:	J	250508-V1,	250512-V1,	250512-V2,	250512-V2 MS/MSD
~~Lab Control Sample~~					
Matrix Spike:	None	"	"	"	"
~~Duplicate Sample~~:					

Validator Name: Kraig Knapp

Signature: /s/ Kraig Knapp Date: 4/9/03

BN-1086 (11/2001)

Bechtel Nevada

DATA CONFIDENCE STATEMENT

MEF Number: JOG V1898 CAU 262 Analyses: ____________

- [x] Field and QA/QC sample data have been generated in accordance with method requirements and within quality control. Requirements of the SOW have been met.

Comments: DRO

- [x] QA/QC problems were encountered during analysis of the samples. Usability is not affected, data are acceptable.

Comments: GRO

- [ ] Significant QA/QC problems were encountered during analysis of the samples.

Data for the following samples is rejected:

Summary:

Validator Name: Kraig Knapp

Validator Signature: /s/ Kraig Knapp Date: 4/8/03

BN-1085 (11/00)

TIER I REVIEW

GENERAL INFORMATION

1. Project Name and/or Sample Delivery Group (SDG): V1898

2. Date Samples taken: 2/18/03

SAMPLE NUMBER	DATE RECEIVED	DATE ANALYZED
250505-V1	2/20/03	2/21/03 2/25/03
250512-V1		
250512-V2		
250512-V2 MS/MSD		

3. Date of Review: 4/9/03

4. Chain of Custody (COC):

Completed? ☒ Yes ☐ No Legible? ☒ Yes ☐ No

5. Is a cover letter/case narrative attached? ☒ Yes ☐ No

If 'yes,' has it been reviewed for significant problems? ☒ Yes ☐ No ☐ NA

Comments: GRO: 1/8 surrogate recoveries was low
GRO: 1 of 2 MS recoveries was low

6. Analyses requested (Attach COC, Sample Request Form, and lab data packet to this review):

☐ Total VOCs ☐ Total BNA ☐ Total Metals ☐ Radionuclides
☐ TCLP VOCs ☐ TCLP BNA ☐ TCLP Metals ☒ TPH
☐ PCBs ☐ Other:

7. Were all requested analyses performed on all samples? ☒ Yes ☐ No

8. Temperature on cooler: 4 °C (parameters: 4°C ±2°) or ☐ NA

10. Refer to Table 1. Was the proper preservation used? ☐ Yes ☐ No ☒ NA

If 'no,' then explain:

TOTAL PETROLEUM HYDROCARBONS (TPH)

PARAMETER	EXTRACTION HOLD TIME	ANALYSIS HOLD TIME	DAYS HELD	PASS Y/N	SAMPLES NOT PASSING
Total TPH EPA Method 8015M or 8015B	Liquids - 14 days Soils - 14 days Oil - 14 days	NA	3	Y	
Total TPH EPA Method 8015M or 8015B	NA	Liquids - 40 days Soils - 40 days Oil - 40 days	4	Y	
Comments:					

Was TPH digestion done within the hold time limit? ☑ Yes ☐ No

Were analyses run within the hold time limit? ☑ Yes ☐ No

A. TPH reported as: ☐ mg/Kg or ☐ ug/Kg Other: mg/L

B. Hits above detection level found in LB, RBS, FB, RB, or other QA samples? ☐ Yes ☑ No
If 'yes,' explain:

C. Did laboratory report indicate any problems? ☑ Yes ☐ No
If 'yes,' explain:

GRO: 1 of 8 surrogate recoveries was low.
GRO: 1 of 2 recoveries for MS was low.

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project: CAU 262 | Bil Cd: A5D2
Charge Number: 5B04AD5U
Project Manager: Brad Jackson
Phone: 5-0321 | Fax: 5-7761 | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Dan Tobiason
Phone: 5-6164 | Fax: 5-7761 | M/S: NTS 306
Turnaround: ☐ Standard - 14 days IH, 28 days Non-rad Env, 45 Days Rad Env ☒ Rush Preliminary by: ______ (IH) ☐1 ☐3 ☒7 ☐14 (non-Rad Env) ☐1 ☐7 ☐14 ☐20 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 25-25-05, 25-25-12
The samples submitted contain (check):
☐ Hazardous (list) -
☐ Radioactive (list) -
☒ Unknown contamination
If known, identify contaminants.
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ______ (IH) V1898 (Non-Rad Env) ______ (Rad Env)
Samples submitted are associated with a signed Project SOW ☒ Yes ☐ No
Analyses entered here agree with the SOW ☒ Yes ☐ No ☐ N/A
If not, identify the variation: ______
Subcontract Lab(s) used for this work: LIONVILLE

Pay Item, Analysis, Method: 5.103 TPH Full Scan 8015

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	5.103 TPH Full Scan 8015							
250505-V1	2/18/03	1000	Water	3	1000 mL				4°C	X							
250512-V1	2/18/03	1120	Water	3	1000 mL				4°C	X							
250512-V2	2/18/03	1120	Water	3	1000 mL				4°C	X							
250512-V2 MS/MSD	2/18/03	1120	Water	3	1000 mL		X	X	4°C	X							

LAST ITEM

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DANIEL S. TOBIASON	/s/ Signature on file	2/18/03 1629	JERRY J. DUGAS	/s/ Signature on file	2/18/03 1628
CDCastaneda for JJD	/s/ Signature on file	2/19/03 1340	Fed Ex	791361089670	2/19/03 1300
Klew E.	/s/ Signature on file	2-20-03/0937			

Retention Code: ENV-5(3)

ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

250505-V1

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		
68334-30-5	Diesel Range Organics	340	
00-00-0000	Motor Oil	590	

12/88 Rev.

CLIENT SAMPLE NO.

ORGANICS ANALYSIS SHEET

250512-V1

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-002

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
68334-30-5	------Diesel Range Organics	300	U
00-00-0000	------Motor Oil	340	

12/88 Rev.

ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

250512-V2

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-003

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
68334-30-5	Diesel Range Organics	300	U
00-00-0000	Motor Oil	300	U

12/88 Rev.

LIONVILLE LABORATORY INC

Analytical Report

Client: BECHTEL-NEVADA V1898
LVL #: 0302L786

W.O. #: 60052-001-001-0001-00
Date Received: 02-20-2003

GRO

Three (3) water samples were collected on 02-18-2003.

The samples and their associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 02-25-2003.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LVLI's sample acceptance policy.
2. Samples were analyzed within required holding time.
3. The method blank was below the reporting limits for all target compounds.
4. One (1) of eight (8) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. The blank spike recoveries were within acceptance criteria.
6. One (1) of two (2) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

/s/ Iain Daniels

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/3/03
Date

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0366047

Initiator:	John Lech	Batch:	0302L786	Parameter:	OGRO
Date:	2/26/03	Samples:	MSD	Matrix:	WATER
Client:	Bechtel	Method:	SW846/MCAWW/CLP/	Prep Batch:	03L0T335

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other ______

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle) . signature/date: ______

c. Problem (Include all relevant specific results; attach data if necessary)

MSD no recoveries

2. Known or Probable Causes(s)

cracked Purge tube

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: ______
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to ______
__ Place On/Take Off Hold (circle)

None. MS in control
precision shown by MS & MSD

4. Project Manager Instructions . signature/date: /s/ Signature on file 2/26/03

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person ______
__ Add
__ Cancel

5. Final Action . signature/date: /s/ Signature on file Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: ______

QA-105-A-0801

VLI

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

GC VOLATILES SHEET

CLIENT SAMPLE NO.

250505-V1

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
86290-81-5	Gasoline Range Organics (GRO)	30	U

12/88 Rev.

CLIENT SAMPLE NO.

GC VOLATILES SHEET

250512-V1

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
86290-81-5	------Gasoline Range Organics (GRO)	30	U

12/88 Rev.

GC VOLATILES SHEET

CLIENT SAMPLE NO.

250512-V2

Lab Name: Lionville Labs, Inc. Work Order: 60052001001

Client: BECHTEL NEVADA V1898

Matrix: WATER

Lab Sample ID: 0302L786-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: BLKLACHJ

Level: (low/med) LOW

Date Received: 02/20/03

% Moisture: not dec. ____

Date Analyzed: 02/25/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
86290-81-5	Gasoline Range Organics (GRO)	30	U

12/88 Rev.

SC&A S. COHEN & ASSOCIATES
AN EMPLOYEE-OWNED COMPANY

February 27, 2003

Mr. Ted Redding
USDOE Zone 1
Bldg. 652, Room 2
M/S NTS 273
Mercury, NV 89023

Dear Mr. Redding:

On February 20, 2003, one water sample (SDG V1899) was received for analysis at the Sanford Cohen and Associates (SC&A) Southeastern Environmental Laboratory. The chain-of-custody accompanying the sample requested that the sample results be reported within seven days of receipt. The samples were assigned Laboratory Report Identification Code 4024. Enclosed the Sample Data Package containing the results of the analyses for the sample.

If you have any questions please do not hesitate to call.

Sincerely,

/s/ Signature on file

Charles Phillips
Vice President

COVER PAGE

Sanford Cohen & Associates
Southeastern Environmental Laboratory
1000 Monticello Court
Montgomery, Alabama 36117

Laboratory Code: SCA Contract Number: 30025

Laboratory Report Identification Code: 4024 SDG: V1899

Sample Matrix: Water

Site Sample Numbers	Laboratory Sample Number
	Gross Alpha/Beta
250505-V1	NTS03-4024-01
Laboratory Control Sample (LC)	SCAQC-4024-LC1
Duplicate (LD)	SCAQC-4024-LC1
Preparation Blank (PB)	SCAQC-4024-PB

Comments: There were no problems encountered during sample receiving.

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory Manager or the Manager's designee, as verified by the following signature."

/s/ Signature on file
Signature

Joe Stinson
Name

Laboratory Manager
Title

2/27/03
Date

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project CAU 262 | BN Org # B5D L

Charge Number 5B04A650

Project Manager Brad Jackson

Phone 5-2221 | Fax 5-7761 | M/S NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Dan Tobiason

Phone 5-6169 | Fax 5-7761 | M/S NTS 306

Turnaround: ☐ Standard - 14 days IH, 28 days Non-rad Env, 45 Days Rad Env. ☒ Rush: Preliminary by: ____ (IH)
☐ 1 ☐ 2 ☐ 7 ☐ 14 (Non-Rad Env)
☐ 1 ☒ 7 ☐ 14 ☐ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site CAU 262 [illegible]

The samples submitted contain (check):
☐ Hazardous (list) -
☐ Radioactive (list) -
☒ Unknown contamination
If known, identify contaminants.
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ____ (IH) ____ (Non-Rad Env) V1899 (Rad Env)

Samples submitted are associated with a signed Project SOW ☒ Yes ☐ No

Analyses entered here agree with the SOW ☒ Yes ☐ No ☐ N/A

If not, identify the variation: ____

Subcontract Lab(s) used for this work: SC&A

NTS03-4024

	ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: GPC-# 001 Gross Alpha/Beta							
-01	250505-01	3/18/03	1000	Water	1	1000 ml				4°C	X							
				Last Item														

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DANIEL TOBIASON	/s/ Signature on file	3/18/03 1623	[illegible]	/s/ Signature on file	3/18/03 1623
[illegible]	/s/ Signature on file	3/19/03 1500	[illegible]	791300991159	3/19/03 1500
FedEx	791300991159	3/20/03 0930	K B Condon	/s/ Signature on file	3/20/03 09 30

001

CASE NARRATIVE
SDG V1899
Laboratory Report Identification Number: 4024

February 27, 2003

I. Introduction

On February 20, 2003, one water sample was received for analysis at the Sanford Cohen and Associates (SC&A) Southeastern Environmental Laboratory, located in Montgomery, Alabama. The chain-of-custody accompanying the sample requested that it be reported within seven days. The samples were analyzed in accordance with the Bechtel Nevada Services Subcontract Task Order Agreement Form, Exhibit B, Statement of Work and Specifications, Rev 1, 1/23/01.

II. Analytical Methodology

The radioanalytical results reported for the sample include the site and laboratory sample identification numbers, collection date, method of analysis, and the quality control samples that were analyzed concurrently. The Samples were analyzed in accordance with the following methods.

Radionuclide	Method Number	Method Name	Counting Method
Gross Alpha	EPA 900.0	Gross Alpha Radioactivity	Gas Proportional Counting
Gross Beta	EPA 900.0	Gross Beta Radioactivity	Gas Proportional Counting

III. Analytical Results

Deficiencies

None.

Matrix Interferences

There were no indications of matrix interference.

Dilutions

No dilutions were required.

Detection Limits

The required detection limits (RDL) were met for all analyses.

Reanalysis

There were no reanalyses.

003

Deviations from Protocols

There were no deviations from the written protocols and analytical methods.

Contacts with the CTR

There were no contacts with the contract technical representative (CTR) regarding these samples.

IV. Quality Control

Site Samples Used for Quality Control Samples: Gross Alpha, Gross Beta

Site Sample Number	Laboratory Sample Number	Type of Quality Control Analysis Sample
Laboratory Type II Water	SCAQC-4024-LC1	Laboratory Control Sample
250505-V1	SCAQC-4024-LD1	Laboratory Duplicate Sample
Preparation Blank	SCAQC-4024-PB	Preparation Blank

The analytical results of all quality control samples met the acceptance criteria specified in the SOW.

Sincerely,

/s/ Joe Stinson

Joe Stinson
Laboratory Manager

2/27/03
Date

Sanford Cohen & Associates
Southeastern Environmental Laboratory

Radioanalytical Results

Report Identification Number: V1899

Project Name: Bechtel Nevada	Chain-of-Custody Number: NONE		Matrix: Water
Site Sample ID: 250505-V1			
Other Sample ID:	Collection Date: 2/18/2003 10:00:00 A	Date Received: 2/20/2003	
	Batch Number: 4024	Laboratory Code: SCA	

Method Number	Radionuclide	Laboratory Sample ID	Activity (pCi/L)	2 σ TPU (pCi/L)	Total Error (pCi/L)	MDA (pCi/L)
EPA 900.0	ALPHA	NTS03-4024-01	3.30	2.71	3.17	3.78
EPA 900.0	BETA	NTS03-4024-01	5.42	1.45	2.18	1.50

Quality Control Samples

Radionuclide	Laboratory Control (LC)	Laboratory Duplicate (LD)	Matrix Spike (MS)	Preparation Blank (PB)
Alpha	SCAQC-4024-LC1	SCAQC-4024-LD1		SCAQC-4024-PB
Beta	SCAQC-4024-LC1	SCAQC-4024-LD1		SCAQC-4024-PB

1000 Monticello Court * Montgomery, Alabama * 36117 * 334.272.2234 * FAX 334.213.0407

PARAGON ANALYTICS, INC.
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

February 10, 2003

Mr. Ted Redding
Bechtel Nevada
US DOE Zone 1, Bldg 652, Rm 2, M/S NTS273
Mercury NV 89023

RE: Paragon Workorder: 03-01-130
Client Project Name: CAU 262
Client Project Number: V1860

Dear Mr. Redding:

Two solid samples were received from Bechtel Nevada on January 28, 2003. The samples were scheduled for Gross Alpha/Beta (pages 1-147) and Gamma Spectroscopy (pages 1-122) analyses. The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

/s/ Ken Campbell

Paragon Analytics, Inc.
Ken Campbell
Project Manager

KDC/hc
Enclosure: Report

0301130

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project: CAU 262 | Bill Code #: 8502
Charge Number: 5804ADSO
Project Manager: BRAD JACKSON
Phone: 5-0331 | Fax: 5-7761 | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: DAN TOBIASON
Phone: 5-6169 | Fax: 5-7761 | M/S: NTS 306
Turnaround: ☐ Standard - 14 days (IH), 28 days Non-rad Env, 45 Days Rad Env; ☒ Rush Preliminary by: FEB 6, 2003 (IH)
☐ 1 ☐ 3 ☐ 7 ☐ 14 (non-Rad Env)
☐ 1 ☒ 7 ☐ 14 ☐ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 25-05-05, 25-04-06B
The samples submitted contain (check):
☐ Hazardous (list) -
☐ Radioactive (list) -
☐ Unknown contamination: FUEL DIESEL
If known, identify contaminants: SEPTAGE
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ______ (IH) ______ (Non-Rad Env) V18LO (Rad Env)
Samples submitted are associated with a signed Project SOW ☒ Yes ☐ No
Analyses entered here agree with the SOW ☒ Yes ☐ No ☐ N/A
If not, identify the variation: ______
Subcontract Lab(s) used for this work: PARAGON

Pay Item, Analysis, Method

	ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	NES-R-002 GAMMA SPEC	GR-A-03 GROSS ALPHA/BETA						
1	250505-WASTE-2	1/22/03	0945	SOLID	1	500 mL				4°C	X	X						
2	250406B-WASTE-1	1/22/03	1015	SOLID	1	500 mL				4°C	X	X						
	LAST ITEM																	

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DANIEL S TOBIASON	/s/ Signature on file	1/23/03 1730	LOCKER FOR SAMPLE RET.	/s/ Signature on file	1/23/03 1730
LOCKER FOR SAMPLE RET.	/s/ Signature on file	1/27/03 0752	DANIEL S TOBIASON	/s/ Signature on file	1/27/03 0752
DANIEL S TOBIASON	/s/ Signature on file	1/27/03 0757	C B CASTANEDA	/s/ Signature on file	01-27-03 0757
CBCASTANEDA	/s/ Signature on file	01/27/03 1300	Fed Ex #	7926845554	01-27-03 1300
FedEx		1/28/03 @ 925	Jason C Kaufman	/s/ Signature on file	1/28/03 @ 925

Retention Code: ENV 5.01

/s/ Signature on file

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gross Alpha/Beta

Bechtel Nevada

CAU 262 / V1860

PAI WO 0301130

1. This report consists of two solid samples received by Paragon on 01/28/03.
2. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP702R15.
3. The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP724R7. The analyses were completed on 02/03/03. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to $^{90}Sr/Y$.
4. The analysis results for these samples are reported on a dry weight basis in units of pCi/gram.
5. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.
6. All of the solid samples associated with this work order were flamed, as prescribed in EPA Methods 900.0 and 9310 for samples which demonstrate hygroscopicity. This could reduce the beta activity if the samples contained ^{137}Cs, or other beta emitters, that may be volatile under the conditions associated with flaming.
7. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file — 2/6/03

John Petrovic — Date

Radiochemistry Instrument Technician

/s/ Signature on file — 2/5/03

Radiochemistry Final Data Review — Date

Sample Results Summary

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1860

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0301130

Reported on: Tuesday, February 04, 2003 12:53:26

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0301130-1	250505-WASTE-2	RD_GAB	GrAlpha	3.60E+00 +/- 9.66E-01	6.47E-01	pCi/g	Solid	AB00725	2/3/03	LT
0301130-1	250505-WASTE-2	RD_GAB	GrBeta	3.96E+00 +/- 9.26E-01	9.46E-01	pCi/g	Solid	AB00725	2/3/03	LT
0301130-2	250406B-WASTE-1	RD_GAB	GrAlpha	4.59E+00 +/- 9.46E-01	3.53E-01	pCi/g	Solid	AB00725	2/3/03	LT
0301130-2	250406B-WASTE-1	RD_GAB	GrBeta	4.55E+00 +/- 8.61E-01	8.73E-01	pCi/g	Solid	AB00725	2/3/03	LT

Comments:

Data Package ID: *ABS0301130-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 105-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gamma Spectroscopy

Bechtel Nevada

CAU 262 / V1860

Paragon Work Order 0301130

1. This report consists of analysis results for two solid samples received by Paragon on 1/28/03. The analysis results for these samples are reported on a "dry weight" basis in units of pCi/gram.
2. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP739R5.
3. The samples were analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics, Inc. procedure PAI SOP713R7. The analyses were completed on 1/31/03.
4. The samples were analyzed using Seeker Version 2.2, which is a product of Vertechs Software Solutions, Inc.
5. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.
6. No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file
Radiochemistry Instrument Technician — Date: 2-3-03

/s/ Signature on file
Radiochemistry Final Data Review — Date: 2/4/03

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Monday, February 03, 2003 18:08:56

Client Name: Bechtel Nevada

Client Project Name: CAU 262

Client Project Number: V1560

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0301130

Field ID: 250505-WASTE-2

Lab ID: 0301130-1

Sample Matrix: Solid
Date Prepared: 30-Jan-03
Prep SOP: PAI 739R5
Prep Batch: GS01875

Date Collected: 23-Jan-03
Date Analyzed: 31-Jan-03
Analytical SOP: PAI 713R7
Spectrum Code: 0301211002A

Final Aliquot: 101.5 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.05E+00 +/- 3.91E-01	7.58E-01	pCi/g	
Am-241	3.28E-01 +/- 6.64E-01	1.13E+00	pCi/g	U
Ce-144	-2.02E-02 +/- 3.65E-01	6.64E-01	pCi/g	U
Co-60	-7.97E-02 +/- 1.20E-01	2.57E-01	pCi/g	U
Cs-134	6.85E-03 +/- 9.19E-02	1.68E-01	pCi/g	U
Cs-137	3.38E-02 +/- 9.23E-02	1.64E-01	pCi/g	U
Eu-152	5.22E-01 +/- 4.48E-01	5.68E-01	pCi/g	U
Eu-154	-1.13E-01 +/- 4.51E-01	9.39E-01	pCi/g	U
Eu-155	2.92E-01 +/- 2.49E-01	3.97E-01	pCi/g	U
K-40	2.18E+01 +/- 5.00E+00	1.97E+00	pCi/g	
Pb-212	1.19E+00 +/- 3.24E-01	3.12E-01	pCi/g	
Pm-144	-7.66E-03 +/- 9.57E-02	1.80E-01	pCi/g	U
Pm-146	7.53E-02 +/- 1.15E-01	1.91E-01	pCi/g	U
Ru-106	-2.81E-01 +/- 8.45E-01	1.65E+00	pCi/g	U
Sb-125	3.08E-02 +/- 2.38E-01	4.28E-01	pCi/g	U
Th-234	2.31E+00 +/- 1.80E+00	2.79E+00	pCi/g	U
U-235	2.38E-01 +/- 3.94E-01	6.59E-01	pCi/g	U
Y-88	3.90E-02 +/- 9.58E-02	1.71E-01	pCi/g	U

Data Package ID: *GSS0301130-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Monday, February 03, 2003 18:08:56

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1860

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0301130

Field ID: 250505-WASTE-2
Lab ID: 0301130-1

Sample Matrix: Solid
Date Prepared: 30-Jan-03
Prep SOP: PAI 739R5
Prep Batch: GS01875

Date Collected: 23-Jan-03
Date Analyzed: 31-Jan-03
Analytical SOP: PAI 713R7
Spectrum Code: 030121D02A

Final Aliquot: 101.5 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:
U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits
LT - Result is less than Requested MDC, greater than sample specific MDC
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0301130-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Monday, February 03, 2003 18:08:56

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1860

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0301130

Field ID: 250406B-WASTE-1
Lab ID: 0301130-2

Sample Matrix: Solid
Date Prepared: 30-Jan-03
Prep SOP: PAI 739R5
Prep Batch: GS01876

Date Collected: 23-Jan-03
Date Analyzed: 31-Jan-03
Analytical SOP: PAI 713R7
Spectrum Code: 030109D03A

Final Aliquot: 88.70 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: GAM-A-001LJ

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.98E+00 +/- 6.98E-01	1.11E+00	pCi/g	
Am-241	5.01E-01 +/- 7.08E-01	1.17E+00	pCi/g	U
Ce-144	1.12E-01 +/- 5.39E-01	9.43E-01	pCi/g	U
Co-60	-8.34E-02 +/- 1.39E-01	3.09E-01	pCi/g	U
Cs-134	1.10E-02 +/- 1.14E-01	2.09E-01	pCi/g	U
Cs-137	-5.63E-02 +/- 1.34E-01	2.65E-01	pCi/g	U
Eu-152	-3.50E-01 +/- 5.88E-01	1.36E+00	pCi/g	U
Eu-154	6.87E-01 +/- 7.72E-01	1.21E+00	pCi/g	U
Eu-155	3.90E-01 +/- 3.31E-01	5.10E-01	pCi/g	U
K-40	3.23E+01 +/- 7.33E+00	3.36E+00	pCi/g	
Pb-212	1.81E+00 +/- 4.36E-01	3.26E-01	pCi/g	
Pm-144	1.13E-01 +/- 1.39E-01	2.25E-01	pCi/g	U
Pm-146	1.34E-02 +/- 1.57E-01	2.84E-01	pCi/g	U
Ru-106	-7.52E-01 +/- 1.28E+00	2.53E+00	pCi/g	U
Sb-125	0.00E+00 +/- 2.65E-01	4.98E-01	pCi/g	U
Th-234	-1.56E-01 +/- 2.08E+00	3.63E+00	pCi/g	U
U-235	1.04E-04 +/- 5.76E-01	1.02E+00	pCi/g	U
Y-88	-1.83E-02 +/- 1.51E-01	2.92E-01	pCi/g	U

Data Package ID: GSS0301130-1

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Monday, February 03, 2003 18:08:56

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1860

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0301130

Field ID: 250406B-WASTE-1	**Sample Matrix:** Solid	**Date Collected:** 23-Jan-03	**Final Aliquot:** 68.70 g
Lab ID: 0301130-2	**Date Prepared:** 30-Jan-03	**Date Analyzed:** 31-Jan-03	**Report Basis:** Dry Weight
	Prep SOP: PAI 739R5	**Analytical SOP:** PAI 713R7	**Count Time (min.):** 30
	Prep Batch: GS01875	**Spectrum Code:** 030109D03A	**Library:** GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0301130-1*

PARAGON ANALYTICS, INC.
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

February 20, 2003

Mr. Ted Redding
Bechtel Nevada
US DOE Zone 1, Bldg 652, Rm 2 M/S NTS273
Mercury, NV, 89023

RE: Paragon Workorder: 03-02-018
Client Project Name: CAU 262
Client Project Number: V1885

Dear Mr. Redding:

One soil sample was received from Bechtel Nevada on February 7, 2003. The samples were scheduled for Gross Alpha/Beta (pages 1-147) and Gamma Spectroscopy (pages 1-108) analyses. The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

/s/ Ken Campbell

Paragon Analytics, Inc.
Ken Campbell
Project Manager

KDC/hc
Enclosure: Report

0302018

Bechtel Nevada

ANALYTICAL LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/CLIENT INFORMATION

Project: CAU 262 | BN Org #: B502
Charge Number: 5B04ADSD
Project Manager: BRAD JACKSON
Phone: 5-0331 | Fax: 5-7761 | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: DAN TOBIASON
Phone: 5-6183 | Fax: 5-7761 | M/S: NTS 306
Turnaround: ☐ Standard - 14 days IH, 28 days Non-rad Env, 45 Days Rad Env. ☒ Rush Preliminary by: 2/13/03 (IH) ☐1 ☐2 ☐7 ☐14 (non-Rad Env) ☐1 ☒7 ☐14 ☐28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 25-05-12
The samples submitted contain (check):
☐ Hazardous (list) -
☐ Radioactive (list) -
☐ Unknown contamination
If known, identify contaminants: TPH, Septage
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG ______ (IH) ______ (Non-Rad Env) V1885 (Rad Env)
Samples submitted are associated with a signed Project SOW ☒ Yes ☐ No
Analyses entered here agree with the SOW ☐ Yes ☐ No ☐ N/A
If not, identify the variation: ______
Subcontract Lab(s) used for this work: ______

Pay Item, Analysis, Method

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	MGS-A-019 GAMMA SPEC	GPC-A-003 GROSS ALPHA/BETA						
250512-WASTE-2	2/5/03	1045	SOLID	1	500 ml				4° C	X	X						

(1)

LAST ITEM

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time
DAVID STRAHAN	/s/ Signature on file	2/5/03/1730	KR [illegible]	/s/ Signature on file	2/5/03 1730
Kevin B Campbell	/s/ Signature on file	2/6/03/0831	CD CASTANEDA	/s/ Signature on file	2/6/03 @ 0831
CD CASTANEDA	/s/ Signature on file	2/6/03 @ 1300	Fed Ex	7929 0990 3190	2/6/03 @ 1300
FedEX	/s/ Signature on file		Jason C Kaufman	/s/ Signature on file	2/7/03 @ 1000

Retention Code: PNV 5-(1) BN-0733 (04/02)

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gross Alpha/Beta

Bechtel Nevada

CAU 262 / V1885

PAI WO 0302018

1. This report consists of one soil sample received by Paragon on 2/7/03.

2. This sample was prepared according to Paragon Analytics, Inc. procedure PAI SOP702R15

3. The sample was analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP724R7. The analyses were completed on 2/13/03. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

4. The analysis results for this sample are reported on a dry weight basis in units of pCi/gram.

5. This sample was flamed, as prescribed in EPA Methods 900.0 and 9310 for samples which demonstrate hygroscopicity. This could reduce the beta activity if the sample contained ^{137}Cs, or other beta emitters, that may be volatile under the conditions associated with flaming.

6. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.

7. No further anomalous situations were noted during the preparation and analysis of this sample. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file

Clare Lenich
Radiochemistry Instrument Technician

2/14/03
Date

/s/ Signature on file

Radiochemistry Final Data Review

2/17/03
Date

Sample Results Summary

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1885

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0302018

Reported on: Thursday, February 13, 2003 14:33:57

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0302018-1	250512-WASTE-2	RD_GAB	GrAlpha	4.79E+00 +/- 1.44E+00	1.12E+00	pCi/g	Soil	AB00738	2/13/03	LT
0302018-1	250512-WASTE-2	RD_GAB	GrBeta	3.73E+00 +/- 1.32E+00	1.77E+00	pCi/g	Soil	AB00738	2/13/03	LT

Comments:

Data Package ID: *ABS0302018-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Gamma Spectroscopy

Bechtel Nevada
CAU 262 / V1885

Paragon Work Order 0302018

1. This report consists of analysis results for one soil sample received by Paragon on 2/7/03. The analysis results for this sample are reported on a 'dry weight' basis in units of pCi/gram.

2. This sample was prepared according to Paragon Analytics, Inc. procedure PAI SOP739R5.

3. The sample was analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics, Inc. procedure PAI SOP713R7. The analyses were completed on 2/11/03.

4. The samples were analyzed using Seeker Version 2.2, which is a product of Vertechs Software Solutions, Inc.

5. Due to current software limitations, the DER determinations in this report were calculated using the 2 sigma TPU. The SOW indicates that the 1 sigma TPU be used in the DER determination. However, the requested DER limit of less than 3 at the 1 sigma level (which is equivalent to 1.5 at the 2 sigma level) was achieved. Data quality is not affected.

6. Duplicate analysis results elevated above the DER limit of 1.50 have been flagged as "W". For gamma spectroscopic analysis SOP 715R12 states that 75% of the nuclides must be within the 2 sigma control limit to meet DER or RPD requirements. Elevated DER may be attributable to sample non-homogeneity.

7. Activity concentrations above the 2σ TPU are reported in some instances where minimum nuclide identification criteria are not met. Such tentative identifications result when the software attempts to calculate net activity concentrations for analytes where either one or both of the following criteria are not satisfied: the 'diagnostic' peak for a nuclide must be identified above critical level (generally the most abundant, interference-free photopeak), or the minimum library peak tolerance of 75% must be attained. These data have been flagged with a "TI" qualifier.

8. There are cases where the magnitude of the negative activity is greater than the 2 sigma TPU. The analyst's review of the data does not indicate a problem with the instrument data or the subsequent reporting systems. The data quality is not believed to be affected and the results are submitted without qualification. Under typical conditions, where background level sample data is normally distributed and analyzed by paired observations, this event is likely to occur at least 2.5% of the time.

9. No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

/s/ Signature on file
Radiochemistry Instrument Technician

2-13-03
Date

/s/ Signature on file
Radiochemistry Final Data Review

2/19/03
Date

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Wednesday, February 12, 2003 17:43:16

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1665

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0302018

Field ID: 250512-WASTE-2
Lab ID: 0302018-1

Sample Matrix: Soil
Date Prepared: 11-Feb-03
Prep SOP: PAI 739R5
Prep Batch: GS01894

Date Collected: 05-Feb-03
Date Analyzed: 11-Feb-03
Analytical SOP: PAI 713R7
Spectrum Code: 030245D01A

Final Aliquot: 100.0 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: GAM-A-001.U

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.31E+00 +/- 3.90E-01	6.64E-01	pCi/g	
Am-241	-3.34E-01 +/- 2.96E-01	5.44E-01	pCi/g	U
Ce-144	2.07E-01 +/- 3.54E-01	5.98E-01	pCi/g	U
Co-60	-3.35E-02 +/- 7.98E-02	1.53E-01	pCi/g	U
Cs-134	-1.01E-01 +/- 1.18E-01	2.19E-01	pCi/g	U
Cs-137	2.13E-01 +/- 1.06E-01	1.42E-01	pCi/g	TI
Eu-152	-1.91E-01 +/- 4.25E-01	8.11E-01	pCi/g	U
Eu-154	-8.14E-02 +/- 4.74E-01	8.62E-01	pCi/g	U
Eu-155	9.49E-02 +/- 2.12E-01	3.57E-01	pCi/g	U
K-40	2.61E+01 +/- 5.10E+00	2.42E+00	pCi/g	
Pb-212	1.28E+00 +/- 2.90E-01	2.51E-01	pCi/g	
Pm-144	1.07E-02 +/- 8.28E-02	1.44E-01	pCi/g	U
Pm-146	6.35E-02 +/- 8.54E-02	1.40E-01	pCi/g	U
Ru-106	-4.91E-01 +/- 7.27E-01	1.35E+00	pCi/g	U
Sb-125	-9.82E-02 +/- 1.71E-01	3.23E-01	pCi/g	U
Th-234	8.17E-01 +/- 1.01E+00	1.67E+00	pCi/g	U
U-235	4.69E-02 +/- 3.71E-01	6.39E-01	pCi/g	U
Y-88	-7.28E-02 +/- 9.82E-02	1.81E-01	pCi/g	U

Data Package ID: *GSS0302018-1*

Gamma Spectroscopy Results

Method PAI 713R7

Sample Results

Reported on: Wednesday, February 12, 2003 17:43:16

Client Name: Bechtel Nevada
Client Project Name: CAU 262
Client Project Number: V1885

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0302018

Field ID: 250512-WASTE-2
Lab ID: 0302018-1

Sample Matrix: Soil
Date Prepared: 11-Feb-03
Prep SOP: PAI 739R5
Prep Batch: GS01894

Date Collected: 05-Feb-03
Date Analyzed: 11-Feb-03
Analytical SOP: PAI 713R7
Spectrum Code: 030245D01A

Final Aliquot: 100.0 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: GAM-A-001.LI

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0302018-1*

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APPENDIX C

SOIL COMPACTION TEST RESULTS

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NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: 5B12AZ32 DATE TYPED 02/04/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

Project CAU 262 Location of Tests CAS 25 05.03 R-MAD LEACH FIELD

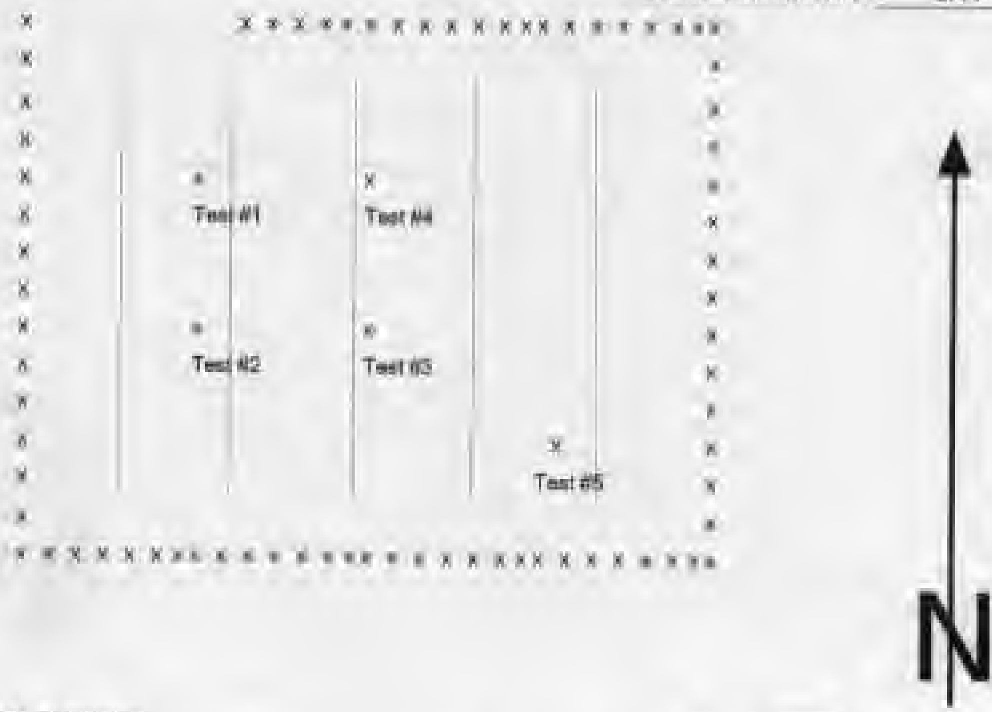
Tested by J. DENNY Date Tested 02/03/2003 Checked by /s/ Signature on file

LABORATORY NO	143	144	145	146	147	N/A
DEPTH OF PROBE	8"	8"	8"	8"	8"	
DEPTH OF TESTS	-16"	-16"	-18"	-18"	-28"	
TEST #	1	2	3	4	5	
DRY DENSITY-PCF	118.6	112.4	115.8	117.7	119.6	
MOISTURE %	6.5	7.6	6.2	6.7	6.6	
PERCENT COMPACTION	95.0	90.0	92.7	94.2	95.8	
MAX DENSITY PCF	124.9	124.9	124.9	124.9	124.9	
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7	7.7	
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0	90.0	
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	

GAUGE NO 23205 DATE OF STANDARDIZATION 02/03/2003 VALUE OF M 642

STANDARDIZATION D 2761

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON

CC: R. JACKSON BECHTEL

J. SCROLA BECHTEL

MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	**BECHTEL NEVADA** MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 6B12AZ32 DATE TYPED 02/04/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

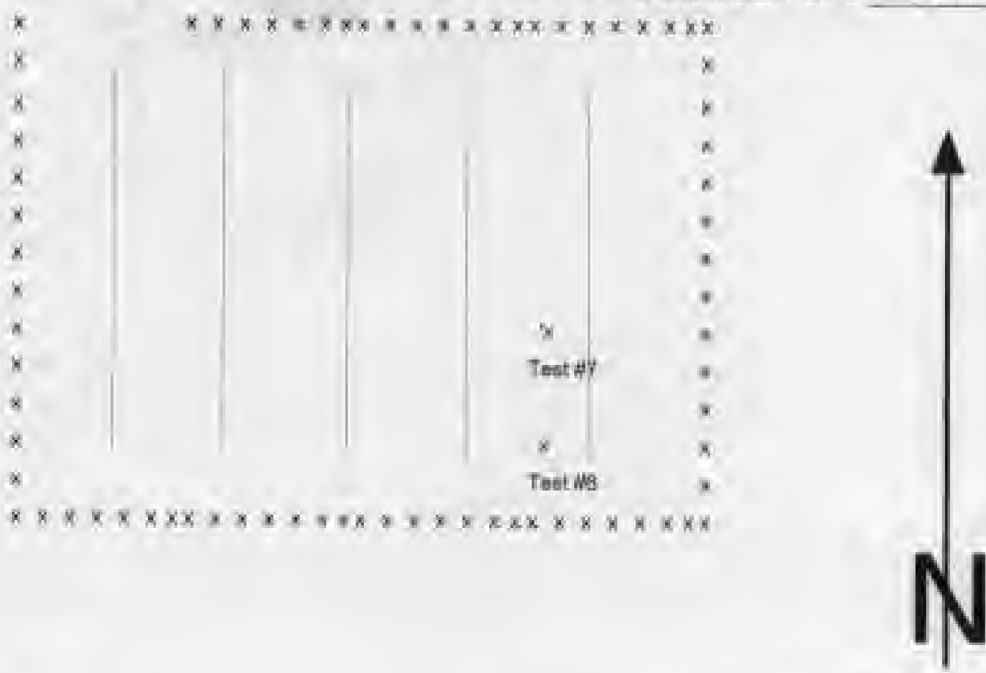
Project CAU 262 Location of Tests CAS 25.05.03 R-MAD LEACH FIELD

Tested by J. DENNY Date Tested 02/04/2003 Checked by /s/ Signature on file

LABORATORY NO	148	149	N/A	N/A	N/A	N/A
DEPTH OF PROBE	8"	8"				
DEPTH OF TESTS	-24"	-24"				
TEST #	6	7				
DRY DENSITY-PCF	117.8	121.7				
MOISTURE %	8.8	7.7				
PERCENT COMPACTION	94.3	97.4				
MAX DENSITY PCF	124.9	124.9				
OPTIMUM MOISTURE %	7.7	7.7				
REQUIRED COMPACTION %	90.0	90.0				
IN / OUT of SPECIFICATION	IN	IN				

GAUGE NO 23285 DATE OF STANDARDIZATION 02/04/2003 VALUE OF M 642
STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC: R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 9B12AZ32 DATE TYPED 02/10/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

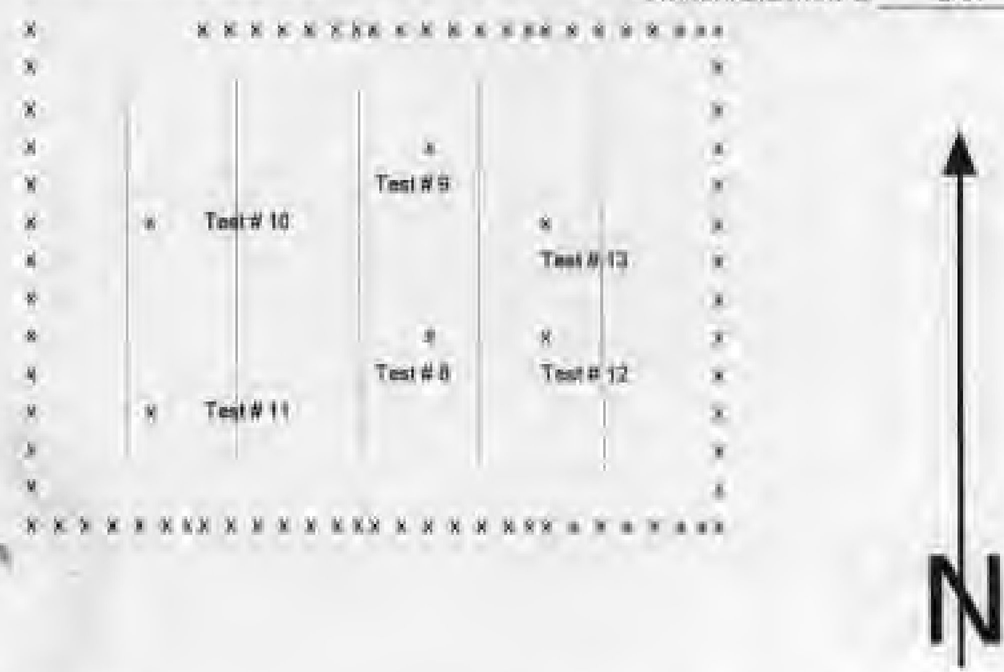
Project CAU 262 Location of Tests CAS 25.05.03 R-MAD LEACH FIELD

Tested by J. DENNY Date Tested 02/06/2003 Checked by /s/ Signature on file

LABORATORY NO	150	151	152	153	154	155
DEPTH OF PROBE	8"	8"	8"	8"	8"	8"
DEPTH OF TESTS	-14"	-8"	-8"	-8"	-8"	-8"
TEST #	8	9	10	11	12	13
DRY DENSITY-PCF	118.4	114.4	117.5	117.6	117.6	118.6
MOISTURE %	6.5	8.1	6.7	7.4	8.8	8.2
PERCENT COMPACTION	94.8	91.6	94.1	94.2	94.2	95.0
MAX DENSITY PCF	124.9	124.9	124.9	124.9	124.9	124.9
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7	7.7	7.7
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0	90.0	90.0
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	IN

GAUGE NO 23205 DATE OF STANDARDIZATION 02/06/2003 VALUE OF M 842
STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON

CC: R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 5B04AD30 DATE TYPED 02/11/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

Project CAU 262 Location of Tests CAS 25,05,03 R-MAD LEACH FIELD

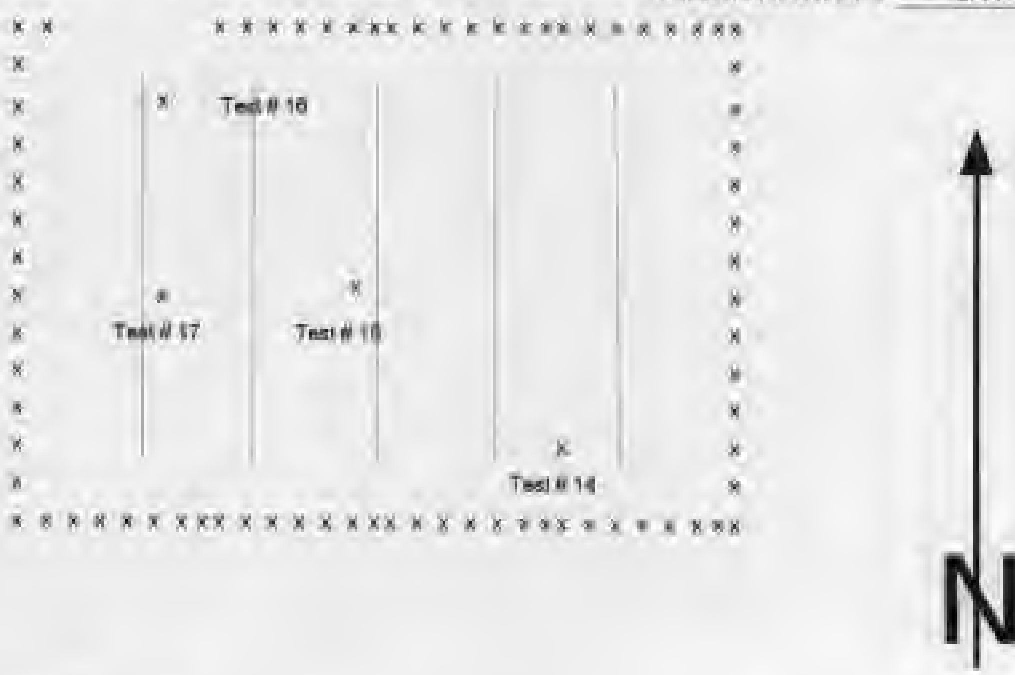
Tested by J. DENNY Date Tested 02/11/2003 Checked by /s/ Signature on file

LABORATORY NO	165	166	167	168	N/A	N/A
DEPTH OF PROBE	8"	8"	8"	8"		
DEPTH OF TESTS	Grade	Grade	Grade	Grade		
TEST #	14	15	16	17		
DRY DENSITY-PCF	118.3	119.6	118.3	116.6		
MOISTURE %	6.2	8.6	10.1	7.7		
PERCENT COMPACTION	94.7	95.8	94.7	93.4		
MAX DENSITY PCF	124.9	124.9	124.9	124.9		
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7		
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0		
IN / OUT of SPECIFICATION	IN	IN	IN	IN		

GAUGE NO 23205 DATE OF STANDARDIZATION 02/11/2003 VALUE OF M 642

STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC: R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	**BECHTEL NEVADA** MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 5B04AD30 DATE TYPED 02/25/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

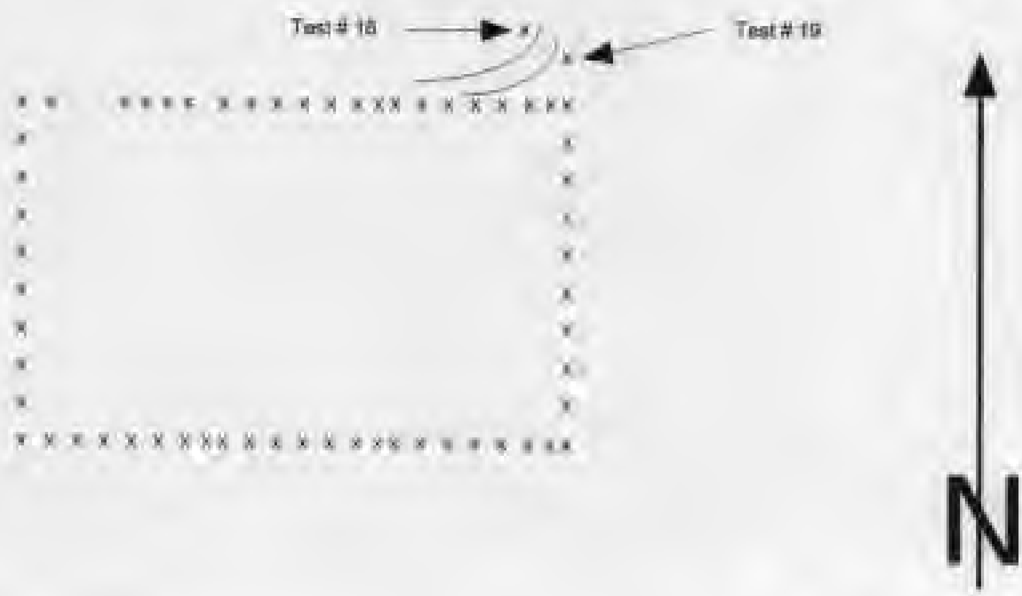
Project CAU 262 Location of Tests CAS 25.05.03 R-MAD LEACH FIELD

Tested by D. HERRINGTON Date Tested 02/24/2003 Checked by /s/ Signature on file

LABORATORY NO	182	183	N/A	N/A	N/A	N/A
DEPTH OF PROBE	6"	6"				
DEPTH OF TESTS	Grade	Grade				
TEST #	18	19				
DRY DENSITY-PCF	118.6	117.4				
MOISTURE %	4.1	5.5				
PERCENT COMPACTION	95.0	94.0				
MAX DENSITY PCF	124.9	124.9				
OPTIMUM MOISTURE %	7.7	7.7				
REQUIRED COMPACTION %	90.0	90.0				
IN / OUT of SPECIFICATION	IN	IN				

GAUGE NO 23206 DATE OF STANDARDIZATION 02/24/2003 VALUE OF M 642
STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO P. ROBINSON.

CC: R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	**BECHTEL NEVADA** MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 6804AD30 DATE TYPED 04/03/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW

Project CAU 262 Location of Tests CAS 25.05.03 R-MAD LEACH FIELD

Tested by D. HERRINGTON Date Tested 04/02/2003 Checked by /s/ Signature on file

LABORATORY NO	442	N/A	N/A	N/A	N/A	N/A
DEPTH OF PROBE	4"					
DEPTH OF TESTS	Final Grade					
TEST #	20					
DRY DENSITY-PCF	115.9					
MOISTURE %	5.0					
PERCENT COMPACTION	92.8					
MAX DENSITY PCF	124.9					
OPTIMUM MOISTURE %	7.7					
REQUIRED COMPACTION %	90.0					
IN / OUT of SPECIFICATION	IN					

GAUGE NO 23205 DATE OF STANDARDIZATION 04/02/2003 VALUE OF M 640
STANDARDIZATION D 2696

PLOT PLAN

REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON
THIS COMPLETES THE TESTING OF THE FILL FOR THE CAP

CC.	D. TOBIASON	BECHTEL
	R. JACKSON	BECHTEL
	J. SOROLA	BECHTEL
	MTL BECHTEL FILES	

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	**BECHTEL NEVADA** MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 5B04AD30 DATE TYPED 03/03/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW (R-MAD)

Project CAU 262 Location of Tests CAS 25.05.08 TEST CELL "C" LEACH FIELD

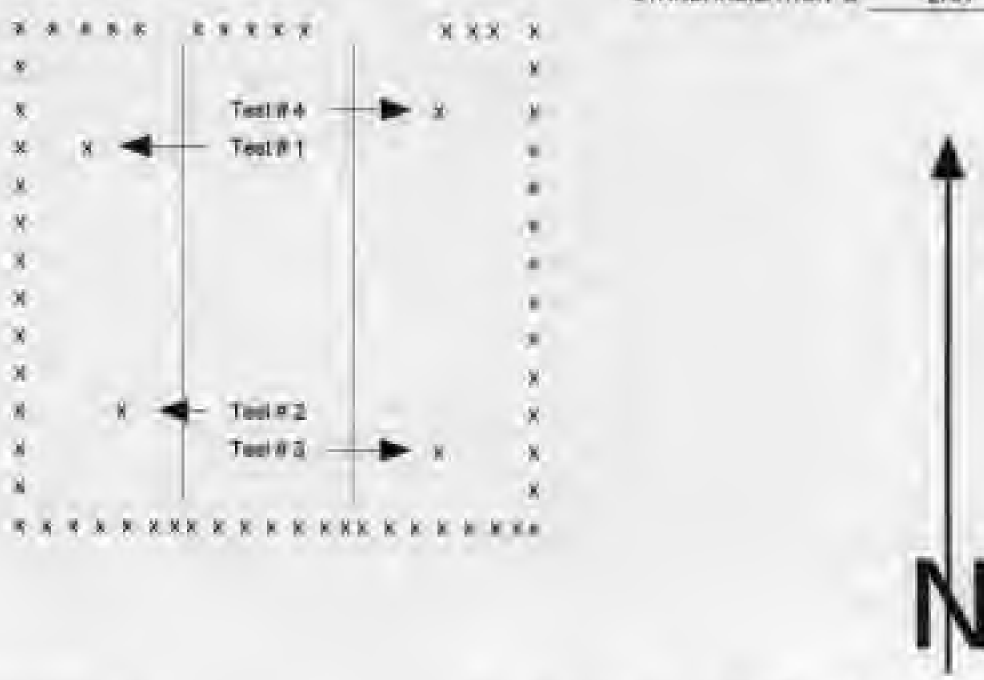
Tested by D. HERRINGTON Date Tested 03/03/2003 Checked by /s/ Signature on file

LABORATORY NO	195	196	197	198	N/A	N/A
DEPTH OF PROBE	6"	6"	6"	6"		
DEPTH OF TESTS	1 st Lift	1 st Lift	1 st Lift	1 st Lift		
TEST #	1	2	3	4		
DRY DENSITY-PCF	117.0	116.8	118.1	120.2		
MOISTURE %	6.2	6.2	6.2	6.4		
PERCENT COMPACTION	93.7	93.5	94.6	96.2		
MAX DENSITY PCF	124.9	124.9	124.9	124.9		
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7		
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0		
IN / OUT of SPECIFICATION	IN	IN	IN	IN		

GAUGE NO 23205 DATE OF STANDARDIZATION 03/03/2003 VALUE OF M 842

STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC: D. TODIASON BECHTEL
R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS168 LAS VEGAS, NV 89193-8521	CHARGE # 5B04AD30 DATE TYPED 03/04/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW (R-MAD)

Project CAU 262 Location of Tests CAS 25 05 08 TEST CELL "C" LEACH FIELD

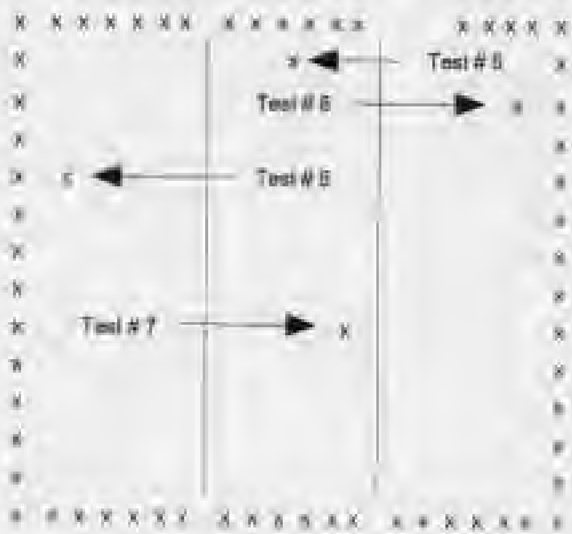
Tested by D. HERRINGTON Date Tested 03/04/2003 Checked by /s/ Signature on file

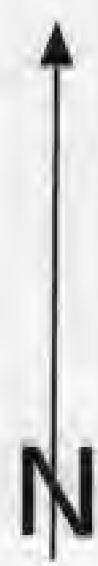
LABORATORY NO	200	201	202	203	N/A	N/A
DEPTH OF PROBE	8"	8"	8"	8"		
DEPTH OF TESTS	2 nd Lift	2 nd Lift	2 nd Lift	2 nd Lift		
TEST #	5	6	7	8		
DRY DENSITY-PCF	117.5	118.6	116.1	117.7		
MOISTURE %	6.7	6.7	6.5	6.8		
PERCENT COMPACTION	94.1	95.0	93.0	94.2		
MAX DENSITY PCF	124.9	124.9	124.9	124.9		
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7		
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0		
IN / OUT of SPECIFICATION	IN	IN	IN	IN		

GAUGE NO 23205 DATE OF STANDARDIZATION 03/04/2003 VALUE OF M 642

STANDARDIZATION D 2701

PLOT PLAN





REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC		
	D. TOBIASON	BECHTEL
	R. JACKSON	BECHTEL
	J. SOROLA	BECHTEL
	MTL BECHTEL FILES	

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE # 5B04AD30 DATE TYPED 03/06/2003 PAGE 1 OF 2

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW (R-MAD)

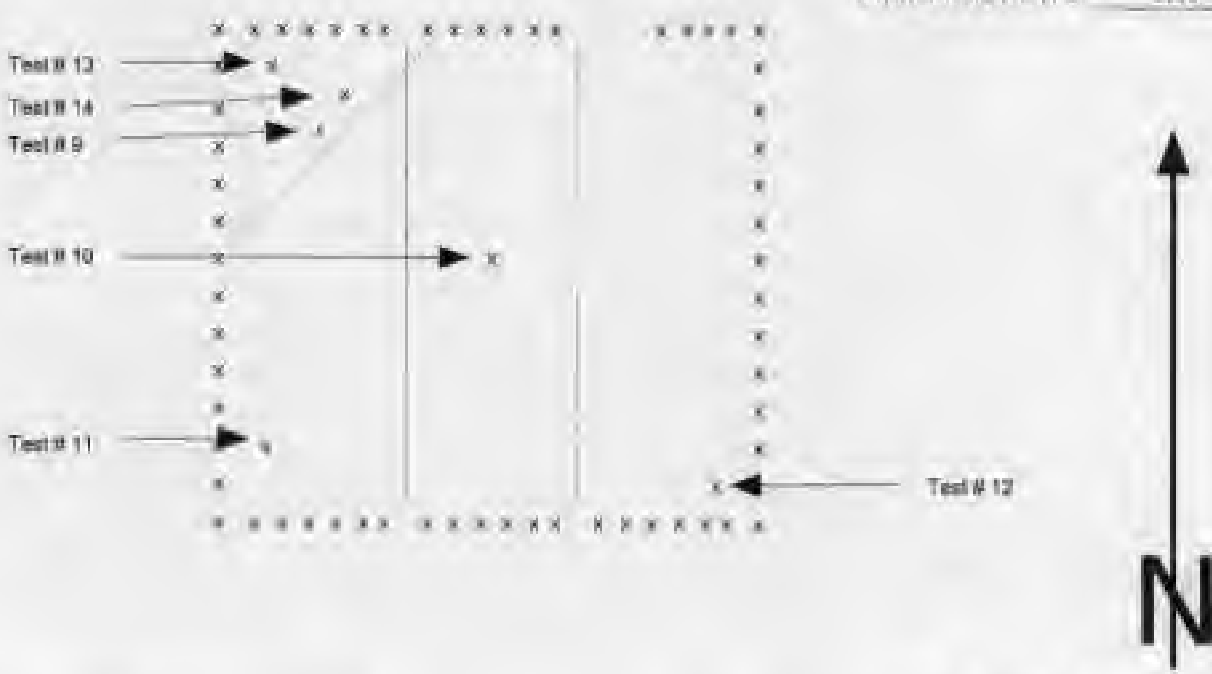
Project CAU 262 Location of Tests CAS 25.05.08 TEST CELL "C" LEACH FIELD

Tested by D. HERRINGTON Date Tested 03/06/2003 Checked by /s/ Signature on file

LABORATORY NO	226	227	228	229	230	231
DEPTH OF PROBE	8"	8"	8"	8"	8"	8"
DEPTH OF TESTS	3 rd Lift	3 rd Lift	3 rd Lift	3 rd Lift	4 th Lift	4 th Lift
TEST #	9	10	11	12	13	14
DRY DENSITY-PCF	118.3	118.8	119.6	116.9	115.5	115.7
MOISTURE %	7.8	7.9	6.6	6.8	9.5	8.8
PERCENT COMPACTION	94.7	95.1	95.8	93.6	92.5	92.6
MAX DENSITY PCF	124.9	124.9	124.9	124.9	124.9	124.9
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7	7.7	7.7
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0	90.0	90.0
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	IN

GAUGE NO 23205 DATE OF STANDARDIZATION 03/06/2003 VALUE OF M 644
STANDARDIZATION D 2690

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC:	
D. TOBIASON	BECHTEL
R. JACKSON	BECHTEL
J. BOROLA	BECHTEL
MTL BECHTEL FILES	

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: 5B04AD30 DATE TYPED: 03/06/2003 PAGE 2 OF 2

Requested by: D. TOBIASON User/Agency: BECHTEL Material: BORROW (R-MAD)

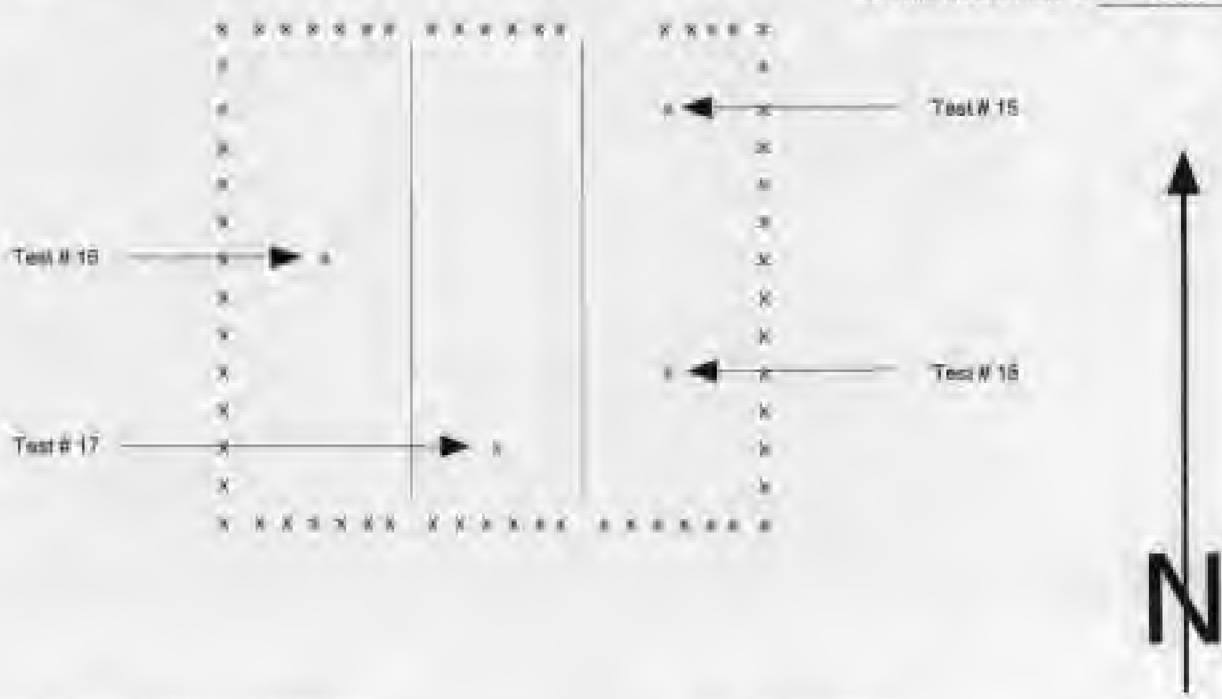
Project: CAU 262 Location of Tests: CAS 25.05.08 TEST CELL "C" LEACH FIELD

Tested by: D. HERRINGTON Date Tested: 03/06/2003 Checked by: /s/ Signature on file

LABORATORY NO	232	233	234	235	N/A	N/A
DEPTH OF PROBE	8"	8"	8"	8"		
DEPTH OF TESTS	4 th Lift	4 th Lift	4 th Lift	4 th Lift		
TEST #	15	16	17	18		
DRY DENSITY-PCF	118.2	123.0	114.3	115.8		
MOISTURE %	5.5	5.7	7.3	8.0		
PERCENT COMPACTION	94.6	98.5	91.5	92.7		
MAX DENSITY PCF	124.9	124.9	124.9	124.9		
OPTIMUM MOISTURE %	7.7	7.7	7.7	7.7		
REQUIRED COMPACTION %	90.0	90.0	90.0	90.0		
IN / OUT of SPECIFICATION	IN	IN	IN	IN		

GAUGE NO 23205 DATE OF STANDARDIZATION 03/06/2003 VALUE OF M 642
STANDARDIZATION D 2701

PLOT PLAN



REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.

CC:		
	D. TOBIASON	BECHTEL
	R. JACKSON	BECHTEL
	J. SOROLA	BECHTEL
	MTL BECHTEL FILES	

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: 5B04AD30 DATE TYPED 03/11/2003 PAGE 1 OF 1

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW (R-MAD)

Project CAU 262 Location of Tests CAS 25.05.08 TEST CELL "C" LEACH FIELD

Tested by D. HERRINGTON Date Tested 03/10/2003 Checked by /s/ Signature on file

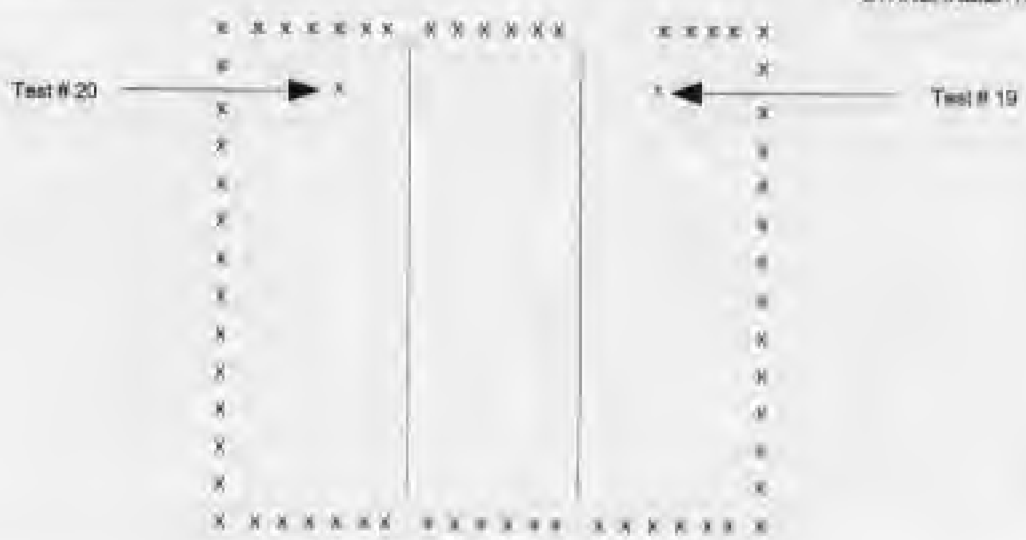
LABORATORY NO	260	261	N/A	N/A	N/A	N/A
DEPTH OF PROBE	8"	8"				
DEPTH OF TESTS	5 th Lift	6 th Lift				
TEST #	19	20				
DRY DENSITY-PCF	116.7	114.3				
MOISTURE %	7.8	8.3				
PERCENT COMPACTION	93.4	91.5				
MAX DENSITY PCF	124.9	124.9				
OPTIMUM MOISTURE %	7.7	7.7				
REQUIRED COMPACTION %	90.0	90.0				
IN / OUT of SPECIFICATION	IN	IN				

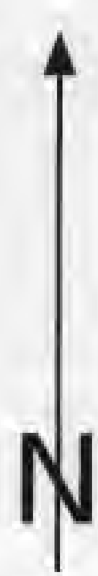
/s/ Signature on file

GAUGE NO 23205 DATE OF STANDARDIZATION 03/10/2003 VALUE OF M 644

STANDARDIZATION D 2690

PLOT PLAN





REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON.
THIS COMPLETES THE TESTING OF THE FILL FOR THE CAP.

CC: D. TOBIASON BECHTEL
R. JACKSON BECHTEL
J. SOROLA BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	**BECHTEL NEVADA** MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: F 8B04AD30 DATE TYPED 04/03/2003

Requested by D. TOBIASON User/Agency BECHTEL Material BORROW (R-MAD)

Project CAU 262 Location of Tests CAS 25.05.08 TEST CELL "C" LEACH FIELD

Tested by D. HERRINGTON Date Tested 04/02/2003 Checked by /s/ Signature on file

LABORATORY NO	440	441	N/A	N/A	N/A	N/A
DEPTH OF PROBE	6"	6"				
DEPTH OF TESTS	Final Grade	Final Grade				
TEST #	21	22				
DRY DENSITY-PCF	115.1	112.6				
MOISTURE %	6.5	6.1				
PERCENT COMPACTION	92.2	90.1				
MAX DENSITY PCF	124.9	124.9				
OPTIMUM MOISTURE %	7.7	7.7				
REQUIRED COMPACTION %	90.0	90.0				
IN / OUT of SPECIFICATION	IN	IN				

GAUGE NO 23205 DATE OF STANDARDIZATION 04/02/2003 VALUE OF M 640
STANDARDIZATION D 2696

PLOT PLAN

REMARKS THE RESULTS WERE GIVEN TO D. TOBIASON
THIS COMPLETES THE TESTING OF THE FILL FOR THE CAU

CC		
	D. TOBIASON	BECHTEL
	R. JACKSON	BECHTEL
	J. SOROLA	BECHTEL
	MTL BECHTEL FILES	

APPENDIX D

RADIOLOGICAL SURVEY REPORTS

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RADIOLOGICAL SURVEY REPORT LOG

CAS NUMBER	RADIOLOGICAL SURVEY REPORT NUMBER
25-05-03	03-ER 25-42
25-05-06	03-ER-25-41, 03-ER-25-191, 03-ER-25-215, 03-ER-25-644
25-05-08	03-ER-25-151, 03-ER-25-324, 03-ER-25-644

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Bechtel Nevada

RADIATION SURVEY REPORT

Number 03-ER-25-42 Page 1 of 3

RCT(S): Pam Saluato

SIGNATURE: /s/ Signature on file

DATE: 1-13-03

COPY

HEALTH PHYSICIST: A Alls House

SUPERVISOR: /s/ Signature on file

EVENT/RWP NO: NA

PROJECT / WORK ORDER: CAU 262

COUNTING EQUIPMENT USED IN COLUMN 1 & 2		COUNTING EQUIPMENT USED IN COLUMN		INSTRUMENT USED IN COLUMN 3 + 4	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
INSTRUMENT: TENNELEC	NUMBER: 7842737	INSTRUMENT	NUMBER	INSTRUMENT: ELECT · NUMBER: 4816	INSTRUMENT USED IN COLUMN: N/A	INSTRUMENT USED IN COLUMN: NA
ALPHA EFFICIENCY: 31.74%	BETA EFFICIENCY: 44.73%	ALPHA EFFICIENCY	BETA EFFICIENCY	COUNTING EQUIPMENT USED IN COLUMN	COUNTING EQUIPMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
MDA: 9	MDA: 13	MDA	MDA	INSTRUMENT · NUMBER: NA	INSTRUMENT · NUMBER	INSTRUMENT · NUMBER
CONVERSION FACTOR: NA	CONVERSION FACTOR: NA	CONVERSION FACTOR	CONVERSION FACTOR	ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☐ YES ☐ NO		
COUNT TIME: 1 MIN	1 MIN	COUNT TIME				

PURPOSE: PRE-JOB SURVEY CUTTING (5) PIPE FLUSH TO THE GROUND @ R-MAD

			COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
			α ☒ β ☐ γ ☐ OTHER	α ☐ β ☒ γ ☐ OTHER	α ☒ β ☐ γ ☐ OTHER	α ☐ β ☒ γ ☐ OTHER	α ☐ β ☐ γ ☐ OTHER NA
			UNIT dpm/100cm²	UNIT dpm/100cm²	UNIT dpm/100cm²	UNIT dpm/100cm²	UNIT
TIME	DESCRIPTION OF SURVEY	No. of Points	FIXED + REMOVE ☐ SWIPE ☒ N/A ☐	FIXED + REMOVE ☐ SWIPE ☒ N/A ☐	FIXED + REMOVE ☒ SWIPE ☐ N/A ☐	FIXED + REMOVE ☒ SWIPE ☐ N/A ☐	FIXED + REMOVE ☐ SWIPE ☐ N/A ☐
NA	**BACKGROUND** (Gross)	NA	0.0	0.9	0	2413	
1619	PIPE #1 SMEAR #1	1	3.15	18.10	0	648	
1621	#2 #2	1	3.15	4.69	28.3	822	
1622	#3 #3	1	0	0.22	57.8	401	
1623	#4 #4	1	3.15	2.45	13.6	222	
1624	#5 #5	1	3.15	6.93	25.3	425	

NA

NA

COMMENTS: SEE MAP FOR PIPE LOCATIONS

FOLLOW UP REQUIRED? YES ☐ NO ☒

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada

RADIATION SURVEY REPORT

Number 03-R-35-41 Page 1 of 4

RCT(S): PAM SALVATO		SIGNATURE: /s/ Signature on file	DATE: 01-13-03
HEALTH PHYSICIST: A. ALLSHOUSE	SUPERVISOR: /s/ Signature on file	EVENT/RWP NO: NA	PROJECT/WORK ORDER: CAU 262

COUNTING EQUIPMENT USED IN COLUMN 1+2		COUNTING EQUIPMENT USED IN COLUMN		INSTRUMENT USED IN COLUMN 3+4	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
INSTRUMENT: TENNELEC	NUMBER: 7842737	INSTRUMENT	NUMBER	INSTRUMENT: ELECTRA NUMBER: 1504	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN NA
ALPHA EFFICIENCY: 31.74%	BETA EFFICIENCY: 44.73%	ALPHA EFFICIENCY NA	BETA EFFICIENCY	COUNTING EQUIPMENT USED IN COLUMN	COUNTING EQUIPMENT USED IN COLUMN NA	INSTRUMENT USED IN COLUMN 5
MDA: 9	MDA: 13	MDA	MDA	INSTRUMENT NUMBER NA	INSTRUMENT NUMBER	INSTRUMENT: BICRON NUMBER: 759
CONVERSION FACTOR: NA	CONVERSION FACTOR: NA	CONVERSION FACTOR	CONVERSION FACTOR	ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☐ YES ☐ NO		
COUNT TIME: 1-MIN	COUNT TIME: 1 MIN	COUNT TIME				

PURPOSE: PRE-JOB SURVEY, CUTTING (10) ALUMINUM PIPE FLUSH TO THE GROUND @ E-MAD

			COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
			α ☑ β ☐ γ ☐ OTHER	α ☐ β ☑ γ ☐ OTHER	α ☑ β ☐ γ ☐ OTHER	α ☐ β ☑ γ ☐ OTHER	α ☐ β ☐ γ ☑ OTHER
			UNIT: DPM/100cm²	UNIT: DPM/100cm²	UNIT: DPM/100cm²	UNIT: DPM/100cm²	UNIT: MR/HR
			FIXED + REMOVE ☐ SWIPE ☑ N/A ☐	FIXED + REMOVE ☐ SWIPE ☑ N/A ☐	FIXED + REMOVE ☑ SWIPE ☐ N/A ☐	FIXED + REMOVE ☑ SWIPE ☐ N/A ☐	FIXED + REMOVE ☐ SWIPE ☐ N/A ☑
TIME	DESCRIPTION OF SURVEY COPY	No. of Points					
NA	BACKGROUND (Gross)	NA	0.0	0.9	8.3	2489	<0.01
1319	PIPE#1 INSIDE SMEAR #1	1	0	0.22	0	0	<0.01
	OUT SIDE #2	1	0	4.69			
	PIPE#2 I/S #3	1	0	2.45			
	O/S #4	1	0	0.22			
	PIPE#3 I/S #5	1	0	0.22			
	O/S #6	1	0	0.22			
	PIPE#4 I/S #7	1	0	0.22			
	O/S #8	1	0	2.45			
	PIPE#5 I/S #9	1	0	4.69			
	O/S #10	1	0	4.69			
	PIPE #6 I/S #11	1	0	0			

COMMENTS: SEE MAP, FOR PIPE LOCATION.

FOLLOW UP REQUIRED? YES ☐ NO ☐

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada

RADIATION SURVEY REPORT
(SUPPLEMENT)

Number 03-ER-2541 Page 2 of 4

RCT(S)	SIGNATURE	DATE
PAM SALUATO	/s/ Signature on file	1-13-03

HEALTH PHYSICIST	SUPERVISOR	EVENT/RWP NO.	PROJECT / WORK ORDER
A. ALLSHOUSE	/s/ Signature on file	NA	CAU 262

PURPOSE: PRE-JOB SURVEY CUTTING (6) ALUMINUM PIPE FLUSH TO THE GROUND @ E-MAD.

NA

TIME	DESCRIPTION OF SURVEY	No. of Points	COLUMN 1 α☒ β☐ γ☐ OTHER; UNIT DPM/100cm2; SWIPE ☒	COLUMN 2 α☐ β☒ γ☐ OTHER; UNIT DPM/100cm2; SWIPE ☒	COLUMN 3 α☒ β☐ γ☐ OTHER; UNIT DPM/100cm2; FIXED + REMOVE ☒	COLUMN 4 α☐ β☒ γ☐ OTHER; UNIT DPM/100cm2; FIXED + REMOVE ☒	COLUMN 5 α☐ β☐ γ☒ OTHER; UNIT MR/HR; N/A ☒
NA	**BACKGROUND** (Gross)	NA	0.0	0.9	8.3	2489	<0.01
1319	PIPE #6 OUT SIDE SMEAR #12	1	0	0	0	0	<0.01
	PIPE #7 IN SIDE #13	1	3.15	2.45			
	OUT SIDE #14	1	0	2.45			
	PIPE #8 I/S #15	1	0	0			
	O/S #16	1	3.15	4.69			
	PIPE #9 I/S #17	1	3.15	0.22			
	O/S #18	1	0	0.22			
	PIPE #10 I/S #19	1	0	2.45			
	O/S #20	1	0	0			
	DRILL #21	1	0	0			
13:47	SAW #22	1	0	4.69			
NA	NA	NA	NA	NA			

COMMENTS: SEE MAP, FOR PIPE LOCATION

FOLLOW UP REQUIRED? YES☐ NO☒

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED.

DISTRIBUTION: Original - [illegible]

BN-2086 [illegible]

Bechtel Nevada RADIATION SURVEY REPORT Number 03-ER-25-151 Page 1 of 4

COPY

RCT(S)	SIGNATURE	DATE
PAM SALVATO	/s/ Signature on file	01-30-03

HEALTH PHYSICIST	SUPERVISOR	EVENT/RWP NO	PROJECT/WORK ORDER
A. ALLSHOUSE	/s/ Signature on file	03-0025-06	CAU 262

COUNTING EQUIPMENT USED IN COLUMN 1+2		COUNTING EQUIPMENT USED IN COLUMN		INSTRUMENT USED IN COLUMN 3+4	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
INSTRUMENT TENN	NUMBER 7847737	INSTRUMENT	NUMBER	INSTRUMENT ELECTRA NUMBER 2125	INSTRUMENT USED IN COLUMN NA	INSTRUMENT USED IN COLUMN NA
ALPHA EFFICIENCY 31.79%	BETA EFFICIENCY 44.73%	ALPHA EFFICIENCY NA	BETA EFFICIENCY	COUNTING EQUIPMENT USED IN COLUMN	COUNTING EQUIPMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN 5
MDA 9	MDA 14	MDA	MDA	INSTRUMENT NA NUMBER	INSTRUMENT NUMBER	INSTRUMENT Bicron NUMBER 761
CONVERSION FACTOR NA	CONVERSION FACTOR NA	CONVERSION FACTOR	CONVERSION FACTOR	ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☐ YES ☐ NO		
COUNT TIME 1-MIN	1 MIN	COUNT TIME				

PURPOSE: PRE-JOB SURVEY, FOR CUTTING MONITORING TUBES FLUSH WITH SURFACE OF THE GROUND @ 25-05056 RADIOACTIVE LEACHFIELD TESTING

TIME	DESCRIPTION OF SURVEY	No. of Points	COLUMN 1 α ☒ β ☐ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☐ SWIPE ☒ N/A ☐	COLUMN 2 α ☐ β ☒ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☐ SWIPE ☒ N/A ☐	COLUMN 3 α ☐ β ☒ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☒ SWIPE ☐ N/A ☐	COLUMN 4 α ☐ β ☒ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☒ SWIPE ☐ N/A ☐	COLUMN 5 α ☐ β ☐ γ ☒ OTHER; UNIT mR/HR; FIXED + REMOVE ☐ SWIPE ☐ N/A ☒
NA	**BACKGROUND** (Gross)	NA	0.00	0.09	11.8	3841	0.02
1618	Soil, TRAVEL PATH SMEARS #1 THRU #6	6	3.15	35.99	54.7	5K	0.03
	INSIDE PIPE #1 #7	1	6.30	65.05	41	0	NA
	OUTSIDE PIPE #1 #8	1	0	40.46	76	0	
	I/S PIPE #2 Smear #9	1	78.6	164.59	397	33K	
	O/S #2 #10	1	15.75	107.52	76	2K	
	I/S PIPE #3 #11	1	0	11.40	250	0	
	O/S PIPE #3 #12	1	0	44.93	0	0	
	I/S PIPE #4 #13	1	0	9.16	0	0	
	O/S PIPE #4 #14	1	0	15.87	0	2K	
	I/S PIPE #5 #15	1	0	33.75	180 ~~480~~	1.5K	
	O/S PIPE #5 #16	1	3.15	6.93	98	1.5K	

COMMENTS: # = DIRECT FRISK, FOR TRAVEL PATH. HIGHEST RESULTS NOTED
AREA POSTED CA

FOLLOW UP REQUIRED? YES ☐ NO ☒ ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada

RADIATION SURVEY REPORT
(SUPPLEMENT)

Number 03-ER-25-151 Page 2 of 4

RCT(S): PAM SALVATO

SIGNATURE: /s/ Signature on file

DATE: 30 Jan 03 / 01-30-03

HEALTH PHYSICIST: A. ALLSHOUSE

SUPERVISOR: /s/ Signature on file

EVENT/ RWP NO: 03-0025-06

PROJECT / WORK ORDER: CAU 410

PURPOSE: PRE JOB SURVEY FOR CUTTING MONITORING TUBES FLUSH WITH SURFACE OF THE GROUND @ 25-03-05 RADIOACTIVE LEACHFIELD TEST CELL.

NA

TIME	DESCRIPTION OF SURVEY	No. of Points	COLUMN 1 α☐ β☐ γ☐ OTHER; UNIT DPM/100cm²; FIXED + REMOVE ☐ SWIPE ☐ N/A ☐	COLUMN 2 α☐ β☐ γ☐ OTHER; UNIT DPM/100cm²; FIXED + REMOVE ☐ SWIPE ☐ N/A ☐	COLUMN 3 α☐ β☐ γ☐ OTHER; UNIT DPM/100cm²; FIXED + REMOVE ☐ SWIPE ☐ N/A ☐	COLUMN 4 α☐ β☐ γ☐ OTHER; UNIT DPM/100cm²; FIXED + REMOVE ☐ SWIPE ☐ N/A ☐	COLUMN 5 α☐ β☐ γ☐ OTHER; UNIT NA; FIXED + REMOVE ☐ SWIPE ☐ N/A ☐
NA	**BACKGROUND** (Gross)	NA	0.0	0.9	11.8	3841	NA
1618	INSIDE PIPE #6 SMEAR # 17	1	9.45	49.40	0	0	
1640	OUTSIDE PIPE #6 # 18	1	0	15.87	32.5	1.7K	
NA	NA						

N A

COMMENTS: * = DIRECT FRISK, FOR TRAVEL PATH. HIGHEST RESULTS NOTED
AREA POSTED RA

FOLLOW UP REQUIRED? YES☐ NO☒

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

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Copy - Requester's Copy

BN-0106b (01/00)

Bechtel Nevada

RADIATION SURVEY REPORT

Number 03-ER-25-191 Page 1 of 3

RCT(S): PAM SALUATO

SIGNATURE: /s/ Signature on file

DATE: 2-5-03

HEALTH PHYSICIST: A ALLSHOUSE

SUPE /s/ Signature on file

EVENT/RWP NO: NA

PROJECT / WORK ORDER: CAU 262

COUNTING EQUIPMENT USED IN COLUMN 1 + 2		COUNTING EQUIPMENT USED IN COLUMN		INSTRUMENT USED IN COLUMN 3 + 4	
INSTRUMENT: FENN	NUMBER: 789273	INSTRUMENT	NUMBER	INSTRUMENT: ELECTRA	NUMBER: 355D
ALPHA	BETA	ALPHA	BETA		
EFFICIENCY: 31.74 %	EFFICIENCY: 44.73 %	EFFICIENCY: NA	EFFICIENCY		
MDA: 9	MDA: 15	MDA	MDA		
CONVERSION FACTOR: NA	CONVERSION FACTOR: NA	CONVERSION FACTOR	CONVERSION FACTOR		
COUNT TIME: 1 MIN	1 MIN	COUNT TIME			

COUNTING EQUIPMENT USED IN COLUMN / INSTRUMENT / NUMBER: NA

INSTRUMENT USED IN COLUMN: NA

ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☐ YES ☐ NO

PURPOSE: INITIAL REMOVAL OF (2) FENCE POSTS FROM LEACHFIELD @ EMAD

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
Type	α ☒ β ☐ γ ☐ OTHER	α ☐ β ☒ γ ☐ OTHER	α ☒ β ☐ γ ☐ OTHER	α ☐ β ☒ γ ☐ OTHER	α ☐ β ☐ γ ☐ OTHER NA
UNIT	DPM/100cm²	DPM/100cm²	DPM/100cm²	DPM/100cm²	UNIT
FIXED + REMOVE / SWIPE / N/A	SWIPE ☒	SWIPE ☒	REMOVE ☒	REMOVE ☒	

TIME	DESCRIPTION OF SURVEY	No. of Points	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
NA	**BACKGROUND** (Gross)	NA	0.0	0.9	55.6	2007	
1403	(2) FENCE POSTS	2	3.15	4.69	0	6000	

N/A

COMMENTS: NEW FENCE IS APPROXIMATELY 50% COMPLETED. # = DIRECT FRISK HIGHEST RESULTS NOTED

FOLLOW UP REQUIRED? YES ☐ NO ☒

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada

RADIATION SURVEY REPORT

Number 03-ER-23-25 Page 1 of 3

RCT(S): PAM SALVATO	SIGNATURE: /s/ Signature on file
DATE: 02-10-03	
HEALTH PHYSICIST: A. ALLSHOUSE	SUPERVISOR: /s/ Signature on file
EVENT/ RWP NO: NA	PROJECT / WORK ORDER: C94262

COPY

COUNTING EQUIPMENT USED IN COLUMN 1+2		COUNTING EQUIPMENT USED IN COLUMN		INSTRUMENT USED IN COLUMN 3+4	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
INSTRUMENT TENN	NUMBER 7842737	INSTRUMENT N/A	NUMBER	INSTRUMENT ELECT / NUMBER 3550	INSTRUMENT USED IN COLUMN N/A	INSTRUMENT USED IN COLUMN
ALPHA EFFICIENCY 31.74%	BETA EFFICIENCY 44.75%	ALPHA EFFICIENCY	BETA EFFICIENCY	COUNTING EQUIPMENT USED IN COLUMN N/A	COUNTING EQUIPMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN N/A
MDA 13	MDA 15	MDA	MDA	INSTRUMENT / NUMBER N/A	INSTRUMENT / NUMBER N/A	INSTRUMENT / NUMBER
CONVERSION FACTOR NA	CONVERSION FACTOR NA	CONVERSION FACTOR	CONVERSION FACTOR	ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☑ YES ☐ NO		
COUNT TIME 1-MIN	1-MIN	COUNT TIME				

PURPOSE: REMOVAL OF EXISTING METAL FENCE POSTS @ E. MAD.
N/A

			COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
			α ☑ β ☐ γ ☐ OTHER	α ☐ β ☑ γ ☐ OTHER	α ☑ β ☐ γ ☐ OTHER	α ☐ β ☑ γ ☐ OTHER	α ☐ β ☐ γ ☐ OTHER N/A
			UNIT DPM/100cm²	UNIT DPM/100cm²	UNIT DPM/100cm²	UNIT DPM/100cm²	UNIT N/A
			FIXED + REMOVE ☐ SWIPE ☑ N/A ☐	FIXED + REMOVE ☐ SWIPE ☑ N/A ☐	FIXED + REMOVE ☑ SWIPE ☐ N/A ☐	FIXED + REMOVE ☑ SWIPE ☐ N/A ☐	FIXED + REMOVE ☐ SWIPE ☐ N/A ☐
TIME	**DESCRIPTION OF SURVEY**	**No. of Points**					
N/A	**BACKGROUND** (Gross)	NA	0.0	0.9	27.8	2239	
1059	(22) FENCE POSTS SMEARS #1 THRU # 58	58	15.75	27.04	50.3	750	
LIFTING EYES	PICKING EYES SMEARS # 59, #60	2	6.30	4.69	24.3	250	

N/A

COMMENTS: HIGHEST RESULTS NOTED, SEE MAP, FOR SMEAR LOCATIONS. ☐ = FENCE POSTS

FOLLOW UP REQUIRED? YES ☐ NO ☑

ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada RADIATION SURVEY REPORT Number 03-ER-35-324 Page 1 of 2

RCT(S): PAM SALVATO	SIGNATURE: /s/ Signature on file		DATE: 02.26.03
HEALTH PHYSICIST: A. ALLS HOUSE	SUPERVISOR: /s/ Signature on file	EVENT/RWP NO: NA	PROJECT/WORK ORDER: CAU 262

COUNTING EQUIPMENT USED IN COLUMN 1+2	COUNTING EQUIPMENT USED IN COLUMN NA	INSTRUMENT USED IN COLUMN 3+4	INSTRUMENT USED IN COLUMN NA	INSTRUMENT USED IN COLUMN NA
INSTRUMENT TENNELEC NUMBER 7842737	INSTRUMENT / NUMBER	INSTRUMENT ELECTRA NUMBER 2114, X13	INSTRUMENT USED IN COLUMN	INSTRUMENT USED IN COLUMN
ALPHA EFFICIENCY 31.74% / BETA EFFICIENCY 44.73%	ALPHA EFFICIENCY / BETA EFFICIENCY	COUNTING EQUIPMENT USED IN COLUMN NA	COUNTING EQUIPMENT USED IN COLUMN NA	INSTRUMENT USED IN COLUMN NA
MDA 12 dpm / MDA 14 dpm	MDA / MDA	INSTRUMENT / NUMBER	INSTRUMENT / NUMBER	INSTRUMENT / NUMBER
CONVERSION FACTOR NA / CONVERSION FACTOR NA	CONVERSION FACTOR / CONVERSION FACTOR	ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☑ YES ☐ NO		
COUNT TIME 1 min / 1 min	COUNT TIME			

PURPOSE: SURVEY OF MATERIAL @ TEST CELL - C, FOR DISPOSAL @ LANDFILL

TIME	DESCRIPTION OF SURVEY	No. of Points	COLUMN 1 α ☑ β ☐ γ ☐ OTHER; UNIT dpm/100cm²; SWIPE ☑	COLUMN 2 α ☐ β ☑ γ ☐ OTHER; UNIT dpm/100cm²; SWIPE ☑	COLUMN 3 α ☑ β ☐ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☑	COLUMN 4 α ☐ β ☑ γ ☐ OTHER; UNIT dpm/100cm²; FIXED + REMOVE ☑	COLUMN 5 α ☐ β ☐ γ ☐ OTHER NA
NA	**BACKGROUND** (Gross)	NA	0.00	0.9	29.8	3226	
1330	FENCE STAKES SMEARS #1 #2 #3	3	3.15	6.93	32.2	500	
	ROPE #4 #5	2	0	6.93	32.2	250	
	BROOM #6	1	0	0	32.2	375	
	SNOW FENCE #7 #8	2	3.15	0.22	32.2	245	
	PALETS #9 #10	2	0	4.69	59.3	300	
	PLASTIC #11	1	0	2.45	77.7	240	
1347	SAND BAGS #12 #13 #14	3	0	4.69	32.2	150	
NA	NA	NA	NA	NA	NA	NA	

COMMENTS: HIGHEST RESULTS NOTED

FOLLOW UP REQUIRED? YES ☐ NO ☑ ALL READINGS ARE NET ABOVE BACKGROUND UNLESS NOTED

Bechtel Nevada

RADIOLOGICAL SURVEY REPORT – DATA

SURVEY # 03-ER-25-644

Location:	Purpose:	Comments:	Date:
E-MAD / TEST CELL-C	VERIFY RADIOLOGICAL CONDITIONS	HIGHEST RESULTS NOTED	03-26-03

Instrument	Serial #	Cal Due	Eff in % Alpha / Beta	BKG in dpm Alpha / Beta	MDA in dpm Alpha / Beta
ELECTRA	1662	12-16-03	14.7 / 127.3	6.8 / 1810	80 / 1580
TENNELEC	7842737	07-14-03	31.74 / 144.73	0.0 / 10.9	8.5 / 13.4
ELECTRA	1662	12-16-03	14.7 / 127.3	27.2 / 2995	80 / 1500
N/A			/	/ N/A	/

RWP #: N/A

Work Package #: CAU 262

RCT Name: PAM SALVATO Signature: Pam Salvato

RCT Name: N/A Signature: N/A

RCT Name: Signature:

RCT Name: Signature:

Survey Point	Description/Comments	Removable dpm/100cm² Alpha	Removable dpm/100cm² Beta	Fixed + Removable dpm/100cm² Alpha	Fixed + Removable dpm/100cm² Beta	Gamma mrem/hr	Neutron mrem/hr	Total mrem/hr
10	FENCE STAKES @ EMAD	3.15	9.16	~~13.6~~ NA PS	~~183~~ NA 3-26-03	NA	NA	NA
1	↓ DIRECT FRISK	NA	NA	13.6	183			
5	FENCE STAKES @ TEST CELL-C	0	13.63	NA	NA			
1	↓ DIRECT FRISK	NA	NA	0	11			
NA	NA			NA	NA			

Reviewed By (Print): Ray Watson

Signature: /s/ Signature on file

Date: 3-26-03

Retention Code: A06 (?)

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APPENDIX E

WASTE DISPOSITION DOCUMENTATION

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Bechtel Nevada

NTS Landfill Load Verification

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 ~~6~~ 9 LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898

REQUIRED: WASTE GENERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Dan Tobiason Phone Number: 5-8169

Location / Origin: Area 25, CAU-262

Waste Category: (check one) [ ] Commercial [X] Industrial

Waste Type: (check one) [ ] NTS [ ] Putrescible [X] FFACO-onsite [ ] WAC Exception [ ] Non-Putrescible [ ] Asbestos Containing Material [ ] FFACO-offsite [ ] Historic DOE/NV

Pollution Prevention Category: (check one) [X] Environmental management [ ] Defense Projects

Pollution Prevention Category: (check one) [X] Clean-Up [ ] Routine

Method of Characterization: (check one) [X] Sampling & Analysis [ ] Process Knowledge [ ] Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids; PCBs above TSCA regulatory levels; and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses; Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead), jet fuel, diesel fuel, lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill: [ ] Paper [X] Rocks / unaltered geologic materials [ ] Empty containers

[ ] Asphalt [X] Metal [ ] Wood [X] Soil [ ] Rubber (excluding tires) [ ] Demolition debris

[X] Plastic [ ] Wire [ ] Cable [ ] Cloth [ ] Insulation (non-Asbestosform) [X] Cement & concrete

[ ] Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: [ ] Office waste [ ] Food Waste [ ] Animal Carcasses

[ ] Asbestos: [ ] Friable [ ] Non-Friable (contact SWO if regulated load) Quantity: ________

Additional waste accepted at the Area 9 U10c Landfill:

[ ] Non-friable asbestos [ ] Drained automobiles and military vehicles [ ] Solid fractions from sand/oil/water separators

[ ] Light ballasts (contact SWO) [ ] Drained fuel filters (gas & diesel) [ ] Deconned Underground and Above Ground

[ ] Hydrocarbons (contact SWO) [ ] Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

[X] Septic sludge [ ] Rags [ ] Drained fuel filters (gas & diesel) [ ] Crushed non-terne plated oil filters

[ ] Plants [ ] Sludge from sand/oil/water separators [ ] PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: ________ *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only thos[e] ... site. I have verified this through the waste characterization method identifie[d] ... prohibited and allowable waste items. DJT

Daniel J Tobiason

Print Name: [signature]

Signature: /s/ Signature on file Date: 3-4-03

Note: Food waste, office trash and/or animal carcasses are considered not to con[tain] ... require a radiological clearance.

Radiation Survey Release for Waste Disposal

RCT Initials

[ ] This container/load is free of external radioactive contamination.

[ ] This container/load is exempt from survey due to process knowledge and origin.

[✓] This container/load is free of radioactive contamination based on radioanalysis.

SIGNATURE: /s/ Signature on file DATE: 3-4-03

SWO USE ONLY

Load Weight (net from scale or estimate): ________ Signature of Certifier: ________

BN-0815 (05/02)

Bechtel Nevada **NTS Landfill Load Verification**

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA ~~23~~ 6 9 **LANDFILL**

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7896.

REQUIRED: WASTE GENERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Dan Tobiason Phone Number: 5-6169

Location / Origin: Area 25, CAU-262

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Non-Putrescible ☐ Putrescible ☐ Asbestos Containing Material ☒ FFACO-onsite ☐ FFACO-offsite ☐ WAC Exception ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects

Pollution Prevention Category: (check one) ☒ Clean-Up ☐ Routine

Method of Characterization: (check one) ☒ Sampling & Analysis ☐ Process Knowledge ☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids; PCBs above TSCA regulatory levels-, and Medical wastes (needles, sharps, bloody clothing)

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses-, Wet garbage (food waste), and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load.

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon and ethylene glycol.

Acceptable waste at any NTS landfill: ☐ Paper ☒ Rocks / unaltered geologic materials ☐ Empty containers ☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rubber (excluding tires) ☐ Demolition debris ☒ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete ☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses ☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: ______

Additional waste accepted at the Area 9 U10c Landfill: ☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water separators ☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground ☐ Hydrocarbons (contact SWO) ☐ Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-terne plated oil filters ☐ Plants ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: ______ *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only tho[se] ... site. I have verified this through the waste characterization method identifi[ed] ... prohibited and allowable waste items.

DANIEL S. TOBIASON

Print Name: Allen Altherr

Signature: /s/ Signature on file Date: 2-4-03

Note: Food waste, office trash and/or animal carcasses are considered not to [...] require a radiological clearance.

Radiation Survey Release for Waste Disposal

RCT Initials

☑ This container/load is free of external radioactive contamination.

☐ This container/load is exempt from survey due to process knowledge and origin.

☐ This container/load is free of radioactive contamination based on radioanalysis.

SIGNATURE: /s/ Signature on file DATE: 2-4-03

SWO USE ONLY

Load Weight (net from scale or estimate): ______ Signature of Certifier: ______

Bechtel Nevada **NTS Landfill Load Verification**

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 X LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GENERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Dan Tobiason Phone Number: 5-6169

Location / Origin: Area 25, CAU-262

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects

Pollution Prevention Category: (check one) ☒ Clean-Up ☐ Routine

Method of Characterization: (check one) ☒ Sampling & Analysis ☐ Process Knowledge ☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids; PCBs above TSCA regulatory levels; and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses; Wet garbage (food waste); and Friable asbestos.

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load.

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; aliphatic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill: ☐ Paper ☐ Rocks / unaltered geologic materials ☒ Empty containers

☐ Asphalt ☒ Metal ☒ Wood ☐ Soil ☐ Rubber (excluding tires) ☐ Demolition debris

☒ Plastic ☒ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

☐ Manufactured items: (swamp coolers, furnaces, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: ______

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water separators

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground

☐ Hydrocarbons (contact SWO) ☐ Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-terne plated oil filters

☒ Plants ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: ______ *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those n... site. I have verified this through the waste characterization method identified a... prohibited and allowable waste items.

DANIEL S TOBIASON

Print Name: Allen Albshaik

Signature: /s/ Signature on file Date: 3-4-03

Radiation Survey Release for Waste Disposal

RCT Initials

☒ This container/load is free of external radioactive contamination.

☐ This container/load is exempt from survey due to process knowledge and origin.

☐ This container/load is free of radioactive contamination based on radioanalysis.

SIGNATURE: /s/ Signature on file DATE: 3-4-03

Note: Food waste, office trash and/or animal carcasses are considered not to contain ... require a radiological clearance.

SWO USE ONLY

Load Weight (net from scale or estimate): ______ Signature of Certifier: ______

BN-0619 (08/00)

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste Area No.	Origin Of Waste Building No.	
AREA 9	19-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	10940	25	CAU062	Comments
AREA 9	19-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35740	25	CAU062	Comments
AREA 9	18-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	22800	25	CAU062	Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: *3

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

SOLID WASTE TRACKING SYSTEM

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste Area No	Origin Of Waste Building No	
AREA 6	13-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	39500	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	39920	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	37910	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	42980	25	CAU262	Comments
AREA 6	12-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	41500	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	40000	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	39300	25	CAU262	Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: 10

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

SOLID WASTE TRACKING SYSTEM

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste Area No.	Origin Of Waste Building No.	
AREA 5	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	38700	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	30000	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	24500	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	26500	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	30000	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	26700	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	39060	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	34140	25	CAU262	Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: 20 <List>

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

SOLID WASTE TRACKING SYSTEM

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste Area No.	Origin Of Waste Building No.	
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	35000	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	38780	25	CAU262	Comments
AREA 6	11-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	38000	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	24500	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	36500	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	38000	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	30780	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	39980	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	34140	25	CAU262	Comments
AREA 6	10-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	49980	25	CAU262	Comments

Duplicates from previous page

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: *21 <List>

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste: Area No.	Origin Of Waste: Building No.	
AREA 23	17-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	37280	25	CAU262	Comments
AREA 23	17-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	36900	25	CAU262	Comments
AREA 23	13-MAR-2003	I	FFACO-ONSITE	EM	CLEAN-UP	33450	25	CAU262	Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada   << < > >> Query Save Exit   Bechtel Nevada

Count: 3

Bechtel Nevada

WASTE TRAVELER

WSID NO. KPY5KKFY01103B

MEF NO. F00016

LOT NO. 02 - R01
YR EVENT CODE

A	B	C	D	E	F	G	H		I	J	K		L	M	N	O
Unit Type	Unit No.	Prohibited Materials Excluded	WG Name & Emp. No.	Unit Packing Date	WAC/ SPMR	WAC/SPM Packing Date	Receiving Waste Handling Facility Date	Receiving Waste Handling Facility Name & Emp. No.	Storage Container Number/ Location	Packing Date	Packing Name & Emp. No.	Package Number	Shipping Number	Date
B	0542	Y	SALVATO 184526	02-03-03						2-3-03	S. Duke 183718	922953	DP03013	4-9-03
	543													
	0544						N/A							
	0545													
	0546													
B	0547	Y	K Ramirez	2-3-03										
B	0548	Y												
B	0549	Y												

Package Transfer & Storage
Field to WHF Date: ____
Field to TRU Pad Date: ____

WHF to TRU Pad
Date(s) ____
TRU Pad to WHF
Date(s) ____

Units:
B = Bag
D_1 = 30 Gal. Drum
D_2 = 55 Gal. Drum
D_3 = 85 Gal. Drum
D_4 = Other Drum
X_1 = 4' x 4' x 7' Box
X_2 = 4' x 2' x 7' Box
S = Supersack
K = Bulk
I = Intermodal Container
L = Load Wrapper (Burrito)

REMARKS:

Retention Code: ENV 2.403

BN0194 (02/00)

Please refer to the instructions on page 2

Bechtel Nevada

UNIT INVENTORY LIST

WSID NO. LRY5LLAY01023
MEF NO. F00015
LOT NO. 02 - R01
YR EVENT CODE

Unit Type	Unit No.	WG Name & Emp. No.	Date	Unit Description
B	0542	SALVATO 184526	02-03-03	TRASH TEST CELL C
	0543			
	0544			
	0545			
	0546			
B	0547	E. RAMIREZ	2-3-03	LDB TRASH
B	0548			BASEMENT ROOM 6 TRASH
B	0549			

Retention Code: ... BN-0735 (02/02)

Units: B = Bag
D_1 = 30 Gal. Drum, D_2 = 55 Gal. Drum, D_3 = 85 Gal. Drum, D_4 = Other Drum,
X_1 = 4' x 2' x 7' Box, X_2 = 4' x 4' x 7' Box,
S = Supersack, K = Bulk, I = Intermodal Container, L = Load Wrapper (Burrito)

Please refer to instructions on page 2

Bechtel Nevada

WASTE TRAVELER

WSID NO. KRY5LCFY011023

MEF NO. F00015

LOT NO. 02 - R01
YR EVENT CODE

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Unit Type	Unit No.	Prohibited Materials Excluded	WG Name & Emp. No.	Unit Packing Date	WAC/ SPM#	WAC/SPM Packing Date	Receiving Waste Handling Facility Date	Receiving Waste Handling Facility Name & Emp. No.	Storage Container Number/ Location	Packing Date	Packing Name & Emp. No.	Package Number	Shipping Number	Date
B	0550	Y	SALVATO 184526	2-4-03						2-10-03	S. Duke 183318	922953	DR03013	4-9-03
B	0551	Y	SALVATO 184526	2-6-03										
	0552													
	0553													
	0554													
B	0555	Y	184526 SALVATO	2-6-03										
	0556													
	0557													

Package Transfer & Storage
Field to WHF Date: ________
Field to TRU Pad Date: ________

WHF to TRU Pad
Date(s) ________
TRU Pad to WHF
Date(s) ________

Units:
B = Bag
D_1 = 30 Gal. Drum
D_2 = 55 Gal. Drum
D_3 = 85 Gal. Drum
D_4 = Other Drum
X_1 = 4' x 4' x 7' Box
X_2 = 4' x 2' x 7' Box
S = Supersack
K = Bulk
I = Intermodal Container
L = Load Wrapper (Burrito)

REMARKS:

Please refer to the instructions on page 2

Retention Code: ENV 3.d(2)

Bechtel Nevada

UNIT INVENTORY LIST

WSID NO. LRW5CCFW0B23

MEF NO. FCC0W5

LOT NO. 02 - RC1
YR EVENT CODE

Unit Type	Unit No.	WG Name & Emp. No.	Date	Unit Description
B	0550	SALVATO 184526	2-4-03	TRASH TEST CELL-C
B	0551		2-6-03	HOT LINE TRASH
	0552			
	0553			
	0554			
B	0555	SALVATO 184526	2-6-03	VIEWING GALLERY TRASH
B	0556			
B	0557			

Retention Code: Env 2.d(2)

BN-0733 (02/02)

Units: B = Bag
D_1 = 30 Gal. Drum, D_2 = 55 Gal. Drum, D_3 = 85 Gal. Drum, D_4 = Other Drum,
X_1 = 4' x 2' x 7' Box, X_2 = 4' x 4' x 7' Box,
S = Supersack, K = Bulk, I = Intermodal Container, L = Lead Wrapper (Burrito)

Please refer to instructions on page 2

APPENDIX F

"AS-BUILT" DRAWINGS

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NATIONAL NUCLEAR SECURITY ADMINISTRATION

NEVADA OPERATIONS OFFICE

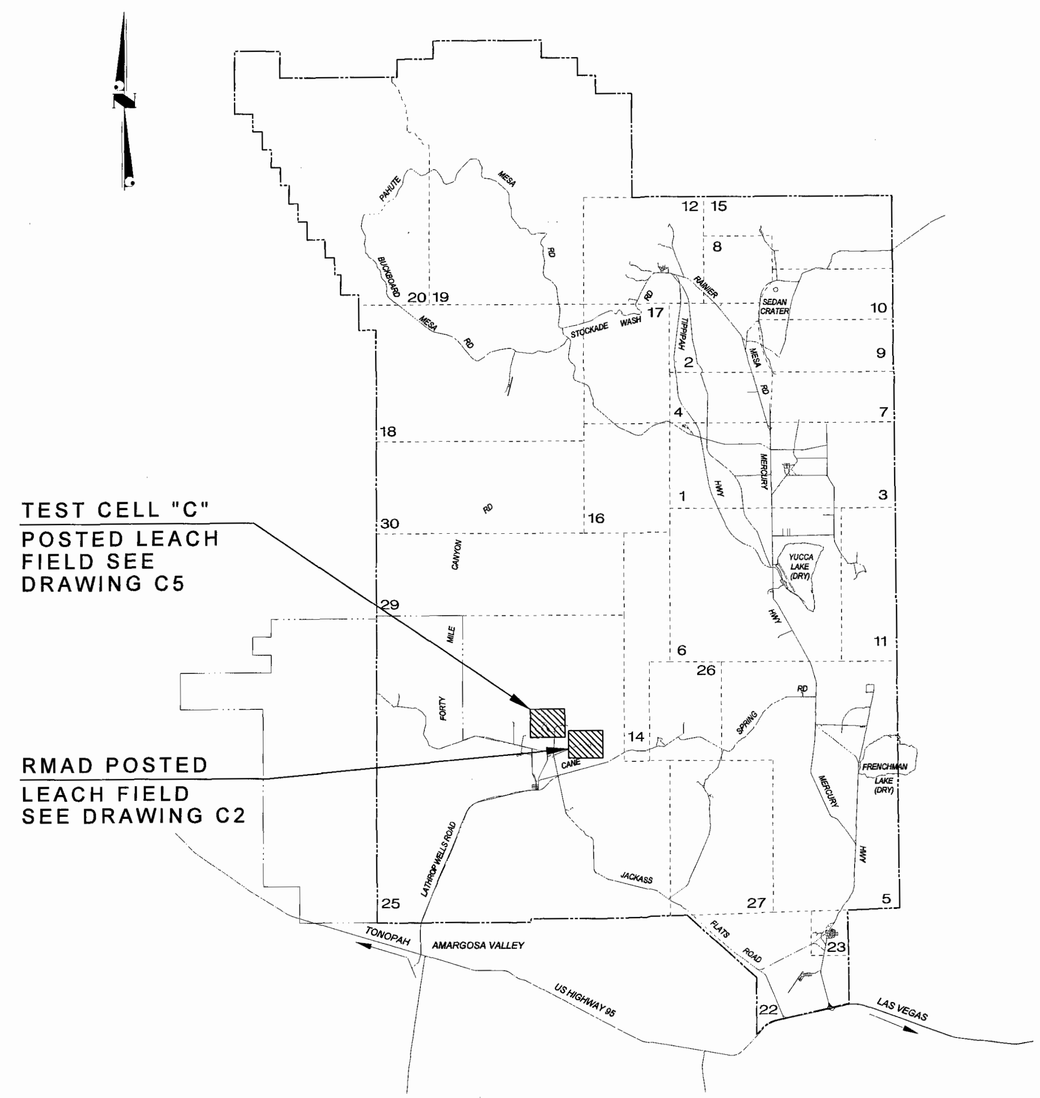
LAS VEGAS, NEVADA

CAU 262 REMEDIATION

AREA 25

DRAWING INDEX

DRAWING NUMBER		DRAWING TITLE
TITLE - COMMON		
02052-025-078-T1	REV 1	TITLE SHEET
02052-025-078-T2	REV 1	GENERAL NOTES, LEGEND & SYMBOLS
02052-025-078-T3	REV 1	ABBREVIATIONS
CIVIL - COMMON		
02052-025-078-C1	REV 1	FENCE & SIGN DETAILS
CIVIL - RMAD (CAS 25-05-03)		
02052-025-078-C2	REV 1	AREA 25 SITE AND DEMOLITION PLAN
02052-025-078-C3	REV 1	AREA 25 GRADING PLAN
02052-025-078-C4	REV 1	AREA 25 SECTIONS
CIVIL - TEST CELL "C" (CAS 25-05-08)		
02052-025-078-C5	REV 1	AREA 25 SITE AND DEMOLITION PLAN
02052-025-078-C6	REV 1	AREA 25 GRADING PLAN
02052-025-078-C7	REV 1	AREA 25 SECTIONS



NEVADA TEST SITE

NOT TO SCALE

SCOPE OF WORK

CONSTRUCT CLOSURE CAP AT RMAD POSTED LEACH FIELD AND TEST CELL "C" POSTED LEACH FIELD AFTER GROUTING DISTRIBUTION BOXES, MONITORING TUBES AND FILLING WITH SOIL EXPERIMENT BOXES. REMOVE AND DISPOSE OF EXISTING FENCING AND INSTALL NEW CHAIN LINK FENCING AND SIGNS AT BOTH SITES. RIPRAP AREAS FOR EROSION PROTECTION.

PROJECT NOTES

ALL CONSTRUCTION FEATURES, MATERIALS, TESTS AND DETAILS SHALL CONFORM TO "USDOE/NV STANDARD SPECIFICATIONS, DATED DECEMBER 1994". FOR STANDARDS REFERENCED ON THIS PROJECT, SEE THE NTS OVERHEAD POWER LINE STANDARDS.

AS-BUILT
Bechtel Nevada
Date 4/08/03

CAUTION NOTE:

INFORMATION SHOWN ON THESE DRAWINGS MIGHT NOT REFLECT CURRENT CONDITIONS OF FACILITY OR SUBSTRUCTURE. PERSONNEL SHALL USE CAUTION WHEN PERFORMING WORK BASED ON THE EXISTING INFORMATION SHOWN ON THE DRAWINGS.

/s/ Signature on file

NO	DATE	REVISION DESCRIPTION
1		NO CHANGE, ISSUED AS-BUILT 04/07/03
0		ISSUED FOR CONSTRUCTION 6/17/02

DESIGNED LRE; DRAWN JET; CHECKED JAS; ENVIR N/A; PROJ ENGINEER RAO; BN PROJECT NUMBER N/A

SUBMITTED BECHTEL NEVADA KEN SCHECHTER DATE 6/13/02

APPROVAL BLOCK: USER JAS DATE 6/13/02

NNSA PROJECT ENGINEER GREGORY DOYLE DATE 6/13/02

ENGINEERING NUMBER SABINE CURTIS 02052.A25; PROJECT AUTH NO N/A; ACTIVITY CODE 5B04AC31 DATE 6/13/02

ORIGINAL MYLAR SIGNED BY:

NEVADA TEST SITE — AREA 25

CAU 262 REMEDIATION

TITLE SHEET

National Nuclear Security Administration
NEVADA SITE OFFICE

Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-T1

SHEET OF REV 1

04/08/03 10:17:21 AM G:\dgn\02052a25\cad_data\rmad\asbuilt\t1.dgn

STANDARD CIVIL SYMBOLS, LEGENDS AND NOTES

GENERAL NOTES

1. DO NOT SCALE DRAWINGS, NUMERICAL DIMENSIONS SHALL TAKE PRECEDENCE.
2. WHEREVER MATERIALS OR EQUIPMENT ITEMS ARE SPECIFIED BY BRAND NAME AND/OR MODEL NUMBER, ALTERNATE PRODUCTS, EQUAL IN QUALITY AND UTILITY TO THOSE SPECIFIED, MAY BE USED SUBJECT TO APPROVAL OF BN DESIGN ENGINEERING.
3. ALL OF THE CONSTRUCTION SHOWN ON THESE DRAWINGS IS NEW AND INCLUDED IN THE CONTRACT UNLESS SHOWN "EXST" OR "NIC".
4. ALL CONSTRUCTION INTERFERENCE SHALL BE REPORTED TO BN DESIGN ENGINEERING FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
5. LATEST EDITIONS OF REFERENCES CITED IN THESE NOTES SHALL APPLY.
6. DESERT TORTOISE SHALL BE PROTETED IN ACCORDANCE WITH EXISTING REGULATIONS AND COMPANY PROCEDURES.

CIVIL NOTES

1. BASIS FOR HORIZONTAL CONTROL: NORTH AMERICAN DATUM 1927, NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE. BASIS FOR VERTICAL CONTROL: NORTH AMERICAN VERTICAL DATUM 1929, NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE.
2. ALL EXISTING UNDERGROUND UTILITIES WITHIN THE CONSTRUCTION SITE SHALL BE LOCATED BY MEANS OF AN ELECTRONIC METAL DETECTING DEVICE AND MARKED.
3. ALL GRADE ELEVATIONS SHOWN ARE FINISH GRADES, UNLESS OTHERWISE NOTED. SUBGRADE ELEVATIONS MUST BE ESTABLISHED WHERE REQUIRED PRIOR TO FINAL GRADING.
4. ALL FILL SHALL BE COMPACTED MATERIAL, FREE OF TRASH, ORGANIC MATERIAL, OR ANY OTHER CONTAMINATION.
5. REMOVE LUMPED SUBGRADE SOIL AND ROCKS OVER 6 INCHES IN DIAMETER.
6. EXCAVATION SAFETY PROCEDURES SHALL BE IN ACCORDANCE WITH BN COMPANY DIRECTIVE CD-0444.021 REV 0 (EXCAVATION AND PENETRATION).
7. STOCKPILE EXCAVATED MATERIAL TO A HEIGHT NOT TO EXCEED 15 FEET.
8. TEMPORARY PERIMETER FENCING SHALL BE PLACED AROUND CONSTRUCTION SITE FOR SAFETY AND ACCESS CONTROL.
9. SUBMIT A FIELD SURVEY SHOWING DIMENSIONS, LOCATIONS, BEARINGS, AND ELEVATIONS FOR THE FINAL CONFIGURATION OF SITE AS SHOWN ON THE ENGINEERING DRAWINGS.
10. SURVEY DATA SHALL BE SUBMITTED TO ENGINEERING IN ASCII FILE FORMAT AND CONTAIN SUFFICIENT DATA POINTS TO CREATE DIGITAL TERRAIN MODELS (DTM) OF SITE TO FACILITATE AS-BUILDING OF THE PROJECT DRAWINGS.
11. ALL COVER FILL MATERIAL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY (A MINIMUM INPLACE DENSITY OF 112 PCF). AS DETERMINED BY ASTM D1557. FILL MAY BE COMPACTED IN 12 INCH (MAXIMUM) LOOSE LIFTS. DENSITY TESTING WILL BE PERFORMED WITH THE PROBE END WITHIN 2 INCHES FROM THE BOTTOM OF THE LIFT. DENSITY TESTING WILL BE PERFORMED AT 4 RANDOM LOCATIONS PER LIFT.

DEMOLITION NOTES

1. WHERE DEMOLITION OCCURS, THE CONTRACTOR SHALL PROTECT EXISTING STRUCTURES, DOORS, ELECTRICAL SYSTEMS, AND MECHANICAL SYSTEMS FROM BEING DAMAGED. PROTECTION SHALL BE IN THE FORM OF DUST COVERS, BARRIERS, OR OTHER MEANS DEEMED APPROPRIATE.
2. ALL DEBRIS, NON-SALVAGEABLE MATERIALS, AND EXCESS SPOILAGE SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF AT THE NEAREST APPROVED SANITARY LANDFILL. ALL SALVAGEABLE MATERIALS NOT REQUIRED FOR THIS PROJECT, AS DETERMINED BY THE USER, SHALL BE DELIVERED TO PROPERTY MANAGEMENT FOR THEIR DISPOSITION.
3. ANY WASTE MATERIAL DETERMINED BY THE ENVIRONMENTAL COMPLIANCE OFFICE OR THE INDUSTRIAL HYGIENE OFFICE TO BE HAZARDOUS SHALL BE DISPOSED OF IN ACCORDANCE WITH THEIR REQUIREMENTS.
4. ANY WASTE MATERIAL DETERMINED BY THE WASTE MANAGEMENT DEPARTMENT AND RADIOLOGICAL CONTROL ORGANIZATION TO BE RADIOLOGICALLY CONTAMINATED SHALL BE DISPOSED OF IN ACCORDANCE WITH THEIR REQUIREMENTS.
5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO DEMOLITION.
6. ALL DIMENSIONS SHOWN ARE FOR ESTIMATING PURPOSES AND AS A GUIDE TO SHOW THE EXTENTS OF DEMOLITION.
7. ALL WORK SHALL BE SCHEDULED TO PROCEED IN A MANNER AS TO CAUSE MINIMUM DISTURBANCE TO PERSONNEL AND EQUIPMENT IN AND AROUND THE SITE AND SHALL MAINTAIN SAFE WORKING CONDITIONS AT ALL TIMES.

LEGEND & SYMBOLS

SYMBOL	DESCRIPTION
N 710,000 E 700,000	NEVADA STATE COORDINATE SYSTEM
N01°30'30"E	CENTER LINE BEARING
(3535)	EXISTING CONTOUR
35	FINISH CONTOUR
(3934.00)	EXISTING SPOT ELEVATION
3935.00 FG	FINISH GRADE ELEVATION
5+00	CENTER LINE W/STATIONS
	AREA BOUNDARY LINE
	EXISTING DIRT ROAD
	EDGE OF EXISTING ASPHALT PAVING
	EDGE OF NEW ASPHALT PAVING
	EDGE EXISTING CONCRETE PAD
	EXISTING EARTH
	AGGREGATE BASE COURSE
	EXISTING FLOW LINE
	NEW FLOW LINE
1 OR A	DETAIL OR SECTION CUT TAKEN & DRAWN ON THE SAME SHEET

SYMBOL	DESCRIPTION
	EXISTING AREA LIGHTING POLE
	EXISTING POWER POLE
	EXISTING PAVEMENT REMOVAL
	EXISTING BUILDING OR STRUCTURE
	EXISTING CULVERT
	NEW CULVERT
X	EXISTING FENCE
X	NEW FENCE
	EXISTING SURVEY MONUMENT
CUG	EXISTING COMMUNICATIONS UNDERGROUND
POH	EXISTING POWER OVERHEAD
PUG	EXISTING POWER UNDERGROUND
8" W	EXISTING WATER LINE W/SIZE
4" S	EXISTING SEWER LINE W/SIZE
	EXISTING VALVE
	EXISTING HYDRANT
	EXISTING POST INDICATOR VALVE
	TEMPORARY TRAFFIC CONTROL SIGN OR PERMANENT ROAD SIGN
△	DELTA (CENTRAL ANGLE)
	BARRICADE
	NEW GUARD RAIL
	TRAFFIC CHANNELIZATION DEVICE
1 REF	ITEM CALLOUT

A / 62 — SECTION IDENTIFICATION; SHEET NUMBER WHERE SECTION IS DRAWN

1 OR A DETAIL OR SECTION TITLE — DETAIL OR SECTION IDENTIFICATION; 1 / S2 — SHEET NUMBER WHERE DETAIL OR SECTION IS TAKEN

AS-BUILT
Bechtel Nevada Date 4/08/03

REFERENCES

TITLE SHEET	02052-025-078-T1

NO	DATE	REVISION DESCRIPTION	DESIGN	CHECK	BN/PE	USER	NNSA
1		NO CHANGE, ISSUED AS-BUILT 04/07/03					
0		ISSUED FOR CONSTRUCTION 6/17/02					

s/ Signature on file

DESIGNED LRE; DRAWN JET; CHECKED JAS; BN/PE N/A; PROJ ENGINEER RAO; BN PROJECT NUMBER N/A

SUBMITTED BECHTEL NEVADA: KEN SCHECHTER, DATE 6/13/02
APPROVAL BLOCK USER: GREGORY DOYLE, DATE 6/13/02
NNSA PROJECT ENGINEER: SABINE CURTIS, DATE 6/13/02
ENGINEERING NUMBER 02052.A25; PROJECT AUTH NO N/A; ACTIVITY CODE 5B04AC31

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
GENERAL NOTES, LEGEND & SYMBOLS

NNSA National Nuclear Security Administration NEVADA SITE OFFICE
Bechtel Nevada P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-T2
SHEET OF REV 1

ORIGINAL MYLAR SIGNED BY:

04/08/03 10:16:42 AM G:\dgn\02052a25\cad_data\med\asbuilt\t2.dgn

ABBREVIATIONS

GENERAL

ABBREVIATION	ABBR
ABOVE FINISH FLOOR	AFF
ABOVE FINISH GRADE	AFG
ADMINISTRATION	ADMIN
AGGREGATE	AGGR
AIR CONDITIONING	A/C
ALTERNATE	ALT
ALUMINUM	AL
AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI
AMERICAN SOCIETY FOR TESTING AND MATERIALS	ASTM
AMERICAN SOCIETY OF SANITARY ENGINEERS	ASSE
AMERICAN WATER WORKS ASSOCIATION	AWWA
ANCHOR BOLT	AB
AND	&
APPROVED	APVD
APPROXIMATE	APPROX
ARCHITECT/ENGINEER	A/E
ASBESTOS CEMENT PIPE	ACP
ASPHALT	ASPH
ASPHALT CEMENT	AC
AT	@
AUTOMATIC	AUTO
AUXILIARY	AUX
AVERAGE	AVG
BEAM	BM
BECHTEL NEVADA	BN
BELOW FINISH GRADE	BFG
BITUMINOUS	BITMUM
BLOCK	BLK
BLOCKING	BLKG
BOREHOLE	BH
BOTTOM	BOT
BRACING	BRCG
BRACKET	BRKT
BUILDING	BLDG
BURIED CABLE	BC
CAST IRON	CI
CATALOG	CAT
CAULKING	CLKG
CEILING	CLG
CEMENT	CEM
CENTER	CTR
CENTER LINE	>
CENTER TO CENTER	C TO C
CIRCULAR	CIRC
CLEAR	CLR
CODE OF FEDERAL REGULATORS	CFR
COLUMN	COL
COMBINATION	COMB
COMMUNICATIONS	COMM/C
COMPARTMENT	COMPT
CONCRETE	CONC
CONCRETE MASONRY UNITS	CMU
CONNECTION	CONN
CONSTRUCTION	CONSTR
CONSTRUCTION JOINT	CJ
CONSTRUCTION SPECIFICATION	CON SPEC
CONTINUATION/CONTINUOUS	CONT
CONTROL JOINT	CLJ
COPPER	CU
CORNER	COR
CORPORATION	CORP
COUNTERSUNK	CTSK
COUNCIL OF AMERICAN BUILDING OFFICIALS	CABO
CUBIC FOOT	CFT
CUBIC METER	CM
CUBIC YARD	CY
DATED	DTD
DETAIL	DET
DEGREE	DEG
DEPARTMENT OF ENERGY	DOE
DIAGONAL	DIAG
DIAMETER	DIA
DIMENSION	DIM
DOUBLE	DBL
DOWN	DN
DRAWING	DWG
DUCTILE IRON	DI
EACH	EA
EAST	E
ELECTRIC/ELECTRICAL	ELEC
ELECTRIC HEATER	EH
ELECTRIC WATER COOLER	EWC
ELECTRIC WATER HEATER	EWH
ELECTRIC UNIT HEATER	EUH
ELEVATION	EL
EMERGENCY	EMER
ENCLOSURE	ENCL
ENGINEER	ENGR
ENTRANCE	ENTR
EQUAL	EQL
EQUIPMENT	EQPT
EXHAUST	EXH
EXISTING	EXST
EXPANSION	EXP
EXPANSION JOINT	EXP JT
EXPOSED	EXP
EXTERIOR	EXT
FACILITY	FACIL
FACTORY MUTUAL	FM
FEET	FT
FIBER OPTICS	FO
FIELD	FLD
FINISH	FNSH
FINISH FLOOR	FF
FINISH GRADE	FG
FIRE	F
FIRE ALARM CONTROL PANEL	FACP
FIRE HYDRANT	FHY
FIRE PROTECTION	FP
FIRST	1ST
FITTING	FTG
FIXTURE	FXTR
FLANGED	FLG
FLOOR	FL
FOOT	FT
FOOTING	FTG
FOUNDATION	FDN
FUTURE	FUT
GAGE OR GAUGE	GA
GALLONS/HOUR	GPH
GALLONS/MINUTE	GPM
GALVANIZED	GALV
GALVANIZED IRON	GALVI
GATE VALVE	GTV
GENERAL	GENL
GOVERNMENT	GOVT
GOVERNMENT FURNISHED EQUIPMENT	GFE
GRADE	GR
GRATING	GRTG
HAND RAIL	HNDRL
HAZARDOUS WASTE	HAZ W
HEATING, VENTILATING AND AIR CONDITIONING	HVAC
HEIGHT	HGT
HIGH POINT	HPT
HORIZONTAL	HORIZ
HORSEPOWER	HP
HOUR	HR
INCH	IN
INSIDE DIAMETER	ID
INSULATION	INSUL
INVERT	INV
JOINT	JT
LAVATORY	LAV
LEFT	LT
LENGTH	LG
LIGHTING	LTG
LINEAR FOOT	LF
LINEAR METER	LM
LIQUEFIED PETROLEUM GAS	LPG
LONG	LG
LOW POINT	LP
MACHINE	MACH
MAGNETIC	MAG
MAINTENANCE	MAINT
MANHOLE	MH
MANUFACTURER	MFR
MANUFACTURING	MFG
MATERIAL	MATL
MAXIMUM	MAX
MECHANICAL	MECH
MEMBRANE	MEMB
METAL	MET
METER/METRIC	M
METRIC TON	MTON
MEZZANINE	MEZZ
MILE	MI
MILIMETER	MM
MILLION GALLONS PER DAY	MGD
MINIMUM	MIN
MISCELLANEOUS	MISC
MOUNT(ING) (ED)	MT(G)(D)
NATIONAL FIRE PROTECTION ASSOCIATION	NFPA
NATIONAL PIPE THREAD	NPT
NEVADA	NV
NEVADA TEST SITE	NTS
NON RISING STEM	NRS
NOMINAL	NOM
NORMAL	NORM
NORTH	N
NOT IN CONTRACT	NICS
NOT TO SCALE	NTS
NUMBER	NO #
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	OSHA
ON CENTER	OC
OPENING	OPNG
OPPOSITE	OPP
OUTSIDE DIAMETER	OD
OUTSIDE STEM & YOKE	OS & Y
OVERHEAD	OVHD
PAIR	PR
PAVEMENT	PVMT
PLATE	PL
POINT	PT
POLE	P
POLYVINYL CHLORIDE	PVC
POUNDS	LBS
POUNDS/SQUARE FOOT	PSF
POUND/SQUARE INCH	PSI
POWER	P
POWER POLE	PP
POWER OVERHEAD	POH
POWER UNDERGROUND	PUG
PREFABRICATED	PREFAB
PRESSURE	PRESS
PROJECT ENGINEER	PE
QUANTITY	QTY
RADIUS	RAD/R
REFERENCE	REF
REINFORCED CONCRETE BOX	RCB
REINFORCING	REINF
REQUIRED	REQD
REVISIONS/REVERSE	REV
RIGHT	R
RIGID STEEL	RS
ROAD	RD
ROOF	RF
ROOF DRAIN	RD
ROOF DRAIN OVERFLOW	RDOF
ROOM	RM
ROUGH	RGH
ROUGH OPENING	RO
ROUND	RND
SANITARY SEWER	SS
SCHEDULE	SCHED
SECOND	2ND SEC
SECTION	SECT
SHEET METAL	SH MET
SIMILAR	SIM
SOUTH/SEWER	S
SPACE	SPA
SPARE	SPR
SPECIFICATION	SPEC
SPIGOT	SP
SQUARE	SQ
STANDARD	STD
STATION	STA
STEAM	ST
STEEL	STL
SUBGRADE	SG
SUBSTATION	SUBSTA
SYMMETRICAL	SYMM
TANGENT/TELEPHONE	T
THICK	THK
TEMPORARY	TEMP
TOP OF CONCRETE	TOC
TYPICAL	(TYP)
UNDERGROUND	UGND
UNDERWRITERS LABORATORIES	UL
UNFINISHED	UNFIN
UNIFORM BUILDING CODE	UBC
UNIFORM PLUMBING CODE	UPC
UNITED STATES	US
UNLESS OTHERWISE NOTED	UON
UNLESS OTHERWISE SPECIFIED	UOS
URINAL	UR
VACUUM	VAC
VENTILATOR	VENT
VERTICAL	VERT
VITRIFIED CLAY PIPE	VCP
VOLUME	VOL
WATER CLOSET	WC
WATERPROOF	WTRPRF
WEATHERPROOF	WP
WEIGHT	WT
WEST/WATER/WASTE	W
WIDTH	WD
WITH	W/
WITHOUT	W/O
YARD	YD

CIVIL

AGGREGATE	AGGR
AMERICAN SOCIETY OF CIVIL ENGINEERS	ASCE
ARC LENGTH	L
BEGIN CURVE	BC
BEGIN VERTICAL CURVE	BVC
BOTTOM OF SLOPE	BOS
CONTROL POINT	CONT PT
CORRUGATED METAL PIPE	CMP
CORRUGATED METAL PIPE ARCH	CMPA
END CURVE	EC
END VERTICAL CURVE	EVC
HIGH POINT	HI PT
HIGHWAY	HWY
LINEAR FEET	LF
LINEAR METERS	LM
STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	NDOT
NORTHEAST	NE
NORTHWEST	NW
POINT OF CURVE	PC
POINT OF INTERSECTION	PI
POINT OF TANGENCY	PT
POINT OF VERTICAL CURVE	PVC
POINT OF VERTICAL INTERSECTION	PVI
POINT OF VERTICAL REVERSE CURVE	PVRC
POINT OF VERTICAL TANGENCY	PVT
SOUTHEAST	SE
SLOPE	S
SHOULDER	SHLDR
SOUTHWEST	SW
TOP OF MANHOLE	TMH
VERTICAL CURVE	VC

AS-BUILT
Bechtel Nevada Date 4/08/03

REFERENCES

TITLE SHEET	02052-025-078-T1

/s/ Signature on file

NO	DATE	REVISION DESCRIPTION
1		NO CHANGE, ISSUED AS-BUILT 04/07/03
0		ISSUED FOR CONSTRUCTION 6/17/02

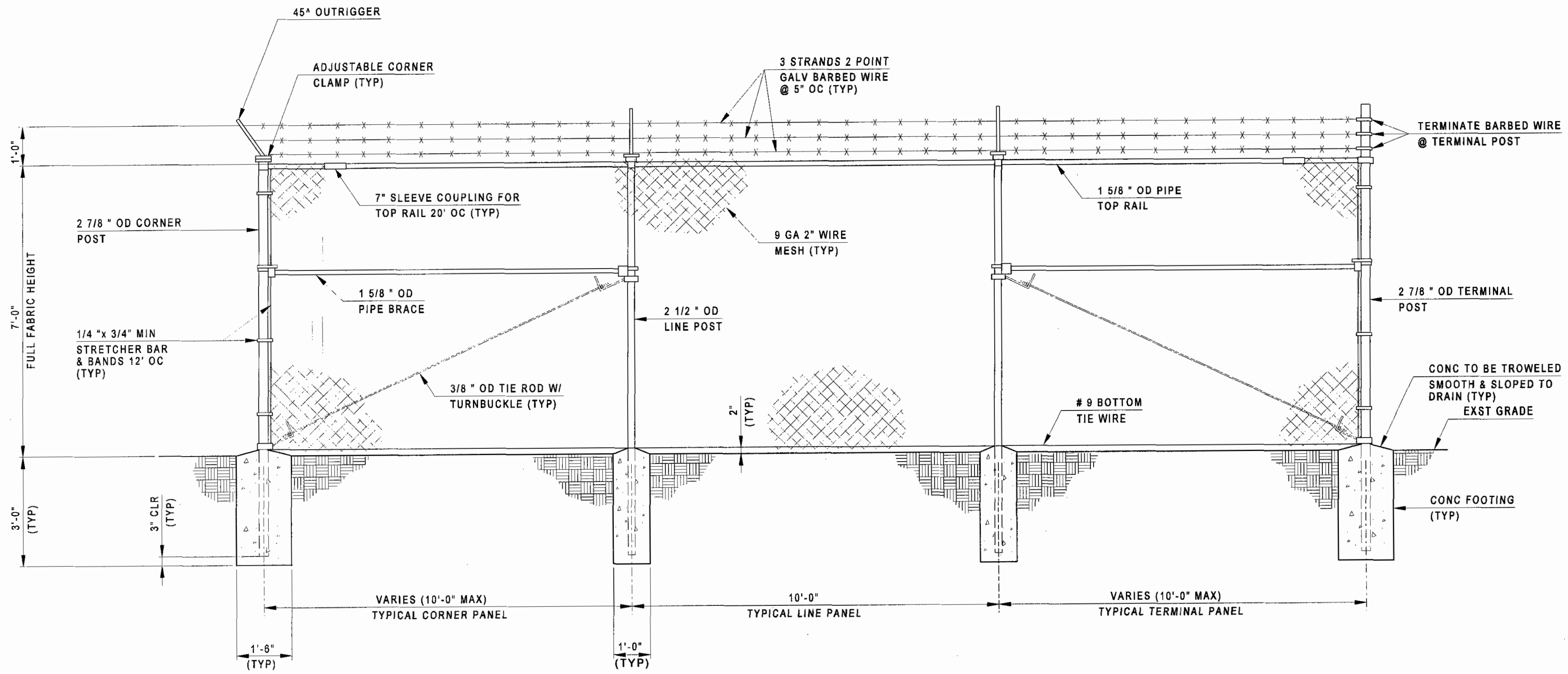
DESIGNED LRE — DRAWN JET — SUBMITTED BECHTEL NEVADA KEN SCHECHTER — DATE 6/13/02
CHECKED JAS — USER — APPROVAL BLOCK
ENVIR N/A — NNSA PROJECT ENGINEER GREGORY DOYLE — DATE 6/13/02
PROJ ENGINEER RAO — BN PROJECT ENGINEER SABINE CURTIS — DATE 6/13/02
BN PROJECT NUMBER N/A — ENGINEERING NUMBER 02052 A25 — PROJECT AUTH NO N/A — ACTIVITY CODE 5BD4C31

ORIGINAL MYLAR SIGNED BY:

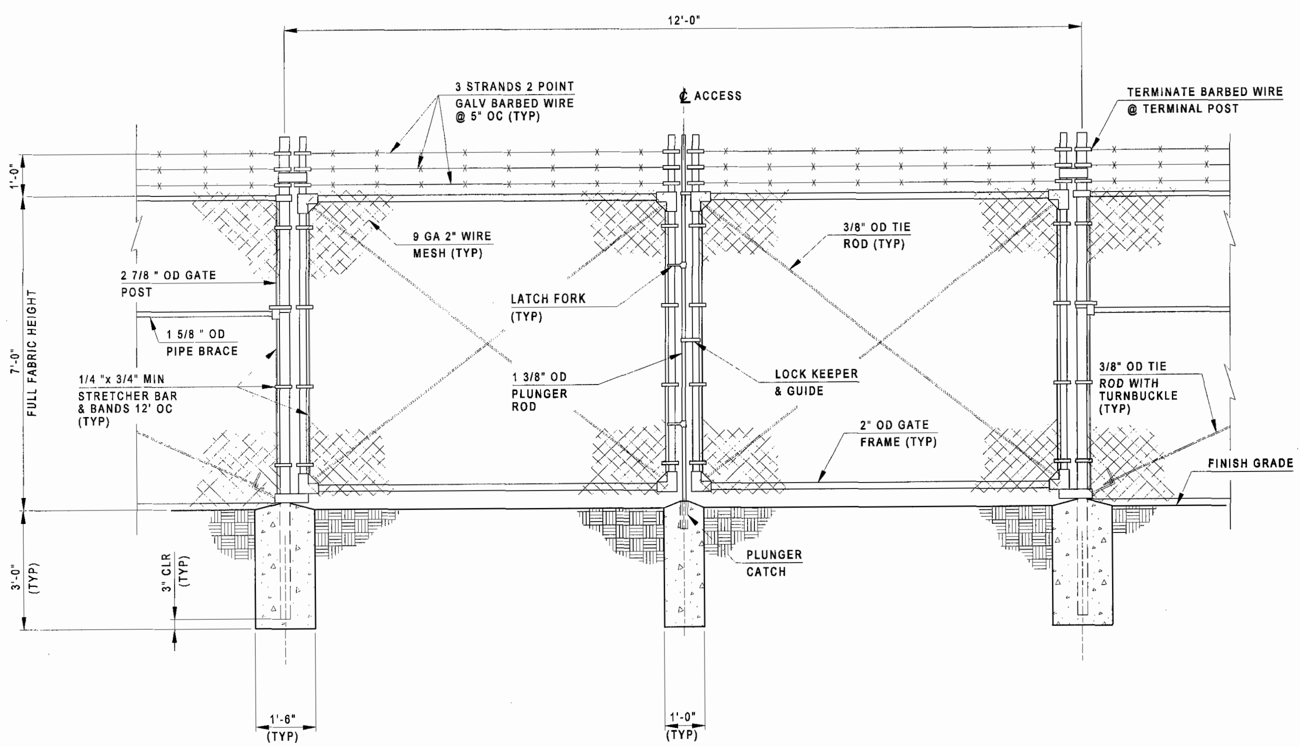
NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
ABBREVIATIONS

National Nuclear Security Administration NEVADA SITE OFFICE
Bechtel Nevada P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-T3
SHEET OF REV 1



TYPICAL FENCE DETAIL (1) C3, C6
NOT TO SCALE



TYPICAL GATE DETAIL (2) C3, C6
NOT TO SCALE

TYPICAL SIGN DETAIL (3) C3, C6
NOT TO SCALE

FENCING NOTES

1. CONCRETE SHALL DEVELOPE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND SHALL CONFORM TO LATEST ACI CODE.
2. FENCE SHALL EXTEND WITHIN 2 INCHES OF FIRM GROUND.
3. ALL FENCE POSTS SHALL BE SET IN CONCRETE. ALL POSTS, BRACING, AND OTHER STRUCTURAL MEMBERS SHALL BE LOCATED INSIDE THE ENCLOSED AREA.
4. 9 GAGE ALUMINUM OR 11 GAGE GALVANIZED STEEL TIE WIRES 12 INCHES OC AT POSTS AND 24 INCHES OC AT TOP RAIL AND BOTTOM TENSION WIRE.
5. FENCE MATERIALS.
   a. STEEL ITEMS, INCLUDING POSTS, TOP RAILS AND BRACE RAILS SHALL BE HOT-DIP GALVANIZED, SCHEDULE 40 PIPE. ALL STRETCHER BARS AND BANDS SHALL BE HOT-DIP GALVANIZED.
   b. IRON ITEMS, INCLUDING POST TOPS AND FITTINGS SHALL BE WROUGHT OR MALLEABLE IRON, HOT-DIP GALVANIZED.
   c. CHAIN LINK FABRIC SHALL BE 9 GAGE IN 2" MESH HOT-DIP GALVANIZED.
   d. BARBED WIRE SHALL CONSIST OF 3 STRANDS OF GALVANIZED TWISTED 13 1/2 GAGE CARBON STEEL. BARBS SHALL BE 14 GAGE GALVANIZED 2 POINT PATTERN ON APPROXIMATE 5" CENTERS
6. FENCE GROUNDING.
   USER SHALL DETERMINE IF GROUNDING OF NEW CHAIN LINK FENCING IS REQUIRED.
7. SIGN PANELS
   SIGN PANELS SHALL BE ATTACHED TO FENCE FABRIC USING HOG RINGS.

REFERENCES

TITLE SHEET 02052-025-078-T1

AS-BUILT
Bechtel Nevada Date 4/08/03

/s/ Signature on file

NO	DATE	REVISION DESCRIPTION	DESIGN	DRAWN	CHECK	ENGR	USER	NNSA
1		NO CHANGE, ISSUED AS-BUILT 04/07/03						
0		ISSUED FOR CONSTRUCTION 6/17/02		JET				

DESIGNED LRE; DRAWN JET; CHECKED JAS; ENGR N/A; PROJ ENGINEER RAO; BN PROJECT NUMBER N/A
SUBMITTED BECHTEL NEVADA KEN SCHECHTER DATE 6/13/02
APPROVAL BLOCK
USER GREGORY DOYLE DATE 6/13/02
NNSA PROJECT ENGINEER SABINE CURTIS DATE 6/13/02
ENGINEERING NUMBER 02052.A25; PROJECT AUTH NO N/A; ACTIVITY CODE 5B04AC31

ORIGINAL MYLAR SIGNED BY:

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
FENCE & SIGN DETAILS

NNSA National Nuclear Security Administration NEVADA SITE OFFICE
Bechtel Nevada P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C1
SHEET OF REV 1

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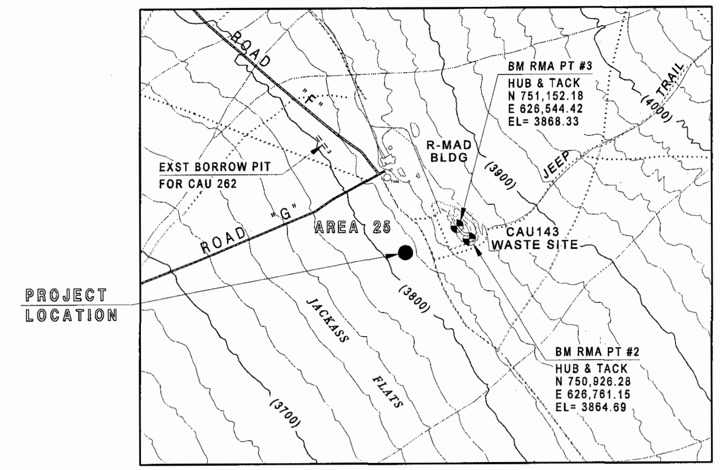
SITE AND DEMOLITION PLAN

SCALE: 1" = 30'



PROJECT LOCATION

KEY MAP

SCALE: NTS

KEY NOTES

1. CLEAN-CUT EXISTING STEEL NEUTRON MONITORING PIPE STUB-UP AS FOLLOWS:

   (A) CUT STEEL PIPE OFF FLUSH WITH EXISTING GROUND.
   (B) FILL STEEL PIPE WITH GROUT MIX DESIGN SHOWN BELOW.

HLGC (CC-A) R-1

MATERIALS	LBS/CU FT
CHEM COMP	12.00
PC, TYPE II	9.60
W-60	2.40
FLY ASH	14.76
CONC SAND A-1	61.11
PSP	0.15
RETARDER	0.77 FL OZ
WATER	22.49

NOTE: 3000 PSI AT 14 DAYS
155°F MAXIMUM
SUMP = 11 + AT 2 HRS
DENSITY = 139.6 PCF
INITIAL SET 7 HRS
FINAL SET 9 HRS

   (C) THE GROUT SHALL BE PLACED INTO THE PIPE UNTIL IT OVERFLOWS INTO THE FOOTER AND FILLED TO GRADE. NO SPECIAL FINISH IS REQUIRED. LEVEL AND LET CURE.

2. EXISTING BURIED WOODEN BOXES (TO BE FILLED W/COMPACTED SUITABLE NATIVE MATERIAL, IN PLACE, BY BN CONSTRUCTION).

3. EXISTING DISTRIBUTION BOX TO BE GROUTED IN PLACE BY BN CONSTRUCTION W/HLGC (CC-A) R-1).

4. EXISTING GATE AND FENCING TO REMAIN, MAY BE REMOVED AS REQUIRED TO FACILITATE CONSTRUCTION. EXISTING FENCING REMOVED TO BE REINSTALLED AND/OR REPAIRED AS NECESSARY.

AS-BUILT
Bechtel Nevada
Date 4/08/03

REFERENCES

02052-025-078-T1	TITLE SHEET
02052-025-078-C2	GRADING PLAN

GRAPHIC SCALE
0 30 60 90 FEET
1" = 30'
(CONTOUR INTERVAL = 1 FT)

NO	DATE	REVISION DESCRIPTION	DRAWN	CHECK	BN PE	USER	NNSA
1		INCORPORATED DCN 01 AND ISSUED AS-BUILT 04/07/03	JET				/s/ Signature on file
0		ISSUED FOR CONSTRUCTION 6/17/02					

DESIGNED LRE	SUBMITTED BECHTEL NEVADA KEN SCHECHTER	DATE 6/13/02	
DRAWN JET	APPROVAL BLOCK	DATE	
CHECKED JAS	USER		
ENVR N/A	NNSA PROJECT ENGINEER GREGORY DOYLE	DATE 6/13/02	
PROJ ENGINEER RAO	ENGINEERING MANAGER SABINE CURTIS	DATE 6/13/02	
BN PROJECT NUMBER N/A	ENGINEERING NUMBER 02052 A25	PROJECT AUTH NO N/A	ACTIVITY CODE 5B04AC31

ORIGINAL MYLAR SIGNED BY:

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION

NNSA National Nuclear Security Administration NEVADA SITE OFFICE
Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C2
SHEET OF REV 1

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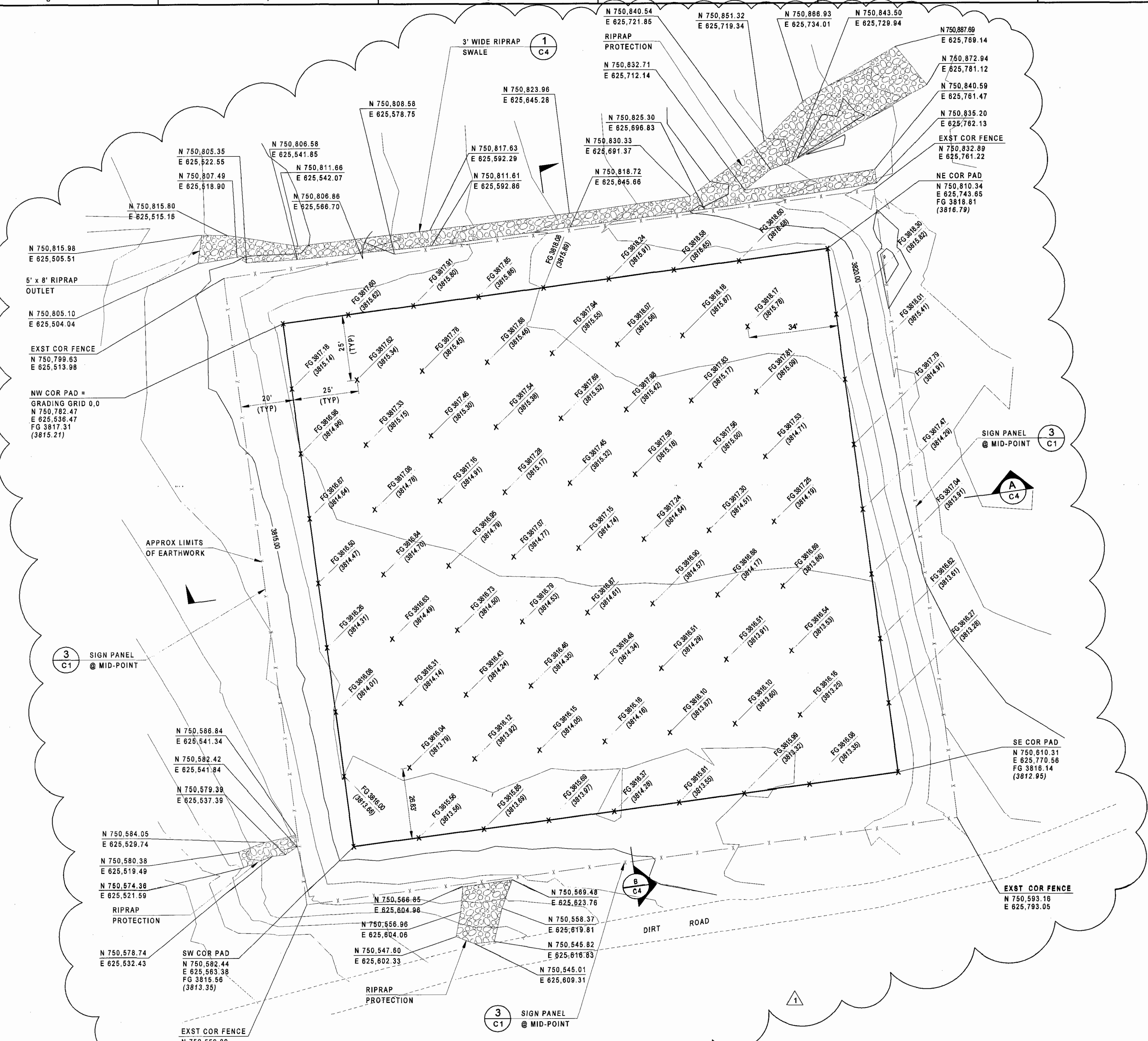

GRADING PLAN

SCALE : 1" = 20'

RIPRAP ROCK GRADATION		
% PASSING BY WEIGHT	SIZE	
	IN	MM
100	12	305
35-50	6	152
0-15	2	51

* ROUNDED TO THE NEAREST INCH

* WEIGHT OF SPHERICAL STONE = 110 LB/CU FT (LOOSE MATERIAL)

* WEIGHT OF FINE AGGREGATE CUSHION (0.187 INCH PARTICLE SIZE) = 98 LB/CU FT (LOOSE MATERIAL)

NOTES

1. GEOTEXTILE FILTER FABRIC SHALL BE PLACED BEFORE RIP-RAP. GEOTEXTILE SHALL BE NONWOVEN NEEDLE PUNCHED WITH AN APPARENT OPENING SIZE (AOS) OF LESS THAN OR EQUAL TO 10mm.
2. A 6" LAYER OF FINE AGGREGATE PER CLARK COUNTY AREA NEVADA UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS SECTION 706.03.03 SHALL BE PLACED ON TOP OF FILTER FABRIC TO ACT AS A CUSHION WHEN PLACING RIP-RAP.
3. NEW CLASS 150 RIP-RAP SHALL BE HARD, DURABLE, ANGULAR IN SHAPE, FREE FROM CRACKS, HAVE A MINIMUM SPECIFIC GRAVITY OF 2.50, AND PLACED IN LAYERS FROM LARGEST TO SMALLEST DIAMETER ROCK FOR PROPER BEDDING PER NDOT SPECIFICATION 708.03.05. 1
4. EXISTING STOCKPILED CLASS 300 RIPRAP APPROVED FOR USE ON CAU 143 TO BE PLACED PRIOR TO THE USE OF NEW CLASS 150 RIPRAP (DO NOT MIX CLASSES).

ESTIMATED QUANTITIES		
DESCRIPTION	QTY.	UNIT
NATIVE FILL MATERIAL	4550	CY
7' HIGH CHAIN LINK SECURITY FENCE	995	LF
12' WIDE CHAIN LINK GATE	1	EA
RIPRAP	76	CY
SIGN PANEL	4	EA
FINE AGGREGATE CUSHION	38	CY

NOTES

1. NO CUT AND FILL FACTORS ARE APPLIED TO PROVIDED QUANTITIES.
2. QUANTITIES PROVIDED ARE FOR BECHTEL NEVADA ESTIMATING PURPOSES ONLY. ITEMS LISTED ARE NOT ALL INCLUSIVE.

AS-BUILT
Bechtel Nevada Date 4/08/03

GRAPHIC SCALE
0 10 20 40 60 FEET
1" = 20'
(CONTOUR INTERVAL = 1 FT)

NO	DATE	REVISION DESCRIPTION
1		REVISED PER NEW SURVEY DATA, INCORPORATED DCN NO. 01 AND ISSUED AS-BUILT 04/07/03
0		ISSUED FOR CONSTRUCTION 6/17/02

/s/ Signature on file

DESIGNED LRE	SUBMITTED BECHTEL NEVADA KEN SCHECHTER	DATE 6/13/02	
DRAWN JET	APPROVAL BLOCK	DATE 6/13/02	
CHECKED JAS	USER GREGORY DOYLE	DATE 6/13/02	
ENVIR N/A	NNSA PROJECT ENGINEER SABINE CURTIS		
PROJ ENGINEER RAO	ENGINEERING NUMBER 02052 A25	PROJECT AUTH NO N/A	ACTIVITY CODE 5B04AC31
BN PROJECT NUMBER N/A			

NEVADA TEST SITE — AREA 25

CAU 262 REMEDIATION
RMAD LEACH FIELD
CAS 25-05-03
GRADING PLAN

National Nuclear Security Administration NEVADA SITE OFFICE

Bechtel Nevada P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C3

SHEET OF REV 1

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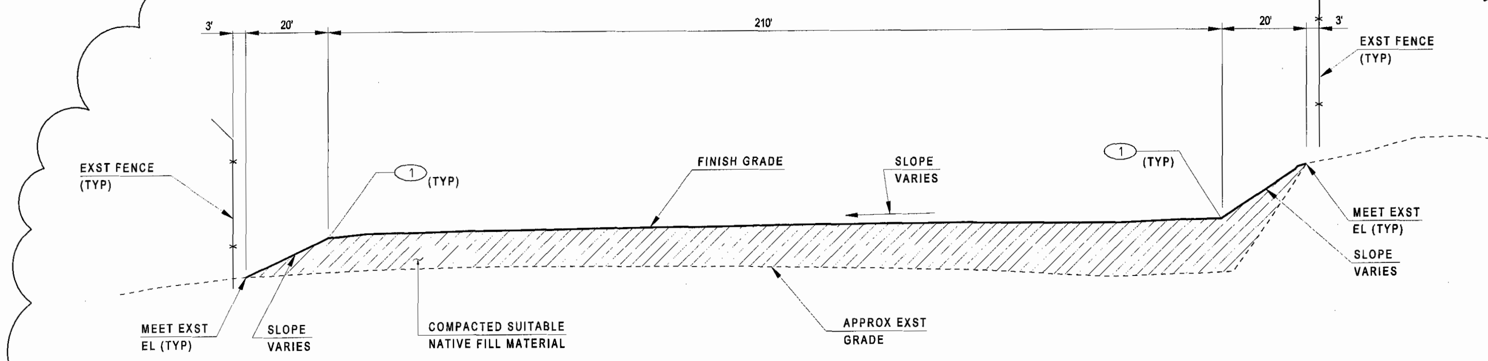
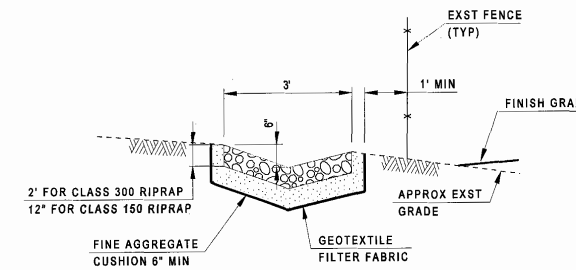


SECTION A (C3)

SCALE : HORIZ 1"= 20', VERT 1"= 4'

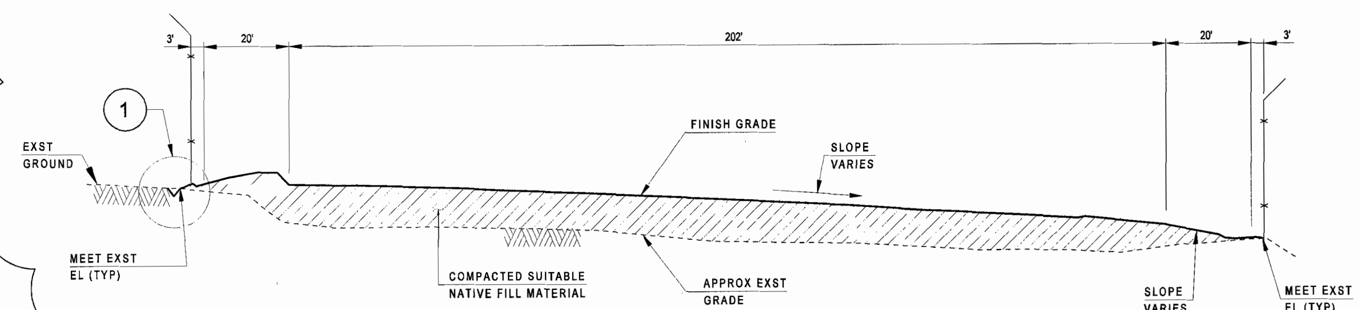
KEY NOTES

1. SEE GRADING GRID FOR FINISH GRADE ELEVATIONS, DWG C3.



DETAIL 1 (C3)

SCALE : NOT TO SCALE



SECTION B (C3)

SCALE : HORZ 1"= 20', VERT 1"= 4'

REFERENCES

TITLE SHEET	02052-025-078-T1

AS-BUILT
Bechtel Nevada Date 4/08/03

GRAPHIC SCALE
0 2 4 8 12 FEET
1" = 4'

GRAPHIC SCALE
0 10 20 40 60 FEET
1" = 20'

/s/ Signature on file

NO	DATE	REVISION DESCRIPTION	DESIGN	DRAWN	CHECK	ENGR
1		REVISED PER NEW SURVEY DATA, INCORPORATED DCN 01 AND ISSUED AS-BUILT 04/07/03				
0		ISSUED FOR CONSTRUCTION 6/17/02		JET	CWK	

DESIGNED LRE — SUBMITTED BECHTEL NEVADA KEN SCHECHTER, DATE 6/13/02
DRAWN JET — APPROVAL BLOCK
CHECKED JAS — USER GREGORY DOYLE, NNSA PROJECT ENGINEER, DATE 6/13/02
ENVR N/A
PROJ ENGINEER RAO — SABINE CURTIS, DATE 6/13/02
BN PROJECT NUMBER N/A — ENGINEERING NUMBER 02052.A25 — PROJECT AUTH NO N/A — ACTIVITY CODE 5B04AC31

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
RMAD LEACH FIELD
CAS 25-05-03
SECTIONS

NNSA National Nuclear Security Administration, NEVADA SITE OFFICE
Bechtel Nevada, P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C4
SHEET OF REV 1

ORIGINAL MYLAR SIGNED BY:

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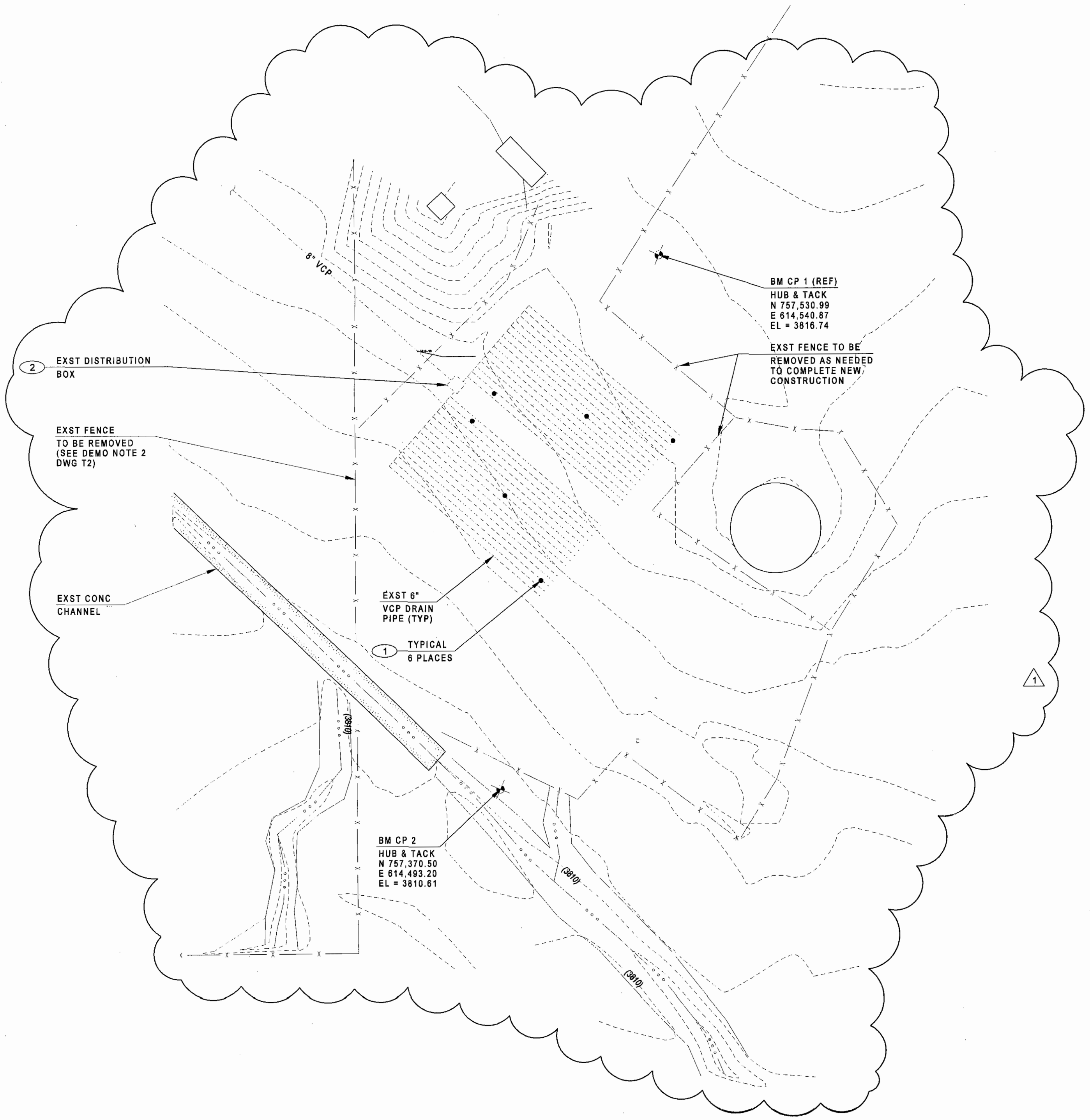
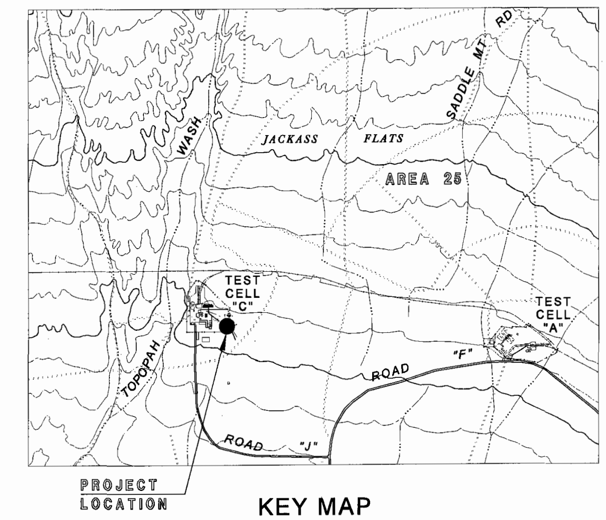


SITE AND DEMOLITION PLAN

SCALE : 1" = 30'



KEY MAP

SCALE : NTS

KEY NOTES

1. CLEAN-CUT EXISTING STEEL NEUTRON MONITORING PIPE STUB-UP AS FOLLOWS:

   (A) CUT STEEL PIPE OFF FLUSH WITH EXISTING GROUND.
   (B) FILL STEEL PIPE WITH GROUT MIX DESIGN SHOWN BELOW.

HLGC (CC-A) R-1

MATERIALS	LBS/CU FT
CHEM COMP	12.00
PC, TYPE II	9.60
W-60	2.40
FLY ASH	14.76
CONC SAND A-1	61.11
PSP	0.15
RETARDER	0.77 FL OZ
WATER	22.49

NOTE: 3000 PSI AT 14 DAYS
155°F MAXIMUM
SUMP = 11 + AT 2 HRS
DENSITY = 139.6 PCF
INITIAL SET 7 HRS
FINAL SET 9 HRS

(C) THE GROUT SHALL BE PLACED INTO THE PIPE UNTIL IT OVERFLOWS INTO THE FOOTER AND FILLED TO GRADE. NO SPECIAL FINISH IS REQUIRED. LEVEL AND LET CURE.

2. EXISTING DISTRIBUTION BOX TO BE GROUTED IN PLACE BY BN CONSTRUCTION W/HLGC (CC-A) R-1.

REFERENCES

02052-025-078-T1	TITLE SHEET
02052-025-078-C6	GRADING PLAN

AS-BUILT
Bechtel Nevada Date 4/08/03

GRAPHIC SCALE
0 10 20 40 60 FEET
1" = 20'
(CONTOUR INTERVAL = 1 FT)

NO	DATE	REVISION DESCRIPTION	DESIGN	CHECK	BN PE	USER	NNSA
1		INCORPORATED DCN 01 AND ISSUED AS-BUILT 04/07/03					
0		ISSUED FOR CONSTRUCTION 6/17/02					

/s/ Signature on file

ORIGINAL MYLAR SIGNED BY:

DESIGNED LRE	SUBMITTED BECHTEL NEVADA		DATE
DRAWN JET	KEN SCHECHTER		6/13/02
CHECKED JAS	USER GREGORY DOYLE	APPROVAL BLOCK	DATE 6/13/02
ENVIR N/A	NNSA PROJECT ENGINEER		DATE
PROJ ENGINEER RAO	SABINE CURTIS		6/13/02
BN PROJECT NUMBER N/A	ENGINEERING NUMBER 02052.A25	PROJECT AUTH NO N/A	ACTIVITY CODE 5B04AC31

NEVADA TEST SITE — AREA 25

CAU 262 REMEDIATION
TEST CELL "C" LEACH FIELD
CAS 25-05-08

SITE AND DEMOLITION PLAN

National Nuclear Security Administration
NEVADA SITE OFFICE

Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C5
SHEET OF REV 1

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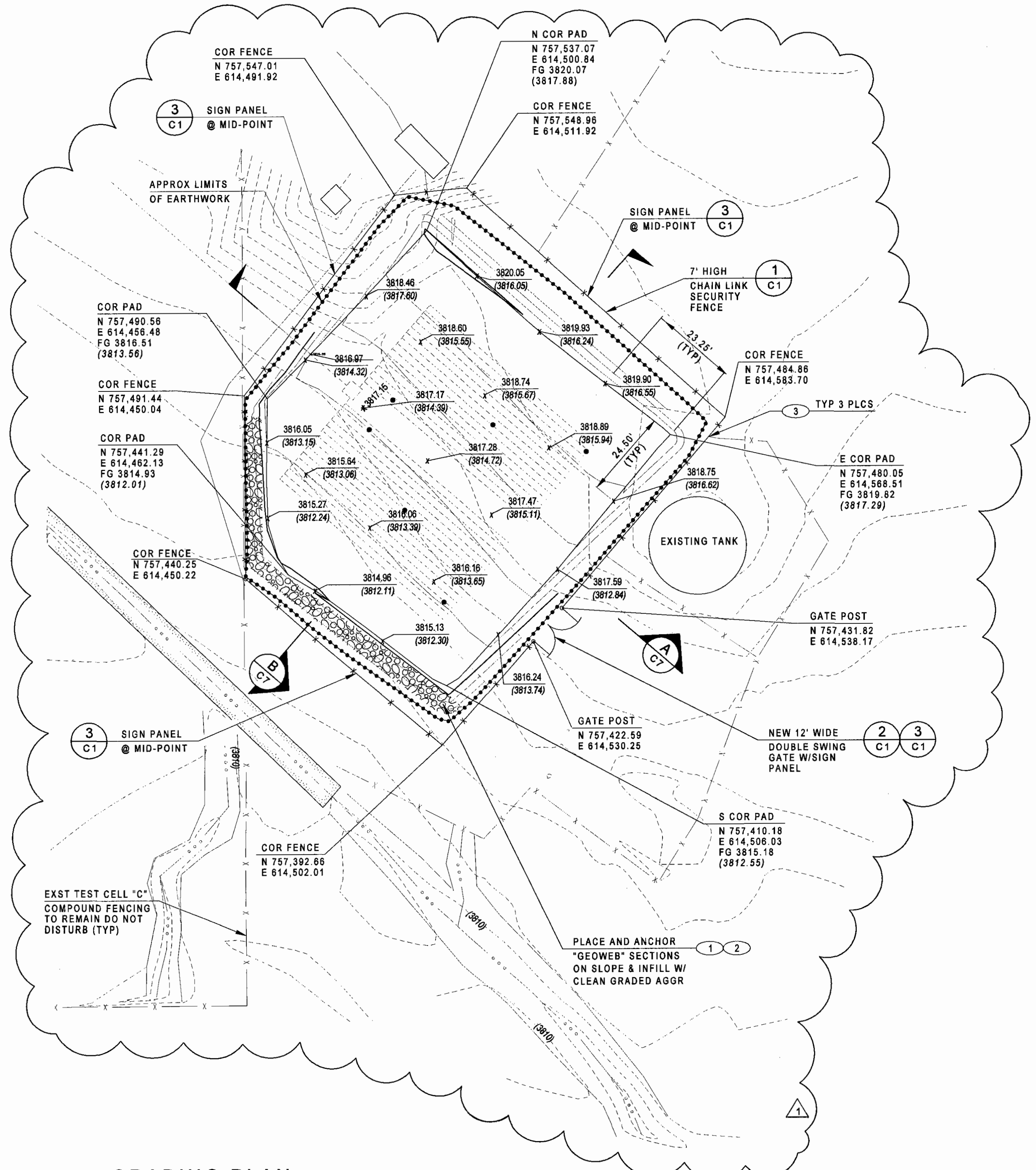


GRADING PLAN

SCALE : 1"= 20'

KEY NOTES

1. GW20V SERIES GEOWEB CONFINEMENT SYSTEM SHALL HAVE A CELL DEPTH OF 4" AS SUPPLIED BY SOIL STABILIZATION PRODUCTS COMPANY INC. INSTALLATION AND FIELD CUTTING SHALL BE PER MANUFACTURE'S SPECIFICATIONS AND RECOMMENDATIONS.
2. INFILL MATERIAL SHALL BE A CLEAN GRADED AGGREGATE RANGING IN SIZE FROM 3/4 TO 2 1/2 INCHES. THE INFILL MATERIAL SHALL BE LEVEL WITH THE TOP OF CELLS
3. CONNECT EXISTING FENCE TO NEW FENCE. PROVIDE END FENCE POSTS AT CONNECTION LOCATIONS.

ESTIMATED QUANTITIES

DESCRIPTION	QTY	UNIT
NATIVE FILL MATERIAL	1 1020	CY
7' HIGH CHAIN LINK SECURITY FENCE	418	LF
12' WIDE CHAIN LINK GATE	1	EA
3/4" TO 2 1/2" AGGREGATE	5	CY
SIGN PANEL	4	EA
20' x 5' GEOWEB SECTION	6	EA

NOTES

1. NO CUT AND FILL FACTORS ARE APPLIED TO PROVIDED QUANTITIES.
2. QUANTITIES PROVIDED ARE FOR BECHTEL NEVADA ESTIMATING PURPOSES ONLY. ITEMS LISTED ARE NOT ALL INCLUSIVE.

REFERENCES

TITLE SHEET 02052-025-078-T1

AS-BUILT
Bechtel Nevada Date 4/08/03

GRAPHIC SCALE
0 10 20 40 60 FEET
1" = 20'
(CONTOUR INTERVAL = 1 FT)

/ Signature on File

NO	DATE	REVISION DESCRIPTION
1		INCORPORATED FCR 02.03, REVISED PER NEW SUVEY DATA AND ISSUED AS-BUILT 04/07/03
0		ISSUED FOR CONSTRUCTION 6/17/02

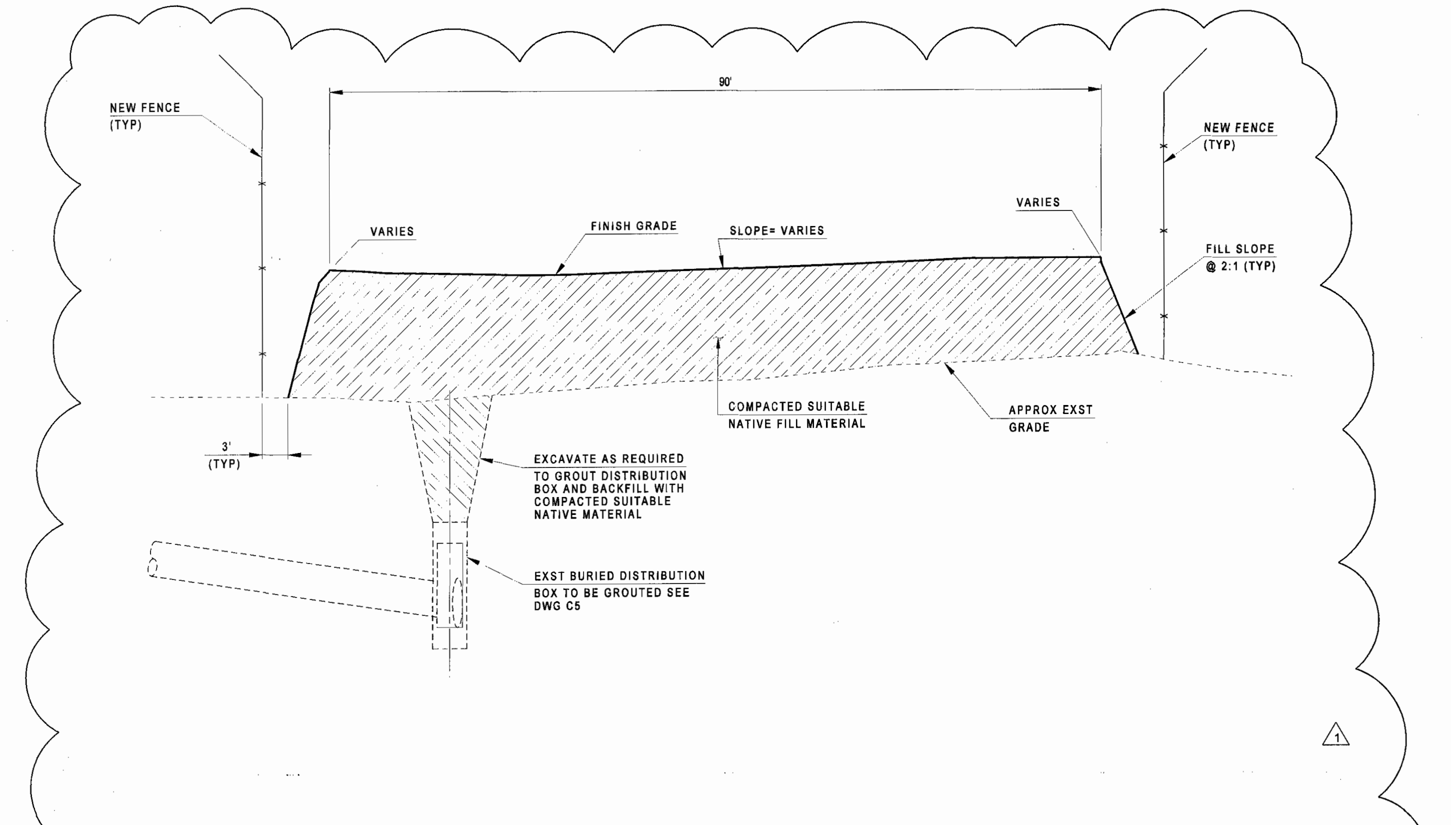
DESIGNED LRE — SUBMITTED BECHTEL NEVADA KEN SCHECHTER — 6/13/02
DRAWN JET
CHECKED JAS — USER GREGORY DOYLE — 6/13/02
ENVR N/A
PROJ ENGINEER RAO — NNSA PROJECT ENGINEER SABINE CURTIS — 6/13/02
BN PROJECT NUMBER N/A — ENGINEERING NUMBER 02052.A25 — PROJECT AUTH NO N/A — ACTIVITY CODE 5B04AC31

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
TEST CELL "C" LEACH FIELD
CAS 25-05-08
REVISED GRADING PLAN

National Nuclear Security Administration NEVADA SITE OFFICE
Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NV 89193-8521

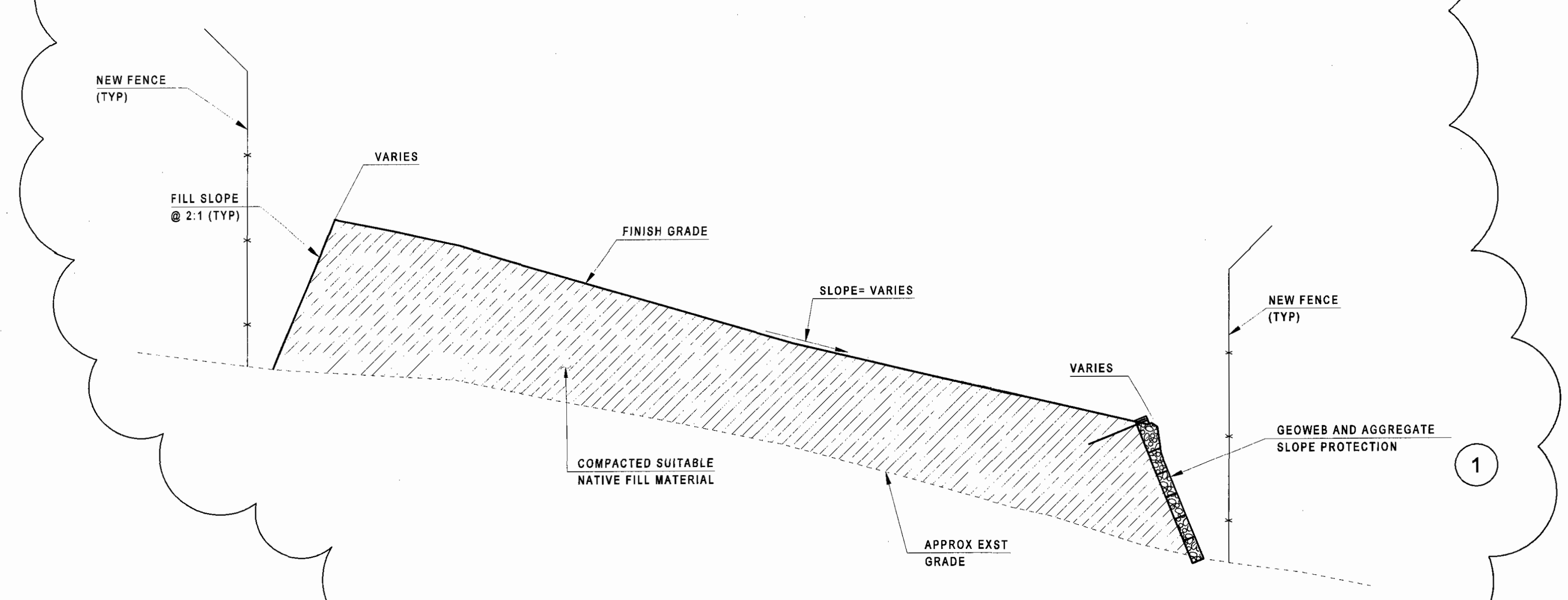
DRAWING NUMBER 02052-025-078-C6
SHEET OF REV 1

ORIGINAL MYLAR SIGNED BY:



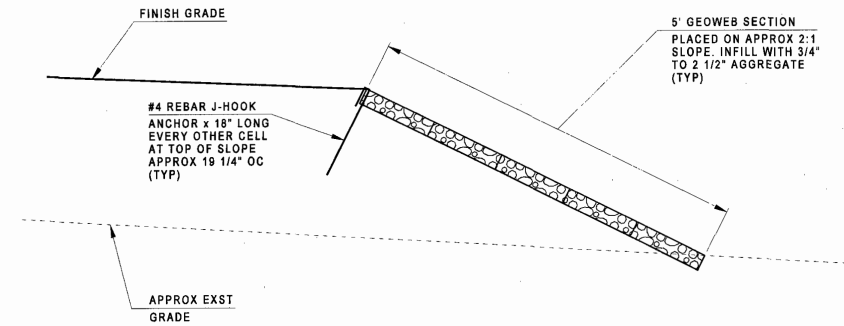
SECTION A C5

SCALE : HORIZ 1"= 10', VERT 1"= 2'



SECTION B C5

SCALE : HORZ 1"= 10', VERT 1"= 2'



DETAIL 1

NOT TO SCALE

AS-BUILT
Bechtel Nevada
Date 4/08/03

REFERENCES

TITLE SHEET	02052-025-078-T1

GRAPHIC SCALE
0 1 2 4 6 FEET
1" = 2'

GRAPHIC SCALE
0 10 20 30 FEET
1" = 10'

NO	DATE	REVISION DESCRIPTION	DESIGN	DRAWN	CHECK	ENVIR	BN PE	USER	NNSA
1		INCORPORATED DCN 01, REVISED SECTIONS AND ISSUED AS-BUILT 04/07/03	MSB	JET	CMK	—		/s/ Signature on file	STC
0		ISSUED FOR CONSTRUCTION 6/17/02							

DESIGNED LRE	SUBMITTED BECHTEL NEVADA KEN SCHECHTER		DATE 6/13/02
DRAWN JET	APPROVAL BLOCK		
CHECKED JAS	USER GREGORY DOYLE		DATE 6/13/02
ENVIR N/A			
PROJ ENGINEER RAO	NNSA PROJECT ENGINEER SABINE CURTIS		DATE 5/13/02
BN PROJECT NUMBER N/A	ENGINEERING NUMBER 02052.A25	PROJECT AUTH NO N/A	ACTIVITY CODE 5B04AC31

ORIGINAL MYLAR SIGNED BY:

NEVADA TEST SITE — AREA 25
CAU 262 REMEDIATION
TEST CELL "C" LEACH FIELD
CAS 25-05-08
SECTIONS & DETAIL

NNSA National Nuclear Security Administration NEVADA SITE OFFICE

Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NV 89193-8521

DRAWING NUMBER 02052-025-078-C7
SHEET OF REV 1

APPENDIX G

USE RESTRICTION DOCUMENTATION

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CAU Use Restriction Information

CAU Number/Description: CAU 262: Area 25 Septic Systems and UDP, Nevada Test Site, Nevada

Applicable CAS Numbers/Descriptions: CAS 25-02-06, Underground Storage Tank

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM coordinates, Zone 11, NAD 27):

CAS 25-02-06, Underground Storage Tank

NW tank corner:	4,073,319.88 m N	562,076.91 m E
NE tank corner:	4,073,319.36 m N	562,079.77 m E
SE tank corner:	4,073,304.24 m N	562,076.32 m E
SW tank corner:	4,073,304.85 m N	562,073.85 m E

Survey Date 02/13/2003 **Survey Method** Transit **Datum** NAD 1927 **Zone** UTM Zone 11

Site Monitoring Requirements: Visual Inspections

Monitoring Frequency (quarterly, annually?): Annually

If Monitoring Has Started, Indicate Last Completion Date: N/A

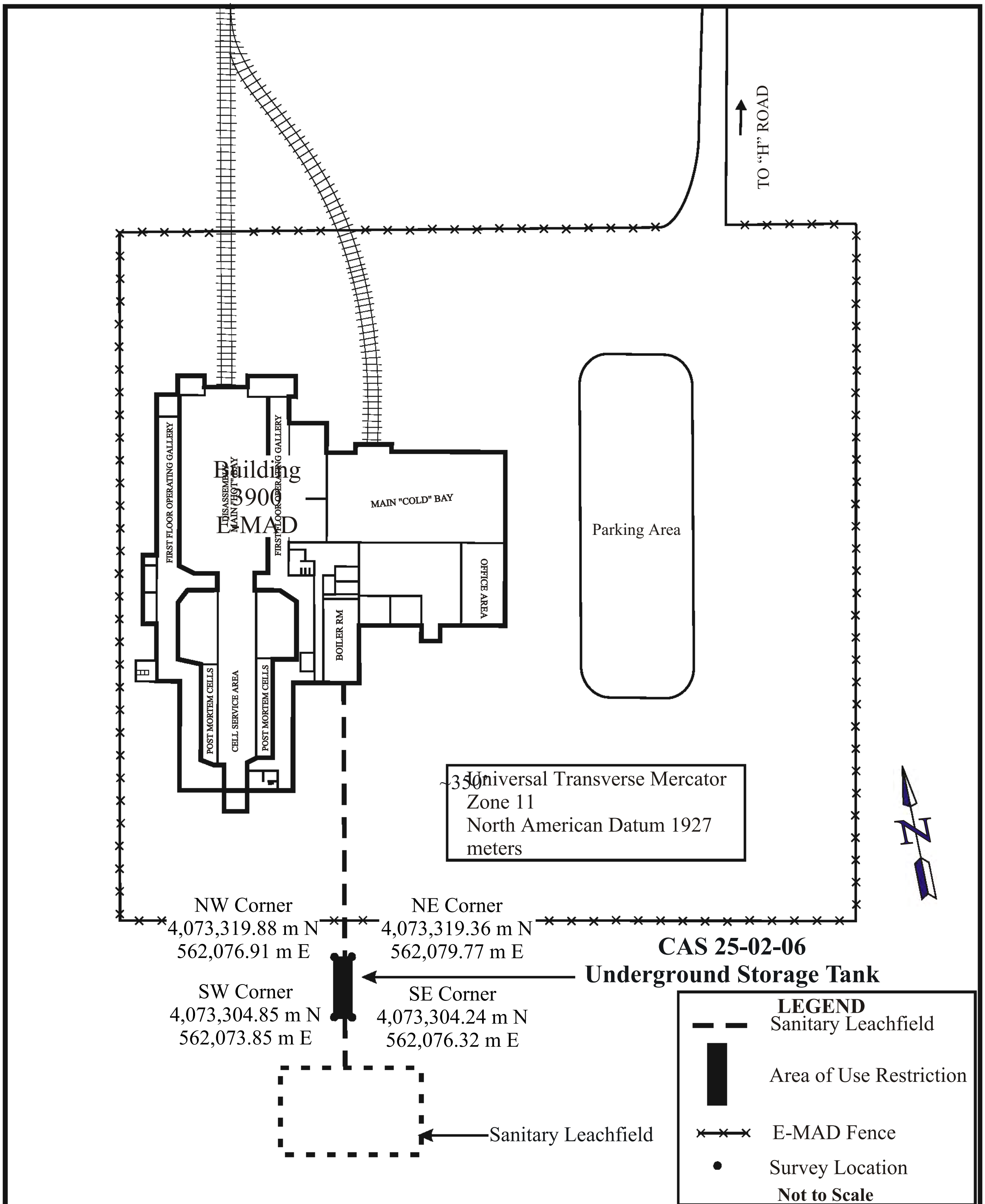
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, 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 Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the CAU 262 Closure Report (DOE/NV--897) for additional information on the condition of the site and any monitoring and/or inspection requirements. The "Underground Storage Tank" is actually the septic tank for the septic system.

Submitted By: SIGNATURE APPROVED **Date:** 5/6/03

Attachments: Site Figure showing survey locations and coordinates (CAS250206 UR.cdr).



USE RESTRICTION BOUNDARIES FOR CAU 262,
AREA 25 SEPTIC SYSTEMS AND UDP
CAS 25-02-06, UNDERGROUND STORAGE TANK

CAU Use Restriction Information

CAU Number/Description: CAU 262: Area 25 Septic Systems and UDP, Nevada Test Site, Nevada

Applicable CAS Numbers/Descriptions: CAS 25-05-03, Leachfield

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM coordinates, Zone 11, NAD 27):

CAS 25-05-03, Leachfield

NW fence corner:	4,074,083.46 m N	567,978.01 m E
NE fence corner:	4,074,093.86 m N	568,053.31 m E
SE fence corner:	4,074,020.84 m N	568,063.26 m E
SW fence corner:	4,074,010.41 m N	567,987.90 m E

Survey Date 02/19/2003 **Survey Method** Transit **Datum** NAD 1927 **Zone** UTM Zone 11

Site Monitoring Requirements: Visual Inspections

Monitoring Frequency (quarterly, annually?): Annually

If Monitoring Has Started, Indicate Last Completion Date: N/A

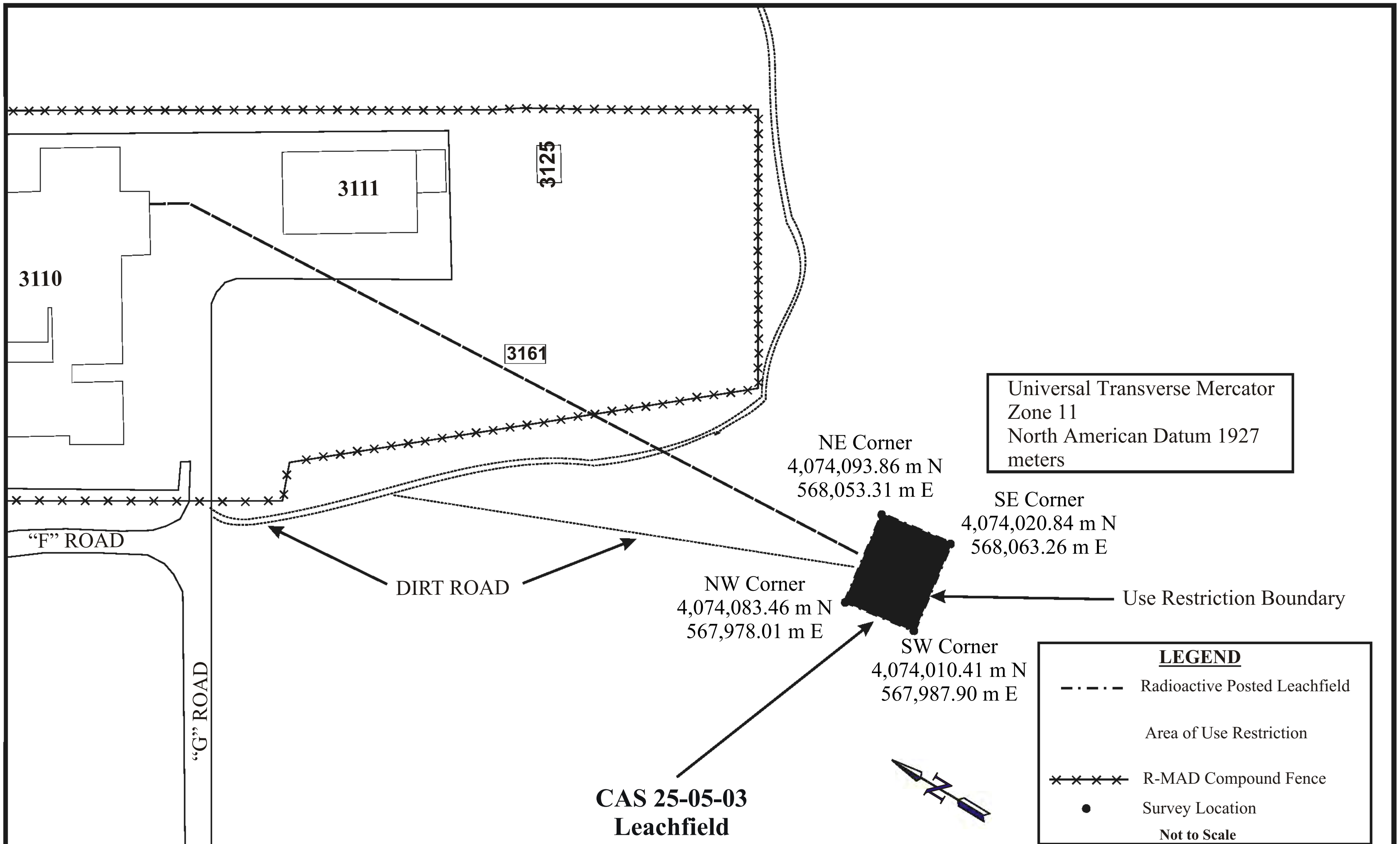
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, 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 Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the CAU 262 Closure Report (DOE/NV--897) for additional information on the condition of the site and any monitoring and/or inspection requirements.

Submitted By: SIGNATURE APPROVED **Date:** 5/6/03

Attachments: Site Figure showing survey locations and coordinates (CAS250503 UR.cdr).



USE RESTRICTION BOUNDARIES FOR CAU 262, AREA 25 SEPTIC SYSTEMS AND UDP
CAS 25-05-03, LEACHFIELD

CAU Use Restriction Information

CAU Number/Description: CAU 262: Area 25 Septic Systems and UDP, Nevada Test Site, Nevada

Applicable CAS Numbers/Descriptions: CAS 25-05-06, Leachfield

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM coordinates, Zone 11, NAD 27):

CAS 25-05-06, Leachfield

NW fence corner:	4,073,210.00 m N	561,978.86 m E
NE fence corner:	4,073,200.11 m N	562,040.77 m E
SE fence corner:	4,073,126.43 m N	562,028.05 m E
SW fence corner:	4,073,136.21 m N	561,965.51 m E

Survey Date 02/13/2003 **Survey Method** Transit **Datum** NAD 1927 **Zone** UTM Zone 11

Site Monitoring Requirements: Visual Inspections

Monitoring Frequency (quarterly, annually?): Annually

If Monitoring Has Started, Indicate Last Completion Date: N/A

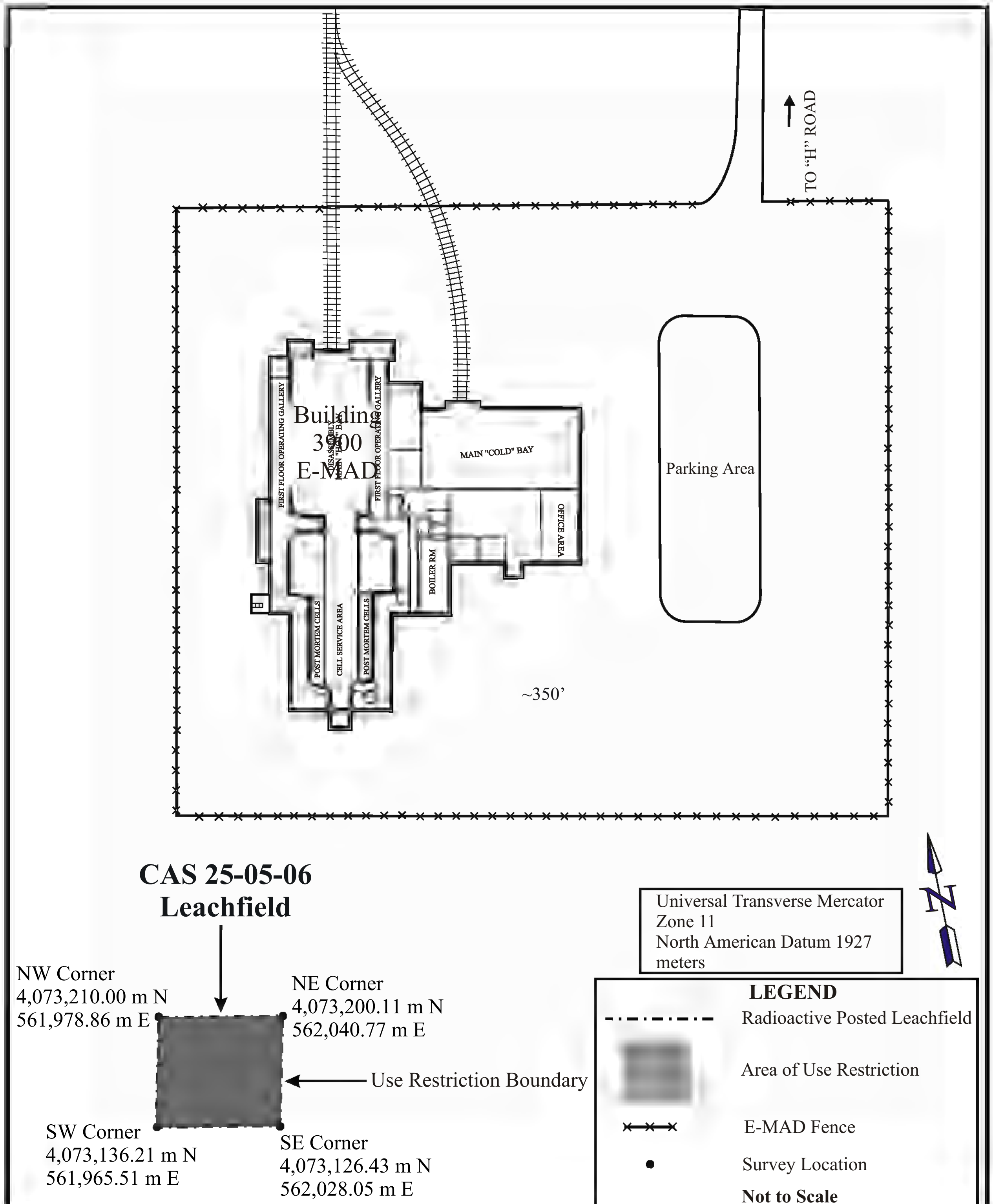
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, 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 Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the CAU 262 Closure Report (DOE/NV--897) for additional information on the condition of the site and any monitoring and/or inspection requirements.

Submitted By: SIGNATURE APPROVED **Date:** 5/6/03

Attachments: Site Figure showing survey locations and coordinates (CAS250506 UR.cdr).



USE RESTRICTION BOUNDARIES FOR CAU 262,
AREA 25 SEPTIC SYSTEMS AND UDP
CAS 25-05-06, LEACHFIELD

CAU Use Restriction Information

CAU Number/Description: CAU 262: Area 25 Septic Systems and UDP, Nevada Test Site, Nevada

Applicable CAS Numbers/Descriptions: CAS 25-05-08, Radioactive Leachfield

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM coordinates, Zone 11, NAD 27):

CAS 25-05-08, Radioactive Leachfield
Fence angle 1: 4,076,095.23 m N 564,599.61 m E
Fence angle 2: 4,076,110.82 m N 564,599.50 m E
Fence angle 3: 4,076,127.80 m N 564,612.21 m E
Fence angle 4: 4,076,128.42 m N 564,618.30 m E
Fence angle 5: 4,076,108.96 m N 564,640.24 m E
Fence angle 6: 4,076,081.06 m N 564,616.33 m E

Survey Date 03/19/2003 **Survey Method** Transit **Datum** NAD 1927 **Zone** UTM Zone 11

Site Monitoring Requirements: Visual Inspections

Monitoring Frequency (quarterly, annually?): Annually

If Monitoring Has Started, Indicate Last Completion Date: N/A

Use Restrictions

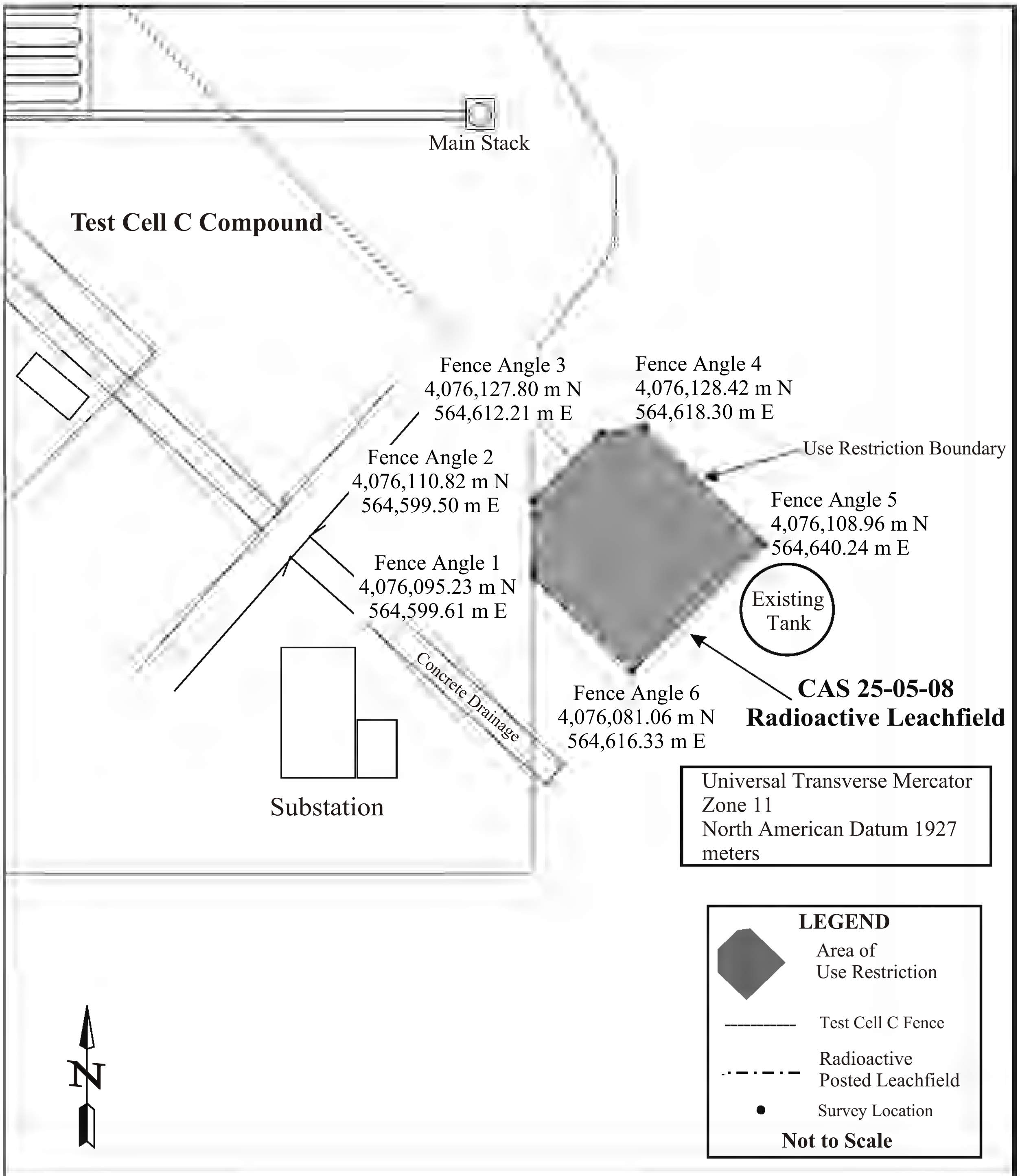
The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: The Radioactive Leachfield Use Restriction is delineated by an irregularly-shaped fence. Survey points were measured at those locations where an angle in the fence occurred. See the CAU 262 Closure Report (DOE/NV--897) for additional information on the condition of the site and any monitoring and/or inspection requirements.

Submitted By: SIGNATURE APPROVED **Date:** 5/6/03

Attachments: Site Figure showing survey locations and coordinates (CAS250508 UR.cdr).

OUND



USE RESTRICTION BOUNDARIES FOR CAU 262,
AREA 25 SEPTIC SYSTEMS AND UDP
CAS 25-05-08, RADIOACTIVE LEACHFIELD

APPENDIX H

SITE CLOSURE PHOTOGRAPHS

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PHOTOGRAPH LOG

PHOTOGRAPH NUMBER	DATE	DESCRIPTION
	CAS 25-05-05	
1	12/04/2002	Pumping septic tank
2	12/04/2002	Adding soil to solidification basin
3	01/08/2003	Septic tank top opened
4	01/08/2003	Mixing septic tank contents
5	01/22/2003	Removing septic tank contents
6	01/30/2003	Rinsing septic tank
7	03/05/2003	Septic tank filled with concrete
8	03/06/2003	Excavation backfilled
	CAS 25-05-12	
9	12/09/2002	Pumping septic tank
10	01/09/2003	Septic Tank Exposed
11	01/16/2003	Septic tank top opened
12	01/30/2003	Septic tank excavation
13	02/04/2003	Removing septic tank contents
14	03/05/2003	Septic tank filled with concrete
15	03/10/2003	Excavation backfilled
	CAS 25-04-07	
16	12/17/2002	Filling septic tank with grout
17	12/17/2002	Septic tank filled with grout
18	12/19/2002	Septic tank area backfilled
	CAS 25-04-06 System A	
19	12/17/2002	Septic tank and excavation filled with grout
20	12/19/2002	Septic tank area backfilled
	CAS 25-04-06 System B	
21	12/17/2002	Septic tank filled with grout

PHOTOGRAPH LOG (Continued)

PHOTOGRAPH NUMBER	DATE	DESCRIPTION
CAS 25-02-06		
22	01/27/2003	Septic tank exposed
23	01/30/2003	Filling septic tank with bulk cement
24	02/10/2003	Septic tank filled with grout
25	03/06/2003	Use Restriction signs
CAS 25-05-03		
26	01/28/2003	Distribution box filled with grout
27	01/28/2003	Installing soil cover
28	02/19/2003	Soil cover completed
29	02/20/2003	Installing erosion protection
30	02/24/2003	Installing rip rap
31	03/05/2003	Use Restriction signs
CAS 25-05-06		
32	03/05/2003	Use Restriction signs and chain link security fence
CAS 25-05-08		
33	02/04/2003	Filling monitoring tubes with grout
34	02/18/2003	Leachfield before closure activities
35	02/28/2003	Distribution box filled with grout
36	02/28/2003	Installing soil cover
37	03/17/2003	Installing erosion protection
38	04/10/2003	Use Restriction signs and chain link security fence
CAS 25-51-01		
39	06/19/2003	CAS location looking north
40	06/19/2003	CAS location looking south

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WARNING
UNDERGROUND
CONTAMINATION
NO EXCAVATION
AND / OR REMOVAL OF
MATERIAL IS PERMITTED
03/06/2003

25


01/28/2003

26

27

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WARNING
03/05/2003

31


WARNING
CAU 262 CAS 25-05-06
UNDERGROUND
CONTAMINATION
NO EXCAVATION
AND / OR REMOVAL OF
MATERIAL IS PERMITTED
RADIOACTIVE MATERIAL
03/05/2003

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03/17/2003

37


WARNING
CAU 262 CAS 25-05-08
UNDERGROUND
CONTAMINATION
NO EXCAVATION
AND / OR REMOVAL OF
MATERIAL IS PERMITTED
RADIOACTIVE MATERIAL
UNDERGROUND
RADIOACTIVE
MATERIAL
04/10/2003

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APPENDIX I

APPROVED RECORDS OF TECHNICAL CHANGE

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RECORD OF TECHNICAL CHANGE

Technical Change No. TCN-FY03-003 Page 1 of 2
Project/Job No. CAU 262 Date 10/21/2002
Project/Job Name Area 25 Septic Systems and Underground Discharge Point

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

Brad Jackson	Task Manager
(Name)	(Title)

1. Sections 2.1.2.2 and 2.1.2.4 of the Corrective Action Plan (CAP) discuss the construction of soil covers over the posted leachfields requiring a soil compaction of 90% of maximum density. This requires density tests to be done after each lift is emplaced. The technical change would require only a compaction performance standard be done to accomplish 90% compaction. This involves using a test plot of backfill material and determining the number of heavy equipment passes necessary to achieve 90% compaction. This eliminates the need to perform density tests after each lift is emplaced.

2. Section 2.1.2.2 and Drawing number 02052-025-078-C2 in the CAP indicate that Corrective Action Site 25-05-03 closure includes the replacement of the existing security fence. The current condition of the existing security fence is such that replacement is not necessary. Only minor repairs are required for the fence to meet specifications. Therefore the technical change is to repair the existing fence as necessary. Replacement of the fence is not needed.

3. Corrective Action Site 25-05-03 closure (Section 2.1.2.2 and Drawing number 02052-025-078-C3 of the CAP) calls for construction of erosion control in existing washes. The erosion control includes Class 150 rip rap. There is an existing stockpile of Class 300 rip rap nearby that was left over from CAU 143 closure. BN Engineering has approved the use of the Class 300 rip rap instead of the Class 150 rip rap. This will constitute a cost and time savings and utilize otherwise unused material. Use of the Class 300 rip rap will require an increase of the engineered depth of the emplaced rip rap from 12 inches to 24 inches.

The project time will be Unchanged .

Applicable Project-Specific Document(s):
Corrective Action Plan for Corrective Action 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada. DOE/NV-824

Technical Change No. TCN-FY03-003
Project/Job No. CAU 262
Project/Job Name Area 25 Septic Systems and Underground Discharge Point

Date 10/21/2002

Approved By: /s/ Signature on file Date 10/24/02
Project Manager
Industrial Sites Project

/s/ Signature on file Date 10-24-02
Division Director
Environmental Restoration Division

Change 1 disapprove do as proposed.
2 approve
3 approve.

Client Notified Yes___ No___ Date ___________
NDEP Concurrence Yes X No___ Date 10-31-02
NDEP Signature /s/ Signature on file
Contract Change Order Required Yes___ No______
Contract Change Order No. ___________

RECORD OF TECHNICAL CHANGE

Technical Change No. TCN-FY03-008

Project/Job No. CAU 262 Date 02/05/2003

Project/Job Name CAU 262: Area 25 Septic Systems and Underground Discharge Point

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

Brad Jackson	Bechtel Nevada Task Manager
(Name)	(Title)

Technical Change to CAU 262 Corrective Action Plan

1. pg. 7 / Table 1 / under 25-02-06 replace comment with the following:
"Liquids in tank will be solidified and the remaining void space backfilled with concrete".

2. pg. 12 / Section 2.1.1.3 / following the second sentence replace the remainder of the paragraph with the following text:
"The septic tank will be clean closed by opening the tank top to allow access to the tank interior so the contents of the tank can be removed. A waste characterization sample(s) will be collected and submitted for laboratory analysis of total petroleum hydrocarbons-diesel range organics (TPH-DRO), volatile organic compounds (VOCs) by the toxicity characterization leaching procedure (U.S. Environmental Protection Agency, 1996), and gross alpha/beta. Septic tank contents will be pumped, as feasible, placed in a lined basin, and solidified/absorbed using clean fill. Clean fill will be used to solidify any residual material within the tank and the solidified/absorbed material will be removed from the tank using a backhoe, or equivalent equipment. The tank interior will be pressure washed/steam cleaned and rinsed to remove any removable scale or residual material. A sample of the final rinse water will be collected from within the septic tank and analyzed for TPH full scan and gross alpha/beta radioactivity to verify clean closure of the tank. If analytical results of the final rinse water indicate residual contamination in excess of the COC action levels, additional cleaning and rinsing will be completed until acceptable analytical results are obtained. Upon receipt of analytical results showing the rinsate is below COC action levels NNSA will be notified. The rinsate remaining in the septic tank will be solidified in place using clean fill, and the remaining void space backfilled with concrete containing Type II Portland Cement or equivalent.

All waste removed from the septic tank will remain on site in the lined basin which is a designated Waste Accumulation Area (WAA). Waste characterization samples of the material in the basin will be collected and submitted for gross alpha/beta and gamma radioactivity analysis. After results for the waste characterization samples are received, the waste will be solidified and containerized, if necessary, and transported to an appropriate facility for disposal as determined by the analytical waste sample results."

3. pg. 13 / Section 2.1.1.4 / following the second sentence replace the remainder of the paragraph with the following text:
"The septic tank will be clean closed by opening the tank top to allow access to the tank interior so the contents of the tank can be removed. A waste characterization sample(s) will be collected and submitted for laboratory analysis of TPH-DRO and gross alpha/beta. Septic tank contents

will be pumped, as feasible, placed in a lined basin, and solidified/absorbed using clean fill. A characterization sample of the waste material removed from the tank will be collected and analyzed, and the waste will be disposed at an appropriate land disposal unit. Clean fill will be used to solidify any residual material within the tank and the solidified/absorbed material will be removed from the tank using a backhoe, or equivalent equipment. The tank interior will be pressure washed/steam cleaned and rinsed to remove any removable scale or residual material. A sample of the final rinse water will be collected from within the septic tank and analyzed for TPH full scan to verify clean closure of the tank. If analytical results of the final rinse water indicate residual contamination in excess of the COC action levels, additional cleaning and rinsing will be completed until acceptable analytical results are obtained. Upon receipt of analytical results showing the rinsate is below COC action levels NNSA will be notified. The rinsate remaining in the septic tank will be solidified in place using clean fill and the remaining void space backfilled with concrete containing Type II Portland Cement or equivalent.

All waste removed from the septic tank will remain in the lined basin which is a designated WAA. Waste characterization samples will be collected from the material in the basin and submitted for gross alpha/beta and gamma radioactivity analysis. After results for the waste characterization samples are received, the waste will be solidified and containerized, if necessary, and transported to an appropriate facility for disposal as determined by the analytical waste sample results."

4. pg. 14 / Section 2.1.2.1 first paragraph / following the third sentence replace the remainder of the paragraph with the following text:
"During fieldwork it was determined that the septic tank was constructed in place and no removable lid is present. Access to the septic tank interior will be through the existing four manholes in the top of the septic tank. The tank contents will be solidified in place by mixing the liquid/sludge with dry Portland Type II cement, or equivalent. After adding the cement to the tank, a wooden paddle will be used to thoroughly mix any potential liquids with the sludge and cement. The remaining void space within the septic tank will be backfilled with concrete or equivalent."

Justification

Due to the specific configuration of the septic tanks access to the tank contents is limited and it is not possible to mix and remove the TPH contaminated liquid and sludge by pumping as originally specified as in the approved CAP. This means that the septic tanks must be opened to provide access to the contents for removal, cleaning of the tanks and sampling.

Dry cement will be added to the CAS 25-02-06 septic tank through the existing manholes and mixed with the tank contents. The existing manholes provide sufficient access to the tank interior for solidification of liquid/sludge and backfilling the remaining void space. No removable tank lid is present, and therefore, there is no lid to remove, survey, and dispose, and no need to install a new reinforced tank cover.

Technical Change No. TCN-FY03-009
Project/Job No. CAU 262
Project/Job Name CAU 262: Area 25 Septic Systems and Underground Discharge Point

Date 02/03/2003

The project time will be Unchanged.

Applicable Project-Specific Document(s): Corrective Action Plan for Corrective Action 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada. DOE/NV--824

Approved By: /s/ Signature on file Date 2/11/03
Project Manager
Industrial Sites

/s/ Signature on file Date 2/11/03
Division Director
Environmental Restoration Division

Client Notified Yes X No ___ Date ______
NDEP Concurrence Yes X No ___ Date 2/11/03

NDEP Signature /s/ Signature on file
Contract Change Order Required Yes ___ No X
Contract Change Order No. N/A

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APPENDIX J

"A THROUGH K" EVALUATION*

* As presented and published in the approved Corrective Action Decision Document for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada, September 2001, NNSA/NV 744, Rev. 1. Las Vegas, NV.

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ACRONYMS AND ABBREVIATIONS

bgs	Below ground surface
CADD	Corrective Action Decision Document
CAS	Corrective Action Site(s)
CAU	Corrective Action Unit(s)
COC	Contaminant(s) of concern
DOE/NV	U.S. Department of Energy, Nevada Operation Office
E-MAD	Engine-Maintenance Assembly and Disassembly
ft	Foot (feet)
in.	Inch(es)
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
PAL	Preliminary action level(s)
PCB	Polychlorinated biphenyl(s)
R-MAD	Reactor-Maintenance Assembly and Disassembly
SNPO	Space Nuclear Propulsion Office
TPH-DRO	Total petroleum hydrocarbons-Diesel range organics
USGS	United States Geological Survey

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radionuclides and strontium-90. This will ensure complete removal of contaminated soil with concentrations exceeding PALs.

Contaminated material will be disposed of at an appropriate disposal facility. All excavated areas will be returned to surficial conditions compatible with on-site maintenance operations. Overburden soil along with additional clean fill will be used to backfill the excavations after removal of the contaminated soils. Clean borrow soil will be removed from a nearby location for placement in voids as necessary.

This CAS will be closed in accordance with NAC 445A (NAC, 1998b) as described in this section.

3.3.2.9 CAS 25-05-08 (Test Cell C Posted Leachfield)

Alternative 2 includes excavating and disposing of soil and debris with radionuclide concentrations above PALs or contaminated above free release criteria. This includes the entire leachfield, with additional 15-ft extensions on all four sides from surface grade down to a depth of 17.5 ft bgs. Alternative 2 also includes trenching to remove overburden soil to expose and remove the collection system piping and diversion box, both determined to be radiologically contaminated above free release criteria.

A visual determination will be made to ensure that debris (i.e., piping, diversion box, leachrock) has been removed. Verification soil samples will be collected and analyzed for gamma-emitting radionuclides and strontium-90. This will ensure complete removal of contaminated soil with concentrations exceeding PALs.

Contaminated material will be disposed of at an appropriate disposal facility. All excavated areas will be returned to surficial conditions compatible with on-site maintenance operations. Clean borrow soil will be removed from a nearby location for placement in voids as necessary.

This CAS will be closed in accordance with NAC 445A (NAC, 1998b) as described in this section.

3.3.3 Alternative 3 - Close in Place with Administrative Controls

Alternative 3 will utilize administrative controls to prevent inadvertent contact with COCs and contaminated media with activity exceeding the free release criteria. These controls would consist of use restrictions to minimize access and prevent unauthorized intrusive activities. The future use of the CAU would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP. This alternative does not apply to CASs 25-04-06 A and B, and 25-04-07. Additionally, this alternative does not apply to CAS 25-05-05 because of the potential for mixed waste.

These sites will be closed in accordance with NAC 445A (NAC, 1998b) as described in this section.

3.3.3.1 CAS 25-02-06 (E-MAD Complex Leachfield)

Alternative 3 includes closure in place of the septic tank contents. Free liquids will be solidified. After solidification is completed, the septic tank will be filled with an inert material and a concrete cover will be installed. The concrete cover will be reinforced with wire mesh/rebar. Administrative Controls would consist of use restrictions to prevent unauthorized intrusive activities and impose long-term maintenance requirements for the concrete cover. The future use of the CAS would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP. Additional measures under this alternative include removal of the existing septic tank cover with a backhoe and disposal in an appropriate landfill.

The combination of these measures will effectively prevent inadvertent intrusive activities by humans and native wildlife and mobilization of COCs.

The following evaluation of NAC 445A.227 (2) (a-k) (NAC, 1998b) supports the protection of groundwater from COCs at this CAS:

a. Depth to groundwater at the nearest well (J-11) is approximately 1,040 ft bgs (USGS, 1993). This well is located 1.8 mi southeast of E-MAD. Groundwater flow is generally to the southwest and may discharge at Ash Meadows (SNPO, 1970).

b. The distance to the nearest active water-supply well, Well J-12, is approximately 5.1 mi north of E-MAD (DOE/NV, 1996a). Well J-12 is primarily used to provide potable water for Area 25. Groundwater flow is generally to the southwest (Laczniak et al., 1996).

c. No soil is contaminated at this site.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, no driving force associated with precipitation is available to mobilize COCs vertically.

e. PCBs, TPH-DRO, and limited radionuclides are contained within the septic tank.

f. The contaminants are contained within the septic tank.

g. Presently, CAS 25-02-06 is located on a government-controlled facility. The NTS is a restricted area that is guarded on a 24-hour, 365-day per year basis; unauthorized personnel are not admitted to the facility. CAS 25-02-06 is contained within a restricted zone classified as the "Yucca Mountain Site Characterization Zone" (DOE/NV, 1998a) (i.e., non-residential).

h. There are no preferred routes of vertical and lateral migration because septic tank integrity has not been compromised.

i. See Section 2.3.1 for site-specific considerations.

j. The potential for a hazard related to fire, vapor, or explosion is nonexistent for the COCs at the site.

k. No other site-specific factors are known at this time.

Based on this evaluation, impacts to groundwater are not expected. Therefore, groundwater monitoring is not proposed for this site and is not considered an element of the alternatives.

3.3.3.2 CAS 25-05-12 (R-MAD Building 3126 Septic System)

Alternative 3 includes closure in place of the septic tank contents. Free liquids will be solidified. After solidification is completed, the septic tank will be filled with an inert material and a concrete cover will be installed. The concrete cover will be reinforced with wire mesh/rebar. Administrative controls would consist of use restrictions to prevent unauthorized intrusive activities and impose long-term maintenance requirements for the concrete cover. The future use of the CAS would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP. Additional measures under this alternative include removal of the existing septic tank cover with a backhoe and disposal in an appropriate landfill.

The combination of these measures will effectively prevent inadvertent intrusive activities by humans and native wildlife and mobilization of COCs.

The following evaluation of NAC 445A.227 (2) (a-k) (NAC, 1998b) supports the protection of groundwater from COCs at this CAS:

a. Depth to groundwater at the nearest well (J-11) is approximately 1,040 ft bgs (USGS, 1993). This well is located 3.3 mi southwest of R-MAD. Groundwater flow is generally to the southwest and may discharge at Ash Meadows (SNPO, 1970).

b. The distance to the nearest active water-supply well, Well J-12, is approximately 7 mi northwest of R-MAD (DOE/NV, 1996a). Well J-12 is primarily used to provide potable water for Area 25. Groundwater flow is generally to the southwest (Laczniak et al., 1996).

c. No soil is contaminated at this site.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, no driving force associated with precipitation is available to mobilize COCs vertically.

e. TPH-DRO and limited radionuclides are contained within the septic tank.

f. The contaminants are contained within the septic tank.

g. Presently, CAS 25-05-12 is located on a government-controlled facility. The NTS is a restricted area that is guarded on a 24-hour, 365-day per year basis; unauthorized personnel are not admitted to the facility. CAS 25-05-12 is contained within a restricted zone classified as a "Research Test and Experiment Zone." This zone is designated for small-scale research and development projects and demonstrations; pilot projects; outdoor tests; and experiments for development, quality assurance, or reliability of material and equipment under controlled conditions. This includes compatible nondefense research, development and testing projects, and activities (DOE/NV, 1998a).

h. There are no preferred routes of vertical and lateral migration because septic tank integrity has not been compromised.

i. See Section 2.3.6 for site-specific considerations.

j. The potential for a hazard related to fire, vapor, or explosion is nonexistent for the COCs at the site.

k. No other site-specific factors are known at this time.

Based on this evaluation, impacts to groundwater are not expected. Therefore, groundwater monitoring is not proposed for this site and is not considered an element of the alternatives.

3.3.3.3 CAS 25-05-03 (R-MAD Posted Leachfield)

Alternative 3 includes an engineered surface cap that will be constructed over the leachfield footprint and extended to the boundaries of the currently fenced area. Administrative controls will be implemented to restrict inadvertent contact with contaminated media within the leachfield and collection system piping. Administrative controls would consist of use restrictions to prevent unauthorized intrusive activities and impose long-term maintenance requirements for the surface cap. The future use of the CAS would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP.

The combination of these measures will effectively prevent inadvertent intrusive activities by humans and native wildlife and mobilization of COCs.

Additional measures under this alternative include grouting the distribution box and the monitoring tubes to the ground surface; and backfilling voids at the site which includes installed subsurface features consisting of three large vaults, the 55-gallon diversion drum, and the two valve boxes. Redirecting surface water run-on may be required to prevent localized flooding from impacting the surface cap.

The following evaluation of NAC 445A.227 (2) (a-k) (NAC, 1998b) supports the protection of groundwater from COCs at this CAS:

a. Depth to groundwater at the nearest well (J-11) is approximately 1,040 ft bgs (USGS, 1993). This well is located 3.3 mi southwest of R-MAD. Groundwater flow is generally to the southwest and may discharge at Ash Meadows (SNPO, 1970). Field screening and analytical data indicate that COCs are confined to the leachfield footprint primarily 0 to 10 ft below the base of the leachfield. This indicates minimal vertical migration has occurred in the past and with the removal of man-made driving forces, vertical migration will be negligible in the future.

b. The distance to the nearest active water-supply well, Well J-12, is approximately 7 mi northwest of R-MAD (DOE/NV, 1996a). Well J-12 is primarily used to provide potable water for Area 25. Groundwater flow is generally to the southwest (Laczniak et al., 1996).

c. The soil beneath the leachrock was a poorly sorted, silty-gravelly sand with abundant pebbles, some gravel, and a few cobbles. Geotechnical data were collected and the results are included in Appendix F of this CADD.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, no driving force associated with precipitation is available to mobilize COCs vertically.

e. The types of regulated substances released are arsenic, PCBs, TPH-DRO, and limited radionuclides. Downward migration of COCs is slowed by the following parameters:

- Volume of release - it is assumed that small volumes of COCs were released over a long period of time rather than a large volume over a short duration.
- Soil saturation - the soil tends to be very dry, especially near the surface and below the leachfield where the COCs are concentrated.
- Soil particle adsorption/desorption - PCB, petroleum hydrocarbons, and radionuclides tend to adsorb to the soil particles with little desorption as suggested by the limited vertical migration of COCs.

f. The lateral extent of contamination is defined by the leachfield boundaries based on reduced concentrations and the lack of contamination found in nearby sampling locations demonstrating minimal lateral mobility. Contaminant concentrations below the upper sampling horizons were significantly lower, demonstrating minimal vertical migration. The vertical extent of contamination is confined to 10 ft below the diversion drum (16 ft bgs) and 0 to 10 ft below the base of the leachfield based on field screening and analytical data.

g. Presently, CAS 25-05-03 is located on a government-controlled facility. The NTS is a restricted area that is guarded on a 24-hour, 365-day-per-year basis; unauthorized personnel are not admitted to the facility. CAS 25-05-03 is contained within a restricted use zone classified as a "Research Test and Experiment Zone." This zone is designated for small-scale research and development projects and demonstrations; pilot projects; outdoor tests; and experiments for development, quality assurance, or reliability of material and equipment under controlled conditions. This includes compatible nondefense research, development and testing projects, and activities (DOE/NV, 1998a).

h. Preferred routes of vertical and lateral migration are nonexistent since the sources have been eliminated and driving forces are not viable.

i. See Section 2.3.8 for site-specific considerations.

j. The potential for a hazard related to fire, vapor, or explosion is nonexistent for the COCs at the site.

k. No other site-specific factors are known at this time.

Based on this evaluation, impacts to groundwater are not expected. Therefore, groundwater monitoring is not proposed for this site and is not considered an element of the alternatives.

3.3.3.4 CAS 25-05-06 (E-MAD Posted Leachfield)

Under Alternative 3, administrative controls will be implemented to restrict inadvertent contact with subsurface contaminated media within the leachfield and collection system piping. Administrative controls would consist of use restrictions to prevent unauthorized intrusive activities. The future use of the CAS would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP.

Additional measures under this alternative include grouting the distribution box; cutting and grouting the monitoring tubes to the ground surface; and replacing the current leachfield fence with security fencing and appropriate signage. The remaining debris (monitoring tube sections and fencing) will be disposed of in an appropriate disposal facility.

The following evaluation of NAC 445A.227 (2) (a-k) (NAC, 1998b) supports the protection of groundwater from COCs at this CAS:

a. Depth to groundwater at the nearest well (J-11) is approximately 1,040 ft bgs (USGS, 1993). This well is located 1.8 mi southeast of E-MAD. Groundwater flow is generally to the southwest and may discharge at Ash Meadows (SNPO, 1970). Field screening and analytical data indicate that COCs are confined primarily within 0 to 8.8 ft below the base of the leachfield. This indicates minimal vertical migration has occurred in the past and, with the removal of man-made driving forces, vertical migration will be negligible in the future.

b. The distance to the nearest active water-supply well, Well J-12, is approximately 5.1 mi north of E-MAD (DOE/NV, 1996a). Well J-12 is primarily used to provide potable water for Area 25. Groundwater flow is generally to the southwest (Laczniak et al., 1996).

c. Lenses of sand and silt were present at some locations. The soil beneath the leachrock was a moderately sorted, silty sand with some gravel, and a few cobbles. Geotechnical data were collected and the results are included in Appendix F of this CADD.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, no driving force associated with precipitation is available to mobilize COCs vertically.

e. The types of regulated substances released are radionuclides. Downward migration of COCs is slowed by the following parameters:

- Volume of release - it is assumed that small volumes of COCs were released over a long period of time rather than a large volume over a short duration.
- Soil saturation - the soil tends to be very dry, especially near the surface and below the leachfield where the COCs are concentrated.
- Soil particle adsorption/desorption - radionuclides tend to adsorb to the soil particles with little desorption as suggested by the limited vertical migration of COCs.

f. The lateral extent of contamination is defined by the leachfield boundaries based on reduced concentrations and the lack of contamination found in nearby sampling locations demonstrating minimal lateral mobility. Contaminant concentrations below the upper sampling horizons were significantly lower, demonstrating minimal vertical migration. The vertical extent of contamination is primarily confined to 0 to 8.8 ft below the base of the leachfield based on field screening and analytical data.

g. Presently, CAS 25-05-06 is located on a government-controlled facility. The NTS is a restricted area that is guarded on a 24-hour, 365-day per year basis; unauthorized personnel are not admitted to the facility. CAS 25-05-06 is contained within a restricted zone classified as the "Yucca Mountain Site Characterization Zone" (DOE/NV, 1998a) (i.e., non-residential).

h. Preferred routes of vertical and lateral migration are nonexistent since the sources have been eliminated and driving forces are not viable.

i. See Section 2.3.9 for site-specific considerations.

j. The potential for a hazard related to fire, vapor, or explosion is nonexistent for the COCs at the site.

k. No other site-specific factors are known at this time.

Based on this evaluation, impacts to groundwater are not expected. Therefore, groundwater monitoring is not proposed for this site and is not considered an element of the alternatives.

3.3.3.5 CAS 25-05-08 (Test Cell C Posted Leachfield)

Alternative 3 includes an engineered surface cap that will be constructed over the leachfield footprint and extended 15 ft in the horizontal dimensions. Administrative controls will be implemented to restrict inadvertent contact with contaminated media within the leachfield and collection system piping. Administrative controls would consist of use restrictions to prevent unauthorized intrusive activities and impose long-term maintenance requirements for the surface cap. The future use of the CAS would be restricted from any activity that would alter or modify the containment control unless appropriate concurrence was obtained from NDEP.

The combination of these measures will effectively prevent inadvertent intrusive activities by humans and native wildlife and mobilization of COCs.

Additional measures under this alternative include grouting the distribution box and the monitoring tubes to the ground surface; and replacing the current leachfield fence with security fencing and appropriate signage. The remaining fencing will be disposed of in an appropriate disposal facility. Redirecting surface water run-on may be required to prevent localized flooding from impacting the surface cap.

The following evaluation of NAC 445A.227 (2) (a-k) (NAC, 1998b) supports the protection of groundwater from COCs at this CAS:

a. Depth to groundwater at the nearest well (J-11) is approximately 1,040 ft bgs (USGS, 1995). This well is located 3 mi southwest of Test Cell C. Groundwater flow is generally to the southwest and may discharge at Ash Meadows (SNPO, 1970). Field screening and analytical data indicate that COCs are confined primarily to within 0 to 10 ft below the base of the leachfield. This indicates minimal vertical migration has occurred in the past and, with the removal of man-made driving forces, vertical migration will be negligible in the future.

b. The distance to the nearest active water-supply well, Well J-12, is approximately 4.7 mi northwest of Test Cell C (DOE/NV, 1996a). Well J-12 is primarily used to provide potable water for Area 25. Groundwater flow is generally to the southwest (Laczniak et al., 1996).

c. The soil beneath the leachrock was a poorly sorted, silty-gravelly sand with abundant pebbles, some gravel, and a few cobbles. Geotechnical data were collected and the results are included in Appendix F of this CADD.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, no driving force associated with precipitation is available to mobilize COCs vertically.

e. The types of regulated substances released are radionuclides. Downward migration of COCs is slowed by the following parameters:

- Volume of release - it is assumed that small volumes of COCs were released over a long period of time rather than a large volume over a short duration.
- Soil saturation - the soil tends to be very dry, especially near the surface and below the leachfield where the COCs are concentrated.
- Soil particle adsorption/desorption - radionuclides tend to adsorb to the soil particles with little desorption as suggested by the limited vertical migration of COCs.

f. The lateral extent of contamination is defined by the leachfield boundaries based on reduced concentrations and the lack of contamination found in nearby sampling locations demonstrating minimal lateral mobility. Contaminant concentrations below the upper sampling horizons were significantly lower, demonstrating minimal vertical migration. The vertical extent of contamination is primarily confined to within 0 to 10 ft below the base of the leachfield based on field screening and analytical data.

g. Presently, CAS 25-05-08 is located on a government-controlled facility. The NTS is a restricted area that is guarded on a 24-hour, 365-day per year basis; unauthorized personnel are not admitted to the facility. CAS 25-05-08 is contained within a restricted use zone classified as a "Research Test and Experiment Zone." This zone is designated for small-scale research and development projects and demonstrations; pilot projects; outdoor tests; and experiments for development, quality assurance, or reliability of material and equipment under controlled conditions. This includes compatible nondefense research, development and testing projects, and activities (DOE/NV, 1998a).

h. Preferred routes of vertical and lateral migration are nonexistent since the sources have been eliminated and driving forces are not viable.

i. See Section 2.3.10 for site-specific considerations.

j. The potential for a hazard related to fire, vapor, or explosion is nonexistent for the COCs at the site.

k. No other site-specific factors are known at this time.

Based on this evaluation, impacts to groundwater are not expected. Therefore, groundwater monitoring is not proposed for this site and is not considered an element of the alternatives.

3.4 Evaluation and Comparison of Alternatives

Because NAC 444.818 (NAC, 1999) requires removal of septic tank contents, only Alternative 2 applies to CASs 25-04-06 A and B, and 25-04-07; therefore, an evaluation and comparison of alternatives is not required for these CASs. Only Alternative 2 applies to CAS 25-05-05 because the potential for mixed waste cannot be excluded until the contents are homogenized for removal and subsequent sampling.

The general corrective action standards and remedy selection decision factors described in Section 3.2 were used to conduct detailed and comparative analyses of each corrective action alternative. The advantages and disadvantages of each alternative were assessed to select preferred alternatives for CAU 262. Tables 3-1, 3-3, 3-5, and 3-7 present a summary of the detailed analysis of the alternatives for CASs 25-02-06, 25-05-12, 25-05-03, 25-05-06, and 25-05-08. Tables 3-2, 3-4, 3-6, and 3-8 present the comparative analysis of the alternatives for the same CASs. Cost summaries are provided in Appendix C.

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U.S. Department of Energy, Nevada Operations Office. 1996a. Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada, DOE/EIS 0243. Las Vegas, NV.

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Winograd, I.J., and W. Thordarson. 1975. Hydrologic and Hydrochemical Framework, South-Central Great Basin, Nevada-California, with Special Reference to the Nevada Test Site, U.S. Geological Survey Professional Paper 712C. Washington, DC: U.S. Government Printing Office.

APPENDIX K

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION DOCUMENT REVIEW SHEET

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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
DOCUMENT REVIEW SHEET

1. Document Title/Number Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada
2. Document Date May 2003
3. Revision Number 0
4. Originator/Organization BN
5. Responsible DOE/NV ERP Project Mgr. Janet Appenzeller-Wing/Sabine Curtis
6. Date Comments Due
7. Review Criteria
8. Reviewer/Organization/Phone No. John Wong, NDEP, 486-2866
9. Reviewer's Signature

10. Comment Number/ Location	11. Type[a]	12. Comment	13. Comment Response	14. Accept
General Comment	M	Provide the completed NEPA Checklist, referenced in Section 2.1, for review.	The NEPA Checklist will be submitted under a separate cover.	Y
1) Section 4.0, pages 14-17, Tables 1-2	M	Include results in Table 1, Waste Characterization Results, for alpha, beta, gamma, and any other analyses performed on samples, 250505-Waste-2, 250406B-Waste-1, and 250512-Waste-2.	The additions to Table 1 were made.	Y
2) Page 23, Section 3.0/ Appendix E	M	Waste quantities and descriptions specified in Section 3.0 need to be cross-referenced and clearly supported/documented in Appendix E; waste quantities are not presented in the Landfill Load Verification Forms or the Waste Travelers.	Solid Waste Tracking forms were included in Appendix E. These forms include the weight of each waste shipment. Waste volumes are not typically included on the Solid Waste Tracking forms, Landfill Access Registers, Load Verification Forms, or Waste Travelers. The waste volumes given in Section 3.0 are estimates based on field observations of the number of truck loads. A table describing generated waste was included in Section 3.0.	Y
3) Section 4.2.2, 4.2.4, page 27	M	Correct typographical errors pertaining to the CAS numbers within the text in each section.	Corrections were made.	Y

[a]Comment Types: M = Mandatory, S = Suggested

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
DOCUMENT REVIEW SHEET

Document Title/Number Closure Report for Corrective Action Unit 262: Area 25 Septic Systems and Underground Discharge Point, Nevada Test Site, Nevada   Revision Number 0

Reviewer/Organization John Wong, NDEP, 486-2866

10. Comment Number/ Location	11. Type[a]	12. Comment	13. Comment Response	14 Accept
4) Section 5.2, page 30	M	Define specific post-closure monitoring (PCM) activities/inspection items for each CAS where PCM applies. Establish an annual date that such activities will be conducted.	Change was made to include a section for each CAS requiring post-closure monitoring. The first Post-Closure Monitoring report is typically due approximately one year after NDEP approves the final CAU 262 Closure Report. Proposed dates for inspections and the monitoring report will be included in the CR.	Y
5) Appendix D	M	Provide the CAS number associated with each radiological survey performed.	A table was added to Appendix D which identifies the CAS associated with each radiological survey report.	Y
6) Page H-1, Appendix H	M	Correct the typographical error for CAS 25-04-07 (recorded as 25-05-07). Also, although no further action was the selected closure alternative for CAS 25-51-01, it may be appropriate to include a photograph of the site location (stake) for completeness and so the CAS can be accounted for.	The typographical error was corrected. No stake is present at CAS 25-51-01. However, photographs of the CAS 25-51-01 location were added to Appendix H.	Y
7) Appendix J	M	Confirm that this Appendix is complete; text appears to be missing from the initial page in the Appendix; ensure that an A-K analysis (NAC 445A.227) is presented for all applicable CASs.	This Appendix was taken from Section 3.0 of the Corrective Action Decision Document (CADD) for CAU 262. Reference to the CADD is provided on page 29 and the Appendix J title page of the Closure Report. Only that portion of Section 3.0 of the CADD that was relevant to the closure was included in the Appendix. That portion includes the A-K analyses supporting the closure in place alternative for the CASs that were closed in place. Because Section 3.0 is from a previously published document, the Section can not be changed.	Y

[a]Comment Types: M = Mandatory, S = Suggested.

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