

Nevada
Environmental
Restoration
Project

DOE/NV--1459



Corrective Action Decision Document/Closure Report for Corrective Action Unit 561: Waste Disposal Areas Nevada National Security Site, Nevada

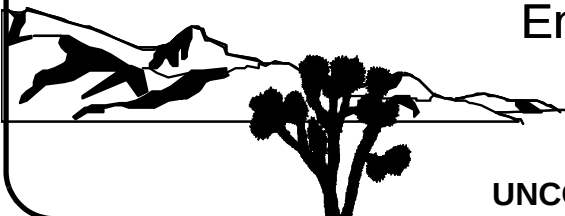
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**CORRECTIVE ACTION DECISION DOCUMENT/
CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT 561:
WASTE DISPOSAL AREAS
NEVADA NATIONAL SECURITY SITE, NEVADA**

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

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**CORRECTIVE ACTION DECISION DOCUMENT/CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT 561:
WASTE DISPOSAL AREAS
NEVADA NATIONAL SECURITY SITE, NEVADA**

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Table of Contents

List of Figures	x
List of Tables	xiii
List of Acronyms and Abbreviations	xix
Executive Summary	ES-1
1.0 Introduction	1
1.1 Purpose	1
1.2 Scope	5
1.3 CADD/CR Contents	6
1.3.1 Applicable Programmatic Plans and Documents	7
1.3.2 Data Quality Assessment Summary	7
2.0 Corrective Action Investigation Summary	8
2.1 Investigation Activities	8
2.1.1 Waste Dump (CAS 01-19-01)	10
2.1.1.1 Radiological Survey	10
2.1.1.2 Geophysical Survey	10
2.1.1.3 Visual Inspection	10
2.1.1.4 Sample Collection	11
2.1.1.5 Conceptual Site Model Validation	11
2.1.2 Waste Dump and Burn Area (CAS 02-08-02)	11
2.1.2.1 Radiological Survey	12
2.1.2.2 Geophysical Survey	12
2.1.2.3 Visual Inspection	12
2.1.2.4 Sample Collection	12
2.1.2.5 Conceptual Site Model Validation	13
2.1.3 Debris Pile (CAS 03-19-02)	14
2.1.3.1 Radiological Survey	14
2.1.3.2 Visual Inspection	14
2.1.3.3 Sample Collection	14
2.1.3.4 Conceptual Site Model Validation	15
2.1.4 Radioactive Gravel Pile (CAS 05-62-01)	15
2.1.4.1 Radiological Survey	15
2.1.4.2 Visual Inspection	15
2.1.4.3 Field Screening	16
2.1.4.4 Sample Collection	16
2.1.4.5 Conceptual Site Model Validation	16
2.1.5 Radioactive Waste Dump (CAS 12-23-09)	16
2.1.5.1 Radiological Survey	17
2.1.5.2 Geophysical Survey	17
2.1.5.3 Visual Inspection	17

Table of Contents (Continued)

	2.1.5.4	Sample Collection	17
	2.1.5.5	Conceptual Site Model Validation	17
2.1.6		Buried Waste Disposal Site (CAS 22-19-06)	18
	2.1.6.1	Geophysical Survey	18
	2.1.6.2	Visual Inspection	18
	2.1.6.3	Sample Collection	18
	2.1.6.4	Conceptual Site Model Validation	19
2.1.7		Waste Disposal Trenches (CAS 23-21-04)	19
	2.1.7.1	Geophysical Survey	19
	2.1.7.2	Visual Inspection	19
	2.1.7.3	Sample Collection	20
	2.1.7.4	Conceptual Site Model Validation	21
2.1.8		Waste Dump (CAS 25-08-02)	22
	2.1.8.1	Radiological Survey	22
	2.1.8.2	Visual Inspection	22
	2.1.8.3	Sample Collection	22
	2.1.8.4	Conceptual Site Model Validation	23
2.1.9		Radioactive Waste Dump (CAS 25-23-21)	23
	2.1.9.1	Radiological Survey	23
	2.1.9.2	Geophysical Survey	24
	2.1.9.3	Visual Inspection	24
	2.1.9.4	Field Screening	24
	2.1.9.5	Sample Collection	24
	2.1.9.6	Conceptual Site Model Validation	26
2.1.10		Hydrocarbon Stains and Trench (CAS 25-25-19)	26
	2.1.10.1	Radiological Survey	26
	2.1.10.2	Geophysical Survey	26
	2.1.10.3	Visual Inspection	26
	2.1.10.4	Sample Collection	27
	2.1.10.5	Conceptual Site Model Validation	28
2.2		Results	28
	2.2.1	Summary of Analytical Data	28
	2.2.1.1	CAS 01-19-01, Waste Dump	28
	2.2.1.2	CAS 02-08-02, Waste Dump and Burn Area	29
	2.2.1.2.1	Waste Dump Environmental Sample Results	29
	2.2.1.2.2	Burn Area Environmental Sample Results	30
	2.2.1.3	CAS 03-19-02, Debris Pile	30
	2.2.1.4	CAS 05-62-01, Radioactive Gravel Pile	30
	2.2.1.5	CAS 12-23-09, Radioactive Waste Dump	33

Table of Contents (Continued)

	2.2.1.6	CAS 22-19-06, Buried Waste Disposal Site	33
	2.2.1.7	CAS 23-21-04, Waste Disposal Trenches	33
	2.2.1.8	CAS 25-08-02, Waste Dump	35
	2.2.1.9	CAS 25-23-21, Radioactive Waste Dump	37
	2.2.1.10	CAS 25-25-19, Hydrocarbon Stains and Trench	37
	2.2.2	Data Assessment Summary	39
2.3		Justification for No Further Action	40
	2.3.1	Final Action Levels	41
3.0		Recommendation	43
4.0		References	44

Appendix A - Corrective Action Investigation Results

A.1.0		Introduction	A-1
	A.1.1	Project Objectives	A-3
	A.1.2	Content	A-3
A.2.0		Investigation Overview	A-4
	A.2.1	Sample Locations	A-5
	A.2.2	Investigation Activities	A-5
		A.2.2.1 Radiological Surveys	A-6
		A.2.2.2 Geophysical Surveys	A-6
		A.2.2.3 Field Screening	A-6
		A.2.2.4 Surface and Subsurface Soil Sampling	A-7
		A.2.2.5 Waste Characterization Sampling	A-7
	A.2.3	Laboratory Analytical Information	A-8
	A.2.4	Comparison to Action Levels	A-9
A.3.0		CAS 01-19-01, Waste Dump	A-11
	A.3.1	Corrective Action Investigation	A-11
		A.3.1.1 Radiological Surveys	A-11
		A.3.1.2 Geophysical Surveys	A-11
		A.3.1.3 Visual Inspections	A-11
		A.3.1.4 Sample Collection	A-13
		A.3.1.5 Deviations	A-14
	A.3.2	Investigation Results	A-15
		A.3.2.1 Volatile Organic Compounds	A-15
		A.3.2.2 Semivolatile Organic Compounds	A-15
		A.3.2.3 Total Petroleum Hydrocarbons	A-15

Table of Contents (Continued)

	A.3.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-16
	A.3.2.5	Polychlorinated Biphenyls	A-17
	A.3.2.6	Gamma-Emitting Radionuclides	A-17
A.3.3		Nature and Extent of Contamination	A-17
A.3.4		Revised Conceptual Site Model	A-17
A.4.0		CAS 02-08-02, Waste Dump and Burn Area	A-18
A.4.1		Corrective Action Investigation	A-18
	A.4.1.1	Radiological Surveys	A-18
	A.4.1.2	Geophysical Surveys	A-18
	A.4.1.3	Visual Inspections	A-27
	A.4.1.4	Sample Collection	A-27
	A.4.1.5	Deviations	A-30
A.4.2		Investigation Results	A-30
	A.4.2.1	Volatile Organic Compounds	A-30
	A.4.2.2	Semivolatile Organic Compounds	A-31
	A.4.2.3	Total Petroleum Hydrocarbons	A-31
	A.4.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-35
	A.4.2.5	Polychlorinated Biphenyls	A-35
	A.4.2.6	Dioxins	A-35
	A.4.2.7	Gamma-Emitting Radionuclides	A-35
A.4.3		Nature and Extent of Contamination	A-35
A.4.4		Revised Conceptual Site Model	A-41
A.5.0		CAS 03-19-02, Debris Pile	A-42
A.5.1		Corrective Action Investigation	A-42
	A.5.1.1	Radiological Surveys	A-42
	A.5.1.2	Visual Inspections	A-44
	A.5.1.3	Sample Collection	A-44
	A.5.1.4	Deviations	A-45
A.5.2		Investigation Results	A-45
	A.5.2.1	Gamma-Emitting Radionuclides	A-45
	A.5.2.2	Potential Source Material	A-46
A.5.3		Nature and Extent of Contamination	A-47
A.5.4		Revised Conceptual Site Model	A-47
A.6.0		CAS 05-62-01, Radioactive Gravel Pile	A-48
A.6.1		Corrective Action Investigation	A-48
	A.6.1.1	Field Screening	A-48
	A.6.1.2	Radiological Surveys	A-48
	A.6.1.3	Visual Inspections	A-50

Table of Contents (Continued)

	A.6.1.4	Sample Collection	A-50
	A.6.1.5	Deviations	A-51
A.6.2		Investigation Results	A-51
	A.6.2.1	Gamma-Emitting Radionuclides	A-52
	A.6.2.2	Plutonium and Uranium Isotopes, and Strontium-90	A-53
A.6.3		Nature and Extent of Contamination	A-53
A.6.4		Revised Conceptual Site Model	A-53
A.7.0		CAS 12-23-09, Radioactive Waste Dump	A-54
A.7.1		Corrective Action Investigation	A-54
	A.7.1.1	Radiological Surveys	A-54
	A.7.1.2	Geophysical Surveys	A-54
	A.7.1.3	Visual Inspections	A-57
	A.7.1.4	Sample Collection	A-57
	A.7.1.5	Deviations	A-57
A.7.2		Investigation Results	A-57
	A.7.2.1	Volatile Organic Compounds	A-58
	A.7.2.2	Semivolatile Organic Compounds	A-58
	A.7.2.3	Total Petroleum Hydrocarbons	A-60
	A.7.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-60
	A.7.2.5	Polychlorinated Biphenyls	A-62
	A.7.2.6	Gamma-Emitting Radionuclides	A-62
A.7.3		Nature and Extent of Contamination	A-62
A.7.4		Revised Conceptual Site Model	A-62
A.8.0		CAS 22-19-06, Buried Waste Disposal Site	A-64
A.8.1		Corrective Action Investigation	A-64
	A.8.1.1	Geophysical Surveys	A-65
	A.8.1.2	Visual Inspections	A-65
	A.8.1.3	Sample Collection	A-65
	A.8.1.4	Deviations	A-67
A.8.2		Investigation Results	A-67
	A.8.2.1	Volatile Organic Compounds	A-68
	A.8.2.2	Semivolatile Organic Compounds	A-68
	A.8.2.3	Total Petroleum Hydrocarbons	A-68
	A.8.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-69
	A.8.2.5	Polychlorinated Biphenyls	A-70
	A.8.2.6	Gamma-Emitting Radionuclides	A-70
A.8.3		Nature and Extent of Contamination	A-70
A.8.4		Revised Conceptual Site Model	A-70

Table of Contents (Continued)

A.9.0	CAS 23-21-04, Waste Disposal Trenches	A-71
A.9.1	Corrective Action Investigation	A-71
A.9.1.1	Geophysical Surveys	A-71
A.9.1.2	Visual Inspections	A-71
A.9.1.3	Sample Collection	A-75
A.9.1.4	Deviations	A-78
A.9.2	Investigation Results	A-78
A.9.2.1	Volatile Organic Compounds	A-79
A.9.2.2	Semivolatile Organic Compounds	A-79
A.9.2.3	Total Petroleum Hydrocarbons	A-80
A.9.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-80
A.9.2.5	Polychlorinated Biphenyls	A-81
A.9.2.6	Gamma-Emitting Radionuclides	A-81
A.9.3	Nature and Extent of Contamination	A-86
A.9.4	Revised Conceptual Site Model	A-86
A.10.0	CAS 25-08-02, Waste Dump	A-87
A.10.1	Corrective Action Investigation	A-87
A.10.1.1	Radiological Surveys	A-87
A.10.1.2	Visual Inspections	A-87
A.10.1.3	Sample Collection	A-90
A.10.1.4	Deviations	A-92
A.10.2	Investigation Results	A-92
A.10.2.1	Volatile Organic Compounds	A-93
A.10.2.2	Semivolatile Organic Compounds	A-93
A.10.2.3	Total Petroleum Hydrocarbons	A-94
A.10.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-94
A.10.2.5	Polychlorinated Biphenyls	A-97
A.10.2.6	Gamma-Emitting Radionuclides	A-97
A.10.3	Nature and Extent of Contamination	A-97
A.10.4	Revised Conceptual Site Model	A-98
A.11.0	CAS 25-23-21, Radioactive Waste Dump	A-99
A.11.1	Corrective Action Investigation	A-99
A.11.1.1	Field Screening	A-99
A.11.1.2	Radiological Surveys	A-99
A.11.1.3	Geophysical Surveys	A-106
A.11.1.4	Visual Inspections	A-106
A.11.1.5	Sample Collection	A-107
A.11.1.6	Deviations	A-108

Table of Contents (Continued)

A.11.2	Investigation Results	A-108
A.11.2.1	Volatile Organic Compounds	A-109
A.11.2.2	Semivolatile Organic Compounds	A-109
A.11.2.3	Total Petroleum Hydrocarbons	A-111
A.11.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-111
A.11.2.5	Polychlorinated Biphenyls	A-115
A.11.2.6	Gamma-Emitting Radionuclides	A-115
A.11.2.7	Potential Source Material	A-118
A.11.3	Nature and Extent of Contamination	A-119
A.11.4	Revised Conceptual Site Model	A-119
A.12.0	CAS 25-25-19, Hydrocarbon Stains and Trench	A-120
A.12.1	Corrective Action Investigation	A-120
A.12.1.1	Radiological Surveys	A-120
A.12.1.2	Geophysical Surveys	A-120
A.12.1.3	Visual Inspections	A-120
A.12.1.4	Sample Collection	A-123
A.12.1.5	Deviations	A-126
A.12.2	Investigation Results	A-126
A.12.2.1	Volatile Organic Compounds	A-126
A.12.2.2	Semivolatile Organic Compounds	A-126
A.12.2.3	Total Petroleum Hydrocarbons	A-127
A.12.2.4	RCRA Metals, Beryllium, and Hexavalent Chromium	A-128
A.12.2.5	Polychlorinated Biphenyls	A-128
A.12.2.6	Gamma-Emitting Radionuclides	A-128
A.12.3	Nature and Extent of Contamination	A-131
A.12.4	Revised Conceptual Site Model	A-131
A.13.0	Waste Management	A-133
A.13.1	Waste Minimization	A-133
A.13.2	Waste Generation	A-133
A.13.2.1	Industrial Waste	A-134
A.13.2.2	Hydrocarbon-Impacted Waste	A-137
A.13.2.3	Low-Level Radioactive Waste	A-137
A.13.2.4	Recyclable Materials	A-137
A.13.3	Waste Characterization and Disposal	A-138
A.13.3.1	CAS 02-08-02, Waste Dump and Burn Area	A-138
A.13.3.2	CAS 23-21-04, Waste Disposal Trenches	A-139
A.13.3.3	CAS 25-08-02, Waste Dump	A-139
A.13.3.4	CAS 25-23-21, Radioactive Waste Dump	A-141
A.13.3.5	CAS 25-25-19, Hydrocarbon Stains and Trench	A-143

Table of Contents (Continued)

A.14.0	Quality Assurance	A-145
A.14.1	Data Validation	A-145
A.14.1.1	Tier I Evaluation	A-145
A.14.1.2	Tier II Evaluation.....	A-146
A.14.1.3	Tier III Evaluation	A-148
A.14.2	Field QC Samples	A-149
A.14.2.1	Laboratory QC Samples.....	A-150
A.14.3	Field Discrepancies	A-150
A.14.4	Laboratory Nonconformances	A-150
A.15.0	Summary	A-151
A.16.0	References	A-154

Appendix B - Data Assessment

B.1.0	Data Assessment	B-1
B.1.1	Review DQOs and Sampling Design.....	B-2
B.1.1.1	Decision I.....	B-2
B.1.1.1.1	DQO Provisions To Limit False Negative Decision Error	B-2
B.1.1.1.2	DQO Provisions To Limit False Positive Decision Error.....	B-10
B.1.1.2	Decision II	B-10
B.1.1.2.1	DQO Provisions To Limit False Negative Decision Error	B-11
B.1.1.2.2	DQO Provisions To Limit False Positive Decision Error.....	B-13
B.1.1.3	Sampling Design	B-14
B.1.2	Conduct a Preliminary Data Review	B-14
B.1.3	Select the Test and Identify Key Assumptions	B-14
B.1.4	Verify the Assumptions	B-15
B.1.4.1	Other DQO Commitments.....	B-16
B.1.5	Draw Conclusions from the Data.....	B-17
B.1.5.1	Decision Rules for Decision I	B-17
B.1.5.2	Decision Rules for Decision II.....	B-18
B.2.0	References	B-19

Table of Contents (Continued)

Appendix C - Risk Assessment

C.1.0	Risk Assessment	C-1
C.1.1	A. Scenario	C-1
C.1.2	B. Site Assessment	C-5
C.1.3	C. Site Classification and Initial Response Action	C-11
C.1.4	D. Development of Tier 1 Lookup Table of RBSLs	C-11
C.1.5	E. Exposure Pathway Evaluation	C-12
C.1.6	F. Comparison of Site Conditions with Tier 1 RBSLs	C-12
C.1.7	G. Evaluation of Tier 1 Results	C-12
C.1.8	H. Tier 1 Remedial Action Evaluation	C-13
C.1.9	I. Tier 2 and Tier 3 Evaluation	C-14
C.2.0	Recommendations	C-15
C.3.0	References	C-17

Appendix D - Closure Activity Summary

D.1.0	Closure Activity Summary	D-1
D.1.1	CAS 02-08-02 Closure Activities	D-1
D.1.2	CAS 23-21-04 Closure Activities	D-4
D.1.3	CAS 25-08-02 Closure Activities	D-5
D.1.4	CAS 25-23-21 Closure Activities	D-9
D.1.5	CAS 25-25-19 Closure Activities	D-12
D.2.0	References	D-14

Attachment D-1 - Use Restriction

Appendix E - Sample Location Coordinates

E.1.0	Sample Location Coordinates	E-1
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Appendix F - Waste Disposition Documents

Appendix G - Nevada Division of Environmental Protection Comments

List of Figures

<i>Number</i>	<i>Title</i>	<i>Page</i>
1-1	Nevada National Security Site.	2
1-2	CAU 561, CAS Location Map	3
A.3-1	Sample Locations at CAS 01-19-01, Waste Dump.....	A-12
A.3-2	Building Foundation with Red Bricks at CAS 01-19-01, Waste Dump	A-14
A.4-1	Sample Locations at CAS 02-08-02, Waste Dump and Burn Area	A-19
A.4-2	Geophysical Survey Showing Sample Locations at the Burn Area CAS 02-08-02, Waste Dump and Burn Area	A-26
A.4-3	Crushed 30-Gal Grease Drum Discovered in Waste Pile CAS 02-08-02, Waste Dump and Burn Area	A-27
A.5-1	Sample Locations at CAS 03-19-02, Debris Pile	A-43
A.5-2	Sample Location C02 at CAS 03-19-02, Debris Pile	A-44
A.6-1	Sample Locations at CAS 05-62-01, Radioactive Gravel Pile	A-49
A.6-2	Gravel Pile Showing Area of Elevated Radioactivity CAS 05-62-01, Radioactive Gravel Pile.	A-51
A.7-1	Sample Locations at CAS 12-23-09, Radioactive Waste Dump.....	A-55
A.7-2	Sample Location E07 at Soil Mound CAS 12-23-09, Radioactive Waste Dump	A-56
A.8-1	Sample Locations at CAS 22-19-06, Buried Waste Disposal Site	A-66
A.8-2	Metal Conduit Pipe at CAS 22-19-06, Buried Waste Disposal Site	A-67
A.9-1	Sample Locations at CAS 23-21-04, Waste Disposal Trenches	A-72
A.9-2	Debris in Trench 6, Pre-excavation CAS 23-21-04, Waste Disposal Trenches	A-75

List of Figures (Continued)

<i>Number</i>	<i>Title</i>	<i>Page</i>
A.9-3	Debris in Trench 3, Post-excavation CAS 23-21-04, Waste Disposal Trenches	A-76
A.10-1	Sample Locations at CAS 25-08-02, Waste Dump.....	A-88
A.10-2	Concrete-like Pile at CAS 25-08-02, Waste Dump.....	A-91
A.10-3	Batteries and Debris at CAS 25-08-02, Waste Dump.....	A-91
A.11-1	Location of CAS 25-23-21, Radioactive Waste Dump.....	A-100
A.11-2	Sample Locations at the Waste Dump CAS 25-23-21, Radioactive Waste Dump	A-101
A.11-3	Sample Locations at the Second Parcel CAS 25-23-21, Radioactive Waste Dump	A-102
A.11-4	Contaminated Pipe Waste Dump CAS 25-23-21, Radioactive Waste Dump	A-105
A.11-5	Biased Sample Location at Second Parcel CAS 25-23-21, Radioactive Waste Dump	A-106
A.12-1	Sample Locations at CAS 25-25-19, Hydrocarbon Stains and Trench	A-121
A.12-2	North Trench Sample Locations CAS 25-25-19, Hydrocarbon Stains and Trench	A-124
A.12-3	Asphalt and Stained Soil in North Trench CAS 25-25-19, Hydrocarbon Stains and Trench	A-125
C.1-1	Risk-Based Corrective Action Decision Process	C-2
D.1-1	CAS 02-08-02, Waste Dump and Burn Area, Area Where Lead Was Removed with Backhoe.....	D-3

List of Figures (Continued)

<i>Number</i>	<i>Title</i>	<i>Page</i>
D.1-2	CAS 02-08-02, Waste Dump and Burn Area, Melted Lead Temporarily Staged on Wooden Pallet	D-3
D.1-3	CAS 02-08-02, Waste Dump and Burn Area, Melted Lead Staged and Wrapped on Metal Pallet.	D-4
D.1-4	CAS 23-21-04, Waste Disposal Trenches, Debris Removal from Trench 3.	D-6
D.1-5	CAS 23-21-04, Waste Disposal Trenches, Front-end Loader Backfilling Trench	D-6
D.1-6	CAS 23-21-04, Waste Disposal Trenches, Trenches 3, 5, and 6 Backfilled.	D-7
D.1-7	CAS 25-08-02, Waste Dump, Bulldozed Arsenic-Contaminated Pile and Verification Sample Locations	D-8
D.1-8	CAS 25-08-02, Waste Dump, Debris Piles Being Loaded Out.	D-8
D.1-9	CAS 25-08-02, Waste Dump, Debris Piles Removed.	D-9
D.1-10	CAS 25-23-21, Radioactive Waste Dump, RMA Soil Piles	D-10
D.1-11	CAS 25-23-21, Radioactive Waste Dump, Leveling of Soil Piles	D-11
D.1-12	CAS 25-23-21, Radioactive Waste Dump, Excavation of RMA, Soil Disposed of in Lined Intermodal	D-11
D.1-13	CAS 25-23-21, Radioactive Waste Dump, Southern RMA Backfilled.	D-12
D.1-14	CAS 25-25-19, Hydrocarbon Stains and Trench, Staged Debris near North Trench	D-13
D.1-15	CAS 25-25-19, Hydrocarbon Stains and Trench, North Trench Cleared of Debris	D-13

List of Tables

Number	Title	Page
2-1	Maximum Detected Sample Results for CAS 01-19-01, Waste Dump	29
2-2	Maximum Detected Sample Results for CAS 02-08-02, Waste Dump and Burn Area	31
2-3	Maximum Detected Sample Results for CAS 03-19-02, Debris Pile.	32
2-4	Maximum Detected Sample Results for CAS 05-62-01, Radioactive Gravel Pile	33
2-5	Maximum Detected Sample Results for CAS 12-23-09, Radioactive Waste Dump	34
2-6	Maximum Detected Sample Results for CAS 22-19-06, Buried Waste Disposal Site.	35
2-7	Maximum Detected Sample Results for CAS 23-21-04, Waste Disposal Trenches	36
2-8	Maximum Detected Sample Results for CAS 25-08-02, Waste Dump	37
2-9	Maximum Detected Sample Results for CAS 25-23-21, Radioactive Waste Dump	38
2-10	Maximum Detected Sample Results for CAS 25-25-19, Hydrocarbon Stains and Trench	39
A.2-1	CAI Activities Conducted at Each CAS To Meet CAIP Requirements for CAU 561	A-4
A.2-2	Laboratory Analyses and Methods, CAU 561 Investigation Samples.	A-8
A.3-1	Samples Collected at CAS 01-19-01, Waste Dump	A-13
A.3-2	Sample Results for TPH-DRO at CAS 01-19-01, Waste Dump.	A-16

List of Tables (Continued)

Number	Title	Page
A.3-3	Sample Results for Metals Detected above MDCs at CAS 01-19-01, Waste Dump	A-16
A.3-4	Sample Results for Gamma-Emitting Radionuclides Detected above MDC at CAS 01-19-01, Waste Dump.	A-17
A.4-1	Samples Collected at CAS 02-08-02, Waste Dump and Burn Area	A-20
A.4-2	Sample Results for VOCs Detected above MDC at CAS 02-08-02, Waste Dump and Burn Area	A-31
A.4-3	Sample Results for SVOCs Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area	A-32
A.4-4	Sample Results for TPH-DRO at CAS 02-08-02, Waste Dump and Burn Area	A-34
A.4-5	Sample Results for Metals Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area	A-36
A.4-6	Sample Results for PCBs Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area	A-39
A.4-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area	A-39
A.5-1	Samples Collected at CAS 03-19-02, Debris Pile	A-42
A.5-2	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 03-19-02, Debris Pile	A-46
A.5-3	PSM Results Detected above MDCs for CAS 03-19-02, Debris Pile	A-46
A.6-1	Samples Collected at CAS 05-62-01, Radioactive Gravel Pile	A-50
A.6-2	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 05-62-01, Radioactive Gravel Pile	A-52

List of Tables (Continued)

Number	Title	Page
A.6-3	Sample Results for Isotopes Detected above MDC s at CAS 05-62-01, Radioactive Gravel Pile.	A-53
A.7-1	Samples Collected at CAS 12-23-09, Radioactive Waste Dump	A-56
A.7-2	Sample Results for VOCs Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump	A-58
A.7-3	Sample Results for SVOCs Detected above MDC at CAS 12-23-09, Radioactive Waste Dump	A-59
A.7-4	Sample Results for TPH-DRO at CAS 12-23-09, Radioactive Waste Dump	A-60
A.7-5	Sample Results for Metals Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump	A-61
A.7-6	Sample Results for PCBs Detected above MDC at CAS 12-23-09, Radioactive Waste Dump	A-62
A.7-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump	A-63
A.8-1	Samples Collected at CAS 22-19-06, Buried Waste Disposal Site	A-64
A.8-2	Sample Results for TPH-DRO at CAS 22-19-06, Buried Waste Disposal Site.	A-69
A.8-3	Sample Results for Metals Detected above MDCs at CAS 22-19-06, Buried Waste Disposal Site	A-69
A.8-4	Sample Results for Gamma-Emitting Radionuclides Detected above MDC at CAS 22-19-06, Buried Waste Disposal Site.	A-70
A.9-1	Samples Collected at CAS 23-21-04, Waste Disposal Trenches	A-73
A.9-2	Sample Results for VOCs Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches.	A-79

List of Tables (Continued)

Number	Title	Page
A.9-3	Sample Results for SVOCs Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches.....	A-80
A.9-4	Sample Results for TPH-DRO Detected at CAS 23-21-04, Waste Disposal Trenches	A-81
A.9-5	Sample Results for Metals Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches.....	A-82
A.9-6	Sample Results for PCBs Detected above MDC at CAS 23-21-04, Waste Disposal Trenches.....	A-85
A.9-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches.....	A-85
A.10-1	Samples Collected at CAS 25-08-02, Waste Dump	A-89
A.10-2	Sample Results for VOCs Detected above MDCs at CAS 25-08-02, Waste Dump	A-93
A.10-3	Samples Results for SVOCs Detected above MDCs at CAS 25-08-02, Waste Dump	A-93
A.10-4	Sample Results for TPH-DRO Detected at CAS 25-08-02, Waste Dump	A-94
A.10-5	Sample Results for Metals Detected above MDCs at CAS 25-08-02, Waste Dump	A-95
A.10-6	Samples Results for PCBs Detected above MDC at CAS 25-08-02, Waste Dump	A-97
A.10-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 25-08-02, Waste Dump	A-98
A.11-1	Samples Collected at CAS 25-23-21, Radioactive Waste Dump	A-103

List of Tables (Continued)

Number	Title	Page
A.11-2	Sample Results for VOCs Detected above MDC at CAS 25-23-21, Radioactive Waste Dump	A-109
A.11-3	Sample Results for SVOCs Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump	A-110
A.11-4	Sample Results for TPH-DRO Detected at CAS 25-23-21, Radioactive Waste Dump	A-111
A.11-5	Sample Results for Metals Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump	A-112
A.11-6	Sample Results for PCBs Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump	A-115
A.11-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump	A-116
A.11-8	PSM Results Detected above MDCs for CAS 25-23-21, Radioactive Waste Dump	A-118
A.12-1	Samples Collected at CAS 25-25-19, Hydrocarbon Stains and Trench	A-122
A.12-2	Sample Results for VOCs Detected above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench	A-127
A.12-3	Sample Results for SVOCs Detected above MDC at CAS 25-25-19, Hydrocarbon Stains and Trench	A-127
A.12-4	Sample Results for TPH-DRO Detected at CAS 25-25-19, Hydrocarbon Stains and Trench	A-128
A.12-5	Sample Results for Metals Detected above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench	A-129
A.12-6	Sample Results for PCBs Detected above MDC at CAS 25-25-19, Hydrocarbon Stains and Trench	A-131

List of Tables (Continued)

Number	Title	Page
A.12-7	Sample Results for Gamma-Emitting Radionuclides Detected above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench	A-132
A.13-1	CAU 561 Waste Disposal Summary	A-135
A.13-2	Waste Characterization Results at CAS 23-21-04, Waste Disposal Trenches	A-140
A.13-3	Waste Characterization Results at CAS 25-08-02, Waste Dump	A-141
A.13-4	Waste Characterization Results at CAS 25-23-21, Radioactive Waste Dump	A-142
A.13-5	Waste Characterization Results at CAS 25-25-19, Hydrocarbon Stains and Trench	A-144
B.1-1	CAU 561 Analyses Performed	B-4
B.1-2	Analytes Failing Sensitivity Criteria.	B-4
B.1-3	Precision Measurements	B-5
B.1-4	Accuracy Measurements.	B-6
B.1-5	Rejected Measurements	B-8
B.1-6	Key Assumptions	B-15
C.1-1	Maximum Reported Value for Tier 1 Comparison	C-7
C.1-2	COPCs Detected above PALs.	C-13
E.1-1	Sample Location Coordinates for CAU 561.	E-1

List of Acronyms and Abbreviations

Ac	Actinium
Am	Americium
amsl	Above mean sea level
ASTM	ASTM International
bgs	Below ground surface
BOL	Bill of lading
BMP	Best management practice
CAA	Corrective action alternative
CADD	Corrective action decision document
CAI	Corrective action investigation
CAIP	Corrective action investigation plan
CAS	Corrective action site
CAU	Corrective action unit
CD	Certificate of Disposal
CLP	Contract Laboratory Program
Co	Cobalt
COC	Contaminant of concern
COPC	Contaminant of potential concern
CR	Closure report
Cs	Cesium
CSM	Conceptual site model
DOE	U.S. Department of Energy
dpm/100cm ²	Disintegrations per minute per 100 square centimeters
DQA	Data quality assessment
DQI	Data quality indicator
DQO	Data quality objective

List of Acronyms and Abbreviations (Continued)

DRO	Diesel-range organics
E-MAD	Engine Maintenance, Assembly, and Disassembly
EML	Environmental Measurements Laboratory
EPA	U.S. Environmental Protection Agency
Eu	Europium
FADL	Field activity daily log
FAL	Final action level
FD	Field duplicate
FFACO	<i>Federal Facility Agreement and Consent Order</i>
FI	Field Instruction
FSL	Field-screening level
FSR	Field-screening result
ft	Foot
gal	Gallon
GPS	Global Positioning System
HASL	Health and Safety Laboratory
HWSU	Hazardous waste storage unit
ID	Identification
IDW	Investigation-derived waste
in.	Inch
lb	Pound
LCS	Laboratory control sample
LLW	Low-level waste
LVF	Landfill Load Verification Form
m	Meter
MDC	Minimum detectable concentration

List of Acronyms and Abbreviations (Continued)

mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MS	Matrix spike
MSD	Matrix spike duplicate
mV	Millivolt
N/A	Not applicable
NAC	<i>Nevada Administrative Code</i>
NAD	North American Datum
Nb	Niobium
NCRP	National Council on Radiation Protection and Measurements
NDEP	Nevada Division of Environmental Protection
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
NNSS	Nevada National Security Site
NSI	Native soil interface
PAH	Polyaromatic hydrocarbon
PAL	Preliminary action level
PB	Preparation blank
PCB	Polychlorinated biphenyl
pCi/g	Picocuries per gram
PID	Photoionization detector
POC	Performance objective criteria
PPE	Personal protective equipment
ppm	Parts per million
PSDR	Package, Storage, and Disposal Request

List of Acronyms and Abbreviations (Continued)

PSM	Potential source material
Pu	Plutonium
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
RBCA	Risk-based corrective action
RBSL	Risk-based screening level
RCP	Reactor Control Point
RCRA	<i>Resource Conservation and Recovery Act</i>
RMA	Radioactive material area
R-MAD	Reactor Maintenance, Assembly, and Disassembly
ROTC	Record of Technical Change
RPD	Relative percent difference
RSL	Regional Screening Level
SCL	Sample collection log
SDG	Sample delivery group
Sr	Strontium
SSTL	Site-specific target level
SVOC	Semivolatile organic compound
TBD	To be determined
TCLP	Toxicity characteristic leaching procedure
Th	Thorium
TPH	Total petroleum hydrocarbons
TSCA	<i>Toxic Substances Control Act</i>
U	Uranium
UCL	Upper confidence level

List of Acronyms and Abbreviations (Continued)

UR	Use restriction
UTM	Universal Transverse Mercator
VOC	Volatile organic compound
VSP	Visual Sample Plan
yd ³	Cubic yard
%R	Percent recovery

Executive Summary

This Corrective Action Decision Document/Closure Report has been prepared for Corrective Action Unit (CAU) 561, Waste Disposal Areas, at the Nevada National Security Site, Nevada, in accordance with the *Federal Facility Agreement and Consent Order (FFACO)*. Corrective Action Unit 561 comprises 10 corrective action sites (CASs):

- 01-19-01, Waste Dump
- 02-08-02, Waste Dump and Burn Area
- 03-19-02, Debris Pile
- 05-62-01, Radioactive Gravel Pile
- 12-23-09, Radioactive Waste Dump
- 22-19-06, Buried Waste Disposal Site
- 23-21-04, Waste Disposal Trenches
- 25-08-02, Waste Dump
- 25-23-21, Radioactive Waste Dump
- 25-25-19, Hydrocarbon Stains and Trench

The purpose of this Corrective Action Decision Document/Closure Report is to provide justification and documentation supporting the recommendation for closure of CAU 561 with no further corrective action. To achieve this, corrective action investigation (CAI) activities were performed from August 2, 2010, through June 28, 2011, as set forth in the *Corrective Action Investigation Plan (CAIP) for Corrective Action Unit 561: Waste Disposal Areas, Nevada Test Site, Nevada*, and Record of Technical Change No. 1 to the CAIP. The purpose of the CAI was to fulfill the following data needs as defined during the data quality objective (DQO) process:

- Determine whether contaminants of concern (COCs) are present.
- If COCs are present, determine their nature and extent.
- Provide sufficient information and data to complete appropriate corrective actions.

The CAU 561 dataset from the investigation results was evaluated based on the data quality indicator parameters. This evaluation demonstrated the quality and acceptability of the dataset for use in fulfilling the DQO data needs.

Analytes detected during the CAI were evaluated against final action levels (FALs) established in this document. The following contaminants were determined to be present at concentrations exceeding their corresponding FALs:

- No contamination exceeding FALs was identified at CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06.
- The surface and subsurface soil within the burn area at CAS 02-08-02 contains arsenic and lead above the FALs of 23 milligrams per kilogram (mg/kg) and 800 mg/kg, respectively. The surface and subsurface soil within the burn area also contains melted lead slag (potential source material [PSM]). The soil within the waste piles contains polyaromatic hydrocarbons (PAHs) above the FALs. The contamination within the burn area is spread throughout the area, as it was not feasible to remove all the PSM (melted lead), while at the waste piles, the contamination is confined to the piles.
- The surface and subsurface soils within Trenches 3 and 5 at CAS 23-21-04 contain arsenic and polychlorinated biphenyls (PCBs) above the FALs of 23 mg/kg and 0.74 mg/kg, respectively. The soil was removed from both trenches, and the soil that remains at this CAS does not contain contamination exceeding the FALs. Lead bricks and counterweights were also removed, and the soil below these items does not contain contamination that exceeds the FAL for lead.
- The concrete-like material at CAS 25-08-02 contains arsenic above the FAL of 23 mg/kg. This concrete-like material was removed, and the soil that remains at this CAS does not contain contamination exceeding the FALs. Lead-acid batteries were also removed, and the soil below the batteries does not contain contamination that exceeds the FAL for lead.
- The surface soils within the main waste dump at the posted southern radioactive material area (RMA) at CAS 25-23-21 contain cesium (Cs)-137 and PCBs above the FALs of 72.9 picocuries per gram (pCi/g) and 0.74 mg/kg, respectively. The soil was removed from the RMA, and the soil that remains at this CAS does not contain contamination exceeding the FALs.
- The surface and subsurface soils at CAS 25-25-19 do not contain contamination exceeding the FALs. In addition, lead bricks were removed, and the soil below these items does not contain contamination that exceeds the FAL for lead.

The following best management practices were implemented:

- Housekeeping debris at CASs 02-08-02, 23-21-04, 25-08-02, 25-23-21, and 25-25-19 was removed and disposed of.
- The open trenches at CAS 23-21-04 were backfilled.
- The waste piles at CAS 25-08-02 were removed and the area leveled to ground surface.
- The remaining waste piles at the main waste dump at CAS 25-23-21 were leveled to ground surface.

Therefore, the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) provides the following recommendations:

- No further action for CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06.
- Closure in place with an FFACO use restriction (UR) at CAS 02-08-02 for the remaining PAH-, arsenic-, and lead-contaminated soil, and the melted lead PSM. The UR form and map have been filed in the NNSA/NSO Facility Information Management System, the FFACO database, and the NNSA/NSO CAU/CAS files.
- No further corrective action at CAS 23-21-04, as the lead bricks and counterweights (PSM) have been removed, and the COCs of arsenic and PCBs in soil have been removed.
- No further corrective action at CAS 25-08-02, as the COC of arsenic in soil has been removed, and the lead-acid batteries have been removed.
- No further corrective action at CAS 25-23-21, as the COCs of Cs-137 and PCBs in soil have been removed, and the cast-iron pipes have been removed and disposed of.
- No further corrective action at CAS 25-25-19, as the lead bricks (PSM) been removed.
- A Notice of Completion to the NNSA/NSO is requested from the Nevada Division of Environmental Protection for closure of CAU 561.
- Corrective Action Unit 561 should be moved from Appendix III to Appendix IV of the FFACO.

1.0 Introduction

This Corrective Action Decision Document (CADD)/Closure Report (CR) presents information supporting closure of Corrective Action Unit (CAU) 561, Waste Disposal Areas, Nevada National Security Site (NNSS), Nevada. The implemented corrective actions described in this document are in accordance with the *Federal Facility Agreement and Consent Order* (FFACO) (1996, as amended) that was agreed to by the State of Nevada; U.S. Department of Energy (DOE), Environmental Management; U.S. Department of Defense; and DOE, Legacy Management. The NNSS (formerly the Nevada Test Site) is approximately 65 miles northwest of Las Vegas, Nevada ([Figure 1-1](#)).

Corrective Action Unit 561 includes the 10 corrective action sites (CASs) that are shown on [Figure 1-2](#) and listed below:

- 01-19-01, Waste Dump
- 02-08-02, Waste Dump and Burn Area
- 03-19-02, Debris Pile
- 05-62-01, Radioactive Gravel Pile
- 12-23-09, Radioactive Waste Dump
- 22-19-06, Buried Waste Disposal Site
- 23-21-04, Waste Disposal Trenches
- 25-08-02, Waste Dump
- 25-23-21, Radioactive Waste Dump
- 25-25-19, Hydrocarbon Stains and Trench

A detailed discussion of the history of this CAU is presented in the *Corrective Action Investigation Plan for Corrective Action Unit 561: Waste Disposal Areas, Nevada Test Site, Nevada* (NNSA/NSO, 2008). This document provides or references the specific information necessary to support closure of this CAU.

1.1 Purpose

This CADD/CR provides justification why no further corrective action is necessary based on the corrective actions implemented and the results of investigative activities that were conducted in accordance with the CAIP (NNSA/NSO, 2008).

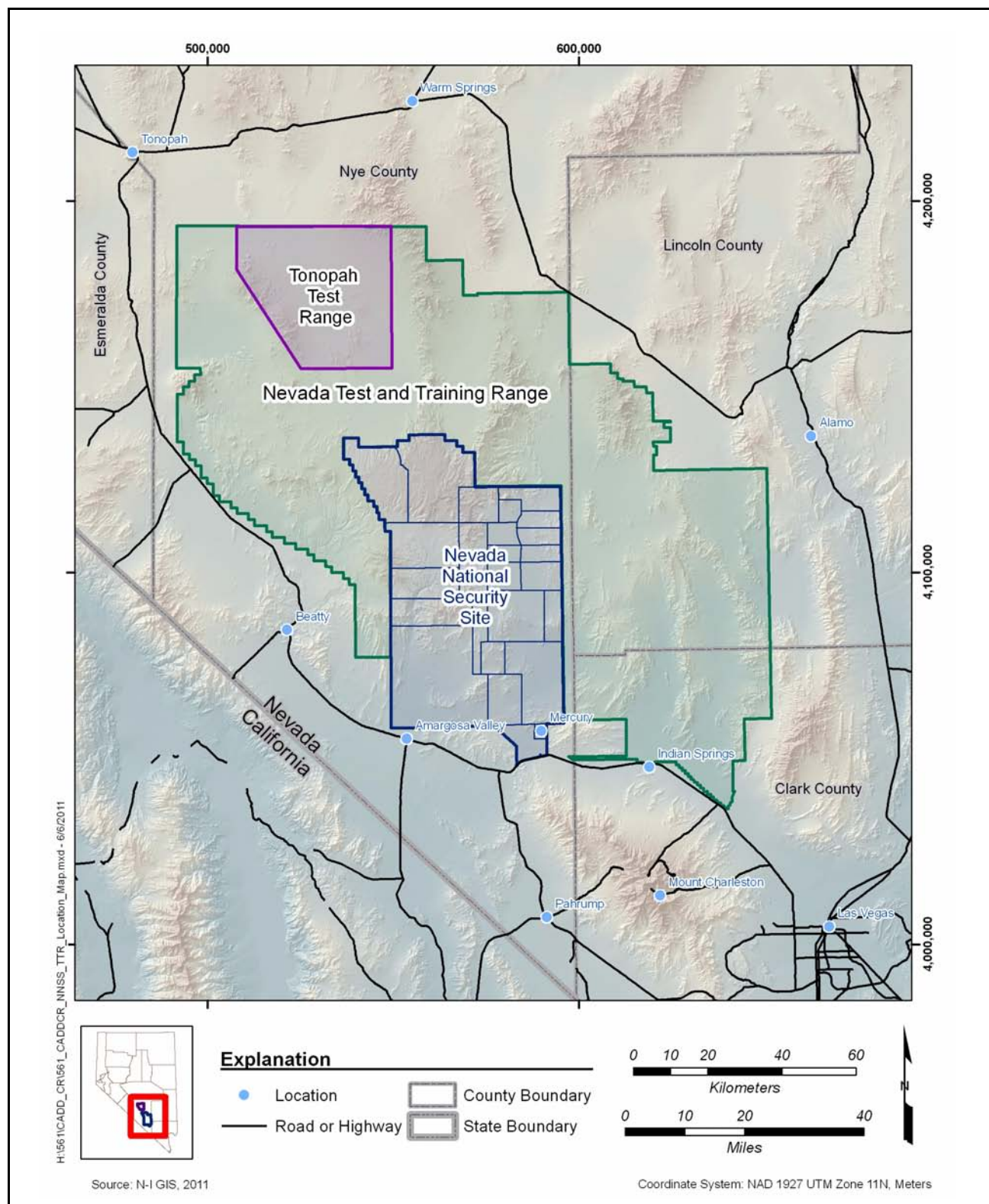


Figure 1-1
Nevada National Security Site

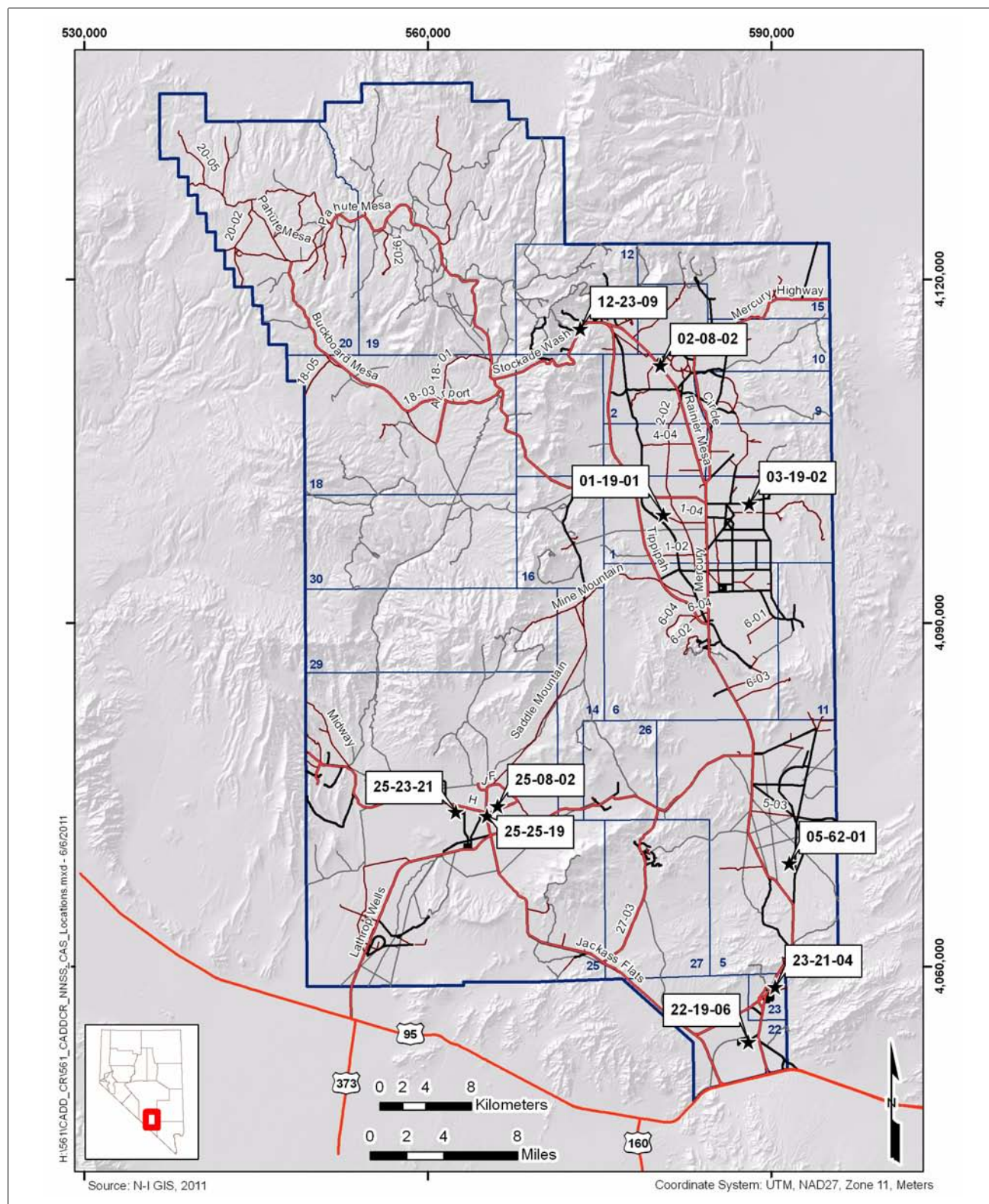


Figure 1-2
CAU 561, CAS Location Map

Corrective Action Unit 561, Waste Disposal Areas, comprises 10 inactive sites located in Areas 1, 2, 3, 5, 12, 22, 23, and 25. The 10 CASs within CAU 561 consist of various waste disposal areas, including trenches, piles, and buried dumps. Each CAS is summarized below:

- Corrective Action Site 01-19-01 is located in Area 1 and consists of a fenced area approximately 20 feet (ft) east of Building 1-31-2.e1. The CAS was originally identified as a subsurface waste dump, but a foundation from Building 31.1-b1, constructed for the Apple-2 test, was uncovered during excavation activities. Although there was visible debris on the ground surface consisting of concrete chunks, rebar, wood, and red bricks, the site was eliminated as a waste dump.
- Corrective Action Site 02-08-02 is located in the dry wash southeast of the Area 2 Camp, and consists of a waste dump and burn area. The waste dump contains piles of construction debris, including cables, wires, wooden planks, scrap metal, tires, and a crushed 30-gallon (gal) drum that contained a small amount of grease. The burn area, located northwest of the waste dump, contains scattered nails, scrap metal, pieces of charcoal wood, and melted lead.
- Corrective Action Site 03-19-02 is located in Area 3. It consists of a pile of concrete debris believed to be associated with the Pommard test, which was conducted on March 14, 1968. A large piece of concrete has Trinity glass adhered to its surface. The CAS is posted as a radioactive material area (RMA) and is posted accordingly; however, this site is not fenced.
- Corrective Action Site 05-62-01 consists of a radioactive gravel pile located approximately 1,000 ft west of the Gravel Gertie in Area 5. The pile contains visible concrete and metal debris, which is believed to be from the Gravel Gertie. The CAS is fenced and posted as an RMA.
- Corrective Action Site 12-23-09 is located approximately 150 ft northwest of Stockade Wash Road, just north of the E-Tunnel Road in Area 12. The CAS consists of two separate fenced areas (north and south) and was labeled as a radioactive waste dump on a topographic map; however, interviews with past employees suggest that the site was used as an electricians' laydown yard.
- Corrective Action Site 22-19-06 is located at the southeast end of Camp Desert Rock in Area 22 of the NNSS and consists of buried debris identified by a geophysical survey. Camp Desert Rock has been identified as eligible for inclusion in the National Register of Historic Places (Jones, 2010).
- Corrective Action Site 23-21-04 consists of six potential waste disposal trenches and one potential covered trench located approximately 1,500 ft northeast of Building 23-160 in Area 23. Three of the trenches contained debris (wood, metal, cables/wire, lead bricks and lead counterweights, nails, and bolts). There was also stained soil near two of the trenches.

- Corrective Action Site 25-08-02 is located north of G Road between the Reactor Control Point (RCP) and the Reactor Maintenance, Assembly, and Disassembly (R-MAD) complex in Area 25, and consists of a large waste dump. The waste dump consists of piles of construction debris, including concrete, metal, rebar, wood, batteries, 5-gal buckets, an empty cable spool, rusted cans, and pipes.
- Corrective Action Site 25-23-21 consists of a radioactive waste dump located within Topopah Wash, northeast of the Engine Maintenance, Assembly, and Disassembly (E-MAD) Facility in Area 25. A second parcel is upstream from the waste dump parcel within Topopah Wash and extends further upstream north of H Road. The waste dump contains numerous dirt mounds and piles within a posted "Controlled Area," along with miscellaneous piles extending up through Topopah Wash to H Road. Within the waste dump, there are two specific piles posted with "Caution Radioactive Material" signs. The second parcel contains typical waste piles, along with concrete, asphalt, and magnetite piles.
- Corrective Action Site 25-25-19 encompasses approximately 8 acres and is located southeast of the intersection of C Road and G Road, across from the RCP, in Area 25. The CAS consists of surface soil stains, a tar spill, an asphalt spill, a trench, concrete pads, debris, rock, and soil piles.

1.2 Scope

The scope of this CADD/CR is to justify that no further corrective action beyond what is described in this document is required at CAU 561, Waste Disposal Areas. The activities conducted to accomplish this scope included the following:

- Removing surface debris and/or materials to facilitate sampling
- Performing radiological surveys and field screening
- Collecting environmental samples for laboratory analysis
- Collecting samples to define the lateral and vertical extent of the contamination
- Removing potential source material (PSM) where feasible
- Collecting samples to characterize PSM to determine whether contaminants of concern (COCs) could be released to the environment in the future
- Collecting waste samples to characterize potential waste to ensure the proper disposal
- Collecting quality control (QC) samples

1.3 CADD/CR Contents

This CADD/CR is divided into the following sections and appendices:

- [Section 1.0](#), “Introduction,” summarizes the purpose, scope, and contents of this CADD/CR.
- [Section 2.0](#), “Corrective Action Investigation (CAI) Summary,” summarizes the investigation field activities, the results of the investigation, the need for corrective action, and the results of the data quality objective (DQO) assessment.
- [Section 3.0](#), “Recommendation,” states why no further corrective action is required.
- [Section 4.0](#), “References,” provides a list of all referenced documents used in the preparation of this CADD/CR.
- [Appendix A](#), *Corrective Action Investigation Results*, provides a description of the project objectives, field investigation and sampling activities, investigation results, waste management, and quality assurance (QA). [Sections A.3.0](#) through [A.12.0](#) provide specific information regarding field activities, sampling methods, and laboratory analytical results from the investigation.
- [Appendix B](#), *Data Assessment*, provides a data quality assessment (DQA) that reconciles DQO assumptions and requirements to the investigation results.
- [Appendix C](#), *Risk Assessment*, presents an evaluation of risk associated with the establishment of final action levels (FALs).
- [Appendix D](#), *Closure Activity Summary*, provides details on the completed closure activities, and includes the required verification activities and supporting documentation.
- [Appendix E](#), *Sample Location Coordinates*, presents the northing and easting coordinates, and the elevation for each sample location.
- [Appendix F](#), *Waste Disposition Documentation*, documents disposal of items and soil removed during closure activities.
- [Appendix G](#), *Nevada Division of Environmental Protection (NDEP) Comments*, contains NDEP comments on the draft version of this document.

1.3.1 Applicable Programmatic Plans and Documents

Investigation activities were performed in accordance with the following documents:

- CAIP for CAU 561, Waste Disposal Areas (NNSA/NSO, 2008)
- Record of Technical Change (ROTC) No. 1 to the CAIP for CAU 561, Waste Disposal Areas (NNSA/NSO, 2010)
- ROTC-1 to Field Instruction (FI) for CAU 561: Waste Disposal Areas (NNES, 2010)
- *Industrial Sites Quality Assurance Project Plan (QAPP)* (NNSA/NV, 2002)
- FFACO (1996, as amended)

1.3.2 Data Quality Assessment Summary

The CAIP for CAU 561, Waste Disposal Areas (NNSA/NSO, 2008), contains the DQOs as agreed to by stakeholders before the field investigation. The DQO process ensures that the right type, quality, and quantity of data will be available to support the resolution of those decisions with an appropriate level of confidence. A DQA was conducted that evaluated the degree of acceptability and usability of the reported data in the decision-making process. This DQA is presented in [Appendix B](#) and summarized in [Section 2.2.2](#). Using both the DQO and DQA processes helps to ensure that DQO decisions are sound and defensible.

Based on this evaluation, the nature and extent of COCs at CAU 561 have been adequately identified to implement the corrective actions. Information generated during the investigation supports the conceptual site model (CSM) assumptions, and the data collected met the DQOs and support their intended use in the decision-making process.

2.0 Corrective Action Investigation Summary

The following sections summarize the investigation activities and investigation results, and justify why no further corrective action beyond what is described in this document is needed at CAU 561. Detailed investigation activities and results for individual CAU 561 CASs are presented in [Appendix A](#) of this document.

2.1 Investigation Activities

Corrective action investigation activities were performed as set forth in the CAIP (NNSA/NSO, 2008) from August 2, 2010, through June 28, 2011. The purpose of the CAU 561 CAI was to address the decision statements in the project-specific DQOs by performing the following:

- Determining whether COCs are present in the soils associated with each CAS in CAU 561.
- Determining the lateral and vertical extent of identified COCs.
- Ensuring adequate data have been collected to close the sites under NDEP, *Resource Conservation and Recovery Act (RCRA)*, *Toxic Substance Control Act*, and DOE requirements.

The scope of the CAI included the following activities:

- Performing radiological surveys (i.e., static, scanning, and swipe collection).
- Field screening soil samples for volatile organic compounds (VOCs) and total alpha and beta/gamma radiation.
- Collecting environmental samples for laboratory analyses to determine the presence of COCs and to define the vertical and lateral extent of COCs, if present.
- Collecting QC samples for laboratory analyses to ensure that the data generated from the analysis of investigation samples meet the requirements of the data quality indicators (DQIs).
- Removing PSM and soil containing COCs.

A combination of judgmental and probabilistic sampling schemes were implemented to select sample locations, as outlined in the CAIP (NNSA/NSO, 2008). Judgmental sampling allows the methodical selection of sample locations that target the populations of interest (defined in the DQOs)

rather than non-selective random locations. Probabilistic sampling uses random sample locations in the absence of adequate biasing factors to define sitewide contamination characteristics (e.g., average concentrations).

For the judgmental sampling scheme, individual sample results (rather than average concentrations) are used to compare to FALs. Therefore, statistical methods to generate site characteristics (averages) are not necessary. If good prior information is available on the target site of interest, then the sampling may be designed to collect samples only from areas known to have the highest concentration levels on the target site (EPA, 2006). If the observed concentrations from these samples are below the action level, then a decision can be made that the site contains safe levels of the contaminant without the samples being truly representative of the entire area.

The judgmental sampling design was used to confirm the existence of contamination at specific locations and provide information (such as extent of contamination) about specific areas of the site.

Confidence in judgmental sampling scheme decisions was established qualitatively by validating CSM and justifying that sampling locations are the most likely locations to contain a COC, if a COC exists.

For the probabilistic sampling scheme, the average contaminant concentrations at the site in question are used to compare to FALs. The averages from sample analytical results for each constituent are an estimation of the true average contaminant concentrations. Because the average contaminant concentrations from samples is only an estimate of the true (unknown) average, it is uncertain how well the sample averages represent the actual averages. To reduce the probability of making a false negative decision error, the 95th percent upper confidence levels (UCLs) of the respective sample contaminant concentration averages will be used to compare to FALs. Therefore, by definition, there will be a 95 percent probability that the true average concentration is less than the 95th percent UCL of the sample average.

Confidence in probabilistic sampling scheme decisions was established by the validating the CSM, justifying that sampling locations are representative of site conditions, demonstrating that a sufficient number of samples were collected, and demonstrating that contaminant distribution assumptions are valid and appropriate to the statistical test being performed.

Waste characterization activities were conducted to gather sufficient information and data to support waste disposal decisions. Information regarding waste characterization is presented in [Appendix A](#).

The following sections describe specific investigation activities conducted at each CAS. Additional information regarding the investigation is presented in [Appendix A](#).

2.1.1 Waste Dump (CAS 01-19-01)

The following subsections summarize the activities conducted at CAS 01-19-01.

2.1.1.1 Radiological Survey

A gamma radiological walkover survey was performed during the preliminary assessment within the fenced area at CAS 01-19-01 to determine whether surface radioactivity was present at the site. No areas of elevated radioactivity were identified at this CAS.

2.1.1.2 Geophysical Survey

Geophysical surveys were performed in 2004 and identified anomalies suspected to be buried metallic debris. Based on the survey results, trenches were excavated to access the buried materials. The buried material was a building foundation, and the geophysical anomalies represented the rebar in the concrete. [Figure A.3-1](#) shows the location of this sample.

2.1.1.3 Visual Inspection

Visual inspections were conducted of the surface soil within the fenced area for any stained soil or other biasing factors before excavation. Concrete, rebar, and red bricks were observed on the surface soil, but there was no visible surface staining. During the excavation of the geophysical anomalies, the subsurface soil was also inspected for staining and other biasing factors. There was no waste in the excavation, but instead a concrete foundation with a red brick chimney and charred wood were identified. Samples 561A001 and 561A004 were collected at the base of the foundation, and samples 561A002 and 561A003 were collected because of debris and burned wood. [Figure A.3-2](#) shows a typical biased sample location at the base of the building foundation.

2.1.1.4 Sample Collection

Decision I environmental sampling activities were conducted in the area of the geophysical anomalies to determine whether there has been a release from what was believed to be a buried waste dump. Subsurface soil samples were collected from the northeast-southwest trench and the northwest-southeast trench in the areas of the geophysical anomalies. In addition to the trenches, numerous potholes were excavated to determine the type of buried material that could be present. Five environmental samples were collected from four locations in the area of the geophysical anomalies; biasing factors were also noted within the area of the geophysical anomalies. Samples 561A001 through 561A004 were collected using excavation methods from a decontaminated backhoe bucket and were collected at various depths based on biasing factors (e.g., debris, burned wood). Decision II samples were not collected at this CAS, as no contaminants of potential concern (COPCs) exceeded the FALs.

2.1.1.5 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases from waste disposal areas at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The CSM was revised because the excavation activities uncovered the foundation of a building and not a waste dump. The CSM was revised to include potentially contaminated subsurface media from building materials and from burning of wood in fireplaces. The migration pathway and release mechanism information gathered during the CAI were consistent with the revised CSM, and all information gathered during the CAI supports and validates the revised CSM. The CSM assumed that any contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.2 Waste Dump and Burn Area (CAS 02-08-02)

The following subsections summarize the activities conducted at CAS 02-08-02. Two components within the CAS were investigated: the waste dump, which consisted of piles of construction debris, and the burn area.

2.1.2.1 Radiological Survey

A gamma walkover survey was performed over the piles and at the burn area at CAS 02-08-02 during the preliminary assessment. No areas of elevated radioactivity were identified.

2.1.2.2 Geophysical Survey

Geophysical surveys were performed at the burn area only, and identified surface and near-surface buried metallic debris (predominantly melted lead, which is considered PSM). Based on the survey results and a visual inspection, soil samples (561B019 through 561B028 at locations B02 through B04 and B21 through B26) were collected from nine locations within the burn area. [Figures A.4-1](#) and [A.4-2](#) show the location of these samples.

2.1.2.3 Visual Inspection

The waste piles were visually inspected for stained soil, debris, or other biasing factors. One pile was observed with stained soil (sample 561B005 through 561B007 at location B18), while at another pile contained a 30-gal crushed grease drum with soil staining (samples 561B013 through 561B015 at location B12). The surface soil within the burn area was inspected for biasing factors. Stained soil resembling burn areas, nails, and melted lead were identified in patches throughout the area. Sample locations B02, B03, B04, and B21 were areas of stained soil and nails. Sample locations B22, B24, and B25 were directly under the melted lead. [Figures A.4-1](#) and [A.4-2](#) show the location of these samples.

2.1.2.4 Sample Collection

Seventy-three environmental samples were collected from 54 locations (location B01 through B54).

Waste Dump

Decision I environmental sampling activities included collecting 16 randomly selected soil samples from inside the waste piles, and two biased surface soil samples downgradient of the waste pile. The randomly selected samples were identified using the Visual Sample Plan (VSP) software (PNNL, 2005). Sample depths at the waste piles ranged from 0.5 to 6 ft into the pile. During random sampling, a 30-gal crushed drum containing a small amount of grease and an area of stained soil was

observed. Soil samples (561B013 through 561B015) were collected immediately beneath the drum and within the pile at depths ranging from 0.5 to 1 ft below ground surface (bgs), 1 to 1.5 ft bgs, and 3 to 3.5 ft bgs. Also, during random sampling, stained soil was observed on the surface of the waste pile (location B18). Soil samples 561B005 and 561 B006 were collected from 2 to 3 ft, and sample 561B007 was collected from 4 to 5 ft into the pile.

The Decision I analytical results showed that concentrations of various polyaromatic hydrocarbons (PAHs) in four samples from four locations (sample 561B003 at location B09, sample 561B005 at location B18, sample 561B013 at location B12, and sample 561B016 at location B11) exceeded the preliminary action levels (PALs), and it was determined that Decision II sampling was necessary. Seven Decision II samples (561B039 through 561B045) were collected along the outside perimeter of the waste dump from 0 to 0.5 ft bgs to delineate the lateral extent of COCs.

Burn Area

At the burn area, Decision I environmental sampling activities included collecting 20 biased surface and shallow subsurface soil samples (samples 561B017 through 561B029 and 561B032 through 561B038). Biasing factors included stained soil and debris on the surface (nails, melted lead).

Twenty-four Decision II samples were collected to define lateral and vertical extent of contamination, and analyzed for semivolatile organic compounds (SVOCs) (samples 561B046 through 561B061 and 561B066 through 561B073). Fourteen samples were collected to define lateral and vertical extent of contamination, and analyzed for metals (samples 561B0058 through 561060, samples 561B062 through 561B065, and 561B067 through 561B073).

2.1.2.5 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any contaminant migration would be minimal based

on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.3 Debris Pile (CAS 03-19-02)

The following subsections summarize the activities conducted at CAS 03-19-02.

2.1.3.1 Radiological Survey

In 2007, a gamma radiological walkover survey was performed at the site. No areas of elevated radioactivity in the soil were identified; however, two locations on the concrete debris contained fixed radiological readings above background. During the field investigation in 2010, a gamma walkover survey was performed, and only one location on the concrete was identified as having fixed readings above background. The concrete was coated with Trinity glass. Based on the results of the radiological surveys, concrete (561C001) and soil (561C002 and 561C003) samples were collected from this sample location (C01).

2.1.3.2 Visual Inspection

In an attempt to locate the second piece of debris with fixed radiological readings, the debris within the pile and the surface soil was visually inspected for Trinity glass or stained soil. Trinity glass was discovered after a large piece of concrete was overturned during the visual inspection. Sample location C02 (sample 561C004) was established based on these visual inspections (see [Figures A.5-1](#) and [A.5-2](#)).

2.1.3.3 Sample Collection

Decision I environmental sampling activities included collecting biased concrete samples on a concrete block, and collecting soil samples beneath two concrete blocks. Four environmental samples were collected from two locations (C01 and C02). A concrete sample was scabbled off the face of the large western concrete block where elevated radiological readings and Trinity glass were observed (sample 561C001). Two surface soil samples (561C002 and 561C003) were collected below this block to verify that no radiological contamination had migrated from the block into the soil. A second sample location (C02) was sited from beneath an overturned concrete block where the

visual inspection uncovered a nickel-sized piece of Trinity glass. A surface soil sample (561C004) was collected near the Trinity glass to verify no migration of radiological contamination from the Trinity glass.

2.1.3.4 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.4 Radioactive Gravel Pile (CAS 05-62-01)

The following subsections summarize the activities conducted at CAS 05-62-01.

2.1.4.1 Radiological Survey

In 2006, a gamma radiological walkover survey was performed at CAS 05-62-01. No areas of elevated radioactivity were identified. During the field investigation, the sample locations within the gravel pile was scanned to identify the highest radioactivity within the pile for sampling purposes. Two samples, 561D006 and 561D007 from location D05, were collected from the gravel pile at the location with the highest radioactivity (see [Figures A.6-1](#) and [A.6-2](#)).

2.1.4.2 Visual Inspection

The gravel pile and surrounding soil was visually inspected for biasing factors. It was observed that there were locations of erosion where the gravel had washed down off the pile; this served as a biasing factor for collection surface samples 561D001 through 561D005.

2.1.4.3 Field Screening

Investigation samples were field screened for alpha and beta/gamma radiation to determine which samples were submitted for analysis. Alpha field-screening levels (FSLs) were exceeded at one sample location within the gravel pile (sample 561D006). Beta/gamma FSLs were exceeded in one surface soil sample (561D003) on the north side of the pile, and within the gravel pile (sample 561D006).

2.1.4.4 Sample Collection

Seven Decision I environmental samples were collected from five locations around and within the gravel pile. Surface soil samples (samples 561D001 through 561D005) were collected from four biased locations around the gravel pile to verify that no radiological contamination had migrated off the pile. Two soil samples were collected from within the pile at one location. One sample (561D006) was collected from 1 to 1.5 ft into the gravel pile, which showed elevated radioactivity within the pile. The second sample (561D007) was collected at the native soil interface (6.5 to 7 ft into pile) to verify that there was no contamination below the gravel pile.

2.1.4.5 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.5 Radioactive Waste Dump (CAS 12-23-09)

The following subsections summarize the activities conducted at CAS 12-23-09.

2.1.5.1 Radiological Survey

A gamma radiological walkover survey was performed in the north fenced area in 2006. The results of this survey identified an area of radioactivity from 2 to 5 times higher than background levels at a soil mound near the center of the fenced area. Based on the results of this survey, two soil samples (561E004 and 561E005 from location E07) were collected within the soil mound (see [Figure A.7-1](#)). In 2008, a gamma walkover survey was performed of the south fenced area; no areas of elevated radioactivity were identified.

2.1.5.2 Geophysical Survey

Geophysical surveys were performed at this CAS that identified buried metal debris in the area of the soil mound. This is the same area where the elevated radioactivity was identified. Two soil samples (561E004 and 561E005) were collected within the soil mound based on the survey results.

2.1.5.3 Visual Inspection

The surface soil within the two fenced areas and the soil mound was inspected for any stained soil or other biasing factors. No biasing factors were noted.

2.1.5.4 Sample Collection

Eight environmental samples were collected from seven locations. Six sample locations were established using the VSP software (PNNL, 2005), and two sample locations were sited in the soil mound, which showed elevated radioactivity. Six samples (561E001 through 561E003, and 561E006 through 561E008) were surface samples (0 to 0.5 ft bgs), while the soil mound was sampled at 1 to 1.5 ft into the mound (samples 561E004 and 561E005).

2.1.5.5 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.6 Buried Waste Disposal Site (CAS 22-19-06)

The following subsections summarize the activities conducted at CAS 22-19-06.

2.1.6.1 Geophysical Survey

Geophysical surveys were performed in 2004 and identified buried metallic debris in the area of the disposal trench. Based on the survey results, one northeast-southwest trench was excavated in the area of two geophysical anomalies. The geophysical anomalies were not associated with a buried waste dump, but were instead concrete and metal manhole covers, and a corrugated conduit pipe. Sample locations F01 through F04 were located along the geophysical anomalies (see [Figure A.8-1](#)), and five samples (561F001 through 561F005) were collected.

2.1.6.2 Visual Inspection

The surface soil at CAS 22-19-06 was inspected for any stained soil or biasing factors. No stained surface soil was observed, but biasing factors (metal pipe, manhole covers) were observed after excavating in the areas of the geophysical anomalies. Two concrete and metal manhole covers were uncovered during the excavation activities at depths ranging from 1 to 3 ft bgs; samples 561F001 through 561F003 were collected from beneath the manhole covers. A corrugated metal conduit pipe was also uncovered at a depth of 6 ft bgs; samples 561F004 and 561F005 were collected from beneath the conduit pipe. These items are considered to be the source of the geophysical anomalies identified in 2004.

2.1.6.3 Sample Collection

Five Decision I samples were collected from four locations at this CAS. Samples 561F001 and 561F002 were collected from beneath a concrete manhole cover at a depth of 1.5 to 2 ft bgs, and

sample 561F003 was collected from 2.5 to 3 ft bgs at the same location. Samples were also collected from beneath the corrugated conduit pipe; sample 561F004 was collected from a depth of 7 to 7.5 ft bgs, and sample 561F005 was collected from 8 to 8.5 ft bgs.

2.1.6.4 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.7 Waste Disposal Trenches (CAS 23-21-04)

The following subsections summarize the activities conducted at CAS 23-21-04. Six trenches and one potential covered trench were investigated.

2.1.7.1 Geophysical Survey

Geophysical surveys were performed in 2006, and no buried metallic debris was identified.

2.1.7.2 Visual Inspection

Before any sampling activities, the trenches were inspected for any stained soil or biasing factors, such as debris, by excavating potholes in each trench and in the potential covered trench. Potholes were excavated across the middle of each trench and at the ends of each trench. No biasing factors were identified in Trenches 1, 2, 4, or at the potential covered trench area; therefore, no samples were collected from these trenches. The potential covered trench was not a trench, but a natural depression. Stained soil was observed on the west end of Trench 3, and east of Trench 6; both locations were sampled (samples 561G004 and 561G003). Trenches 3, 5, and 6 were inspected by

excavating potholes; debris was discovered in all three trenches, and samples were collected at these biasing factors (see [Figures A.9-1](#) through [A.9-3](#)).

2.1.7.3 Sample Collection

Forty-one environmental samples were collected from 37 locations near and within Trenches 3, 5, and 6. No samples were collected from Trenches 1, 2, 4, or the potential covered trench because there were no biasing factors. A lead brick was identified as PSM and removed from the west end of Trench 3. Verification soil samples were collected from the underlying soil after removing the PSM. The analytical results from the lead brick verification samples were less than the corresponding Tier 1 action levels (i.e., PALs).

Two waste characterization samples were collected from locations within Trenches 3 and 5 and analyzed for toxicity characteristic leaching procedure (TCLP) metals.

Trench 3

Nineteen environmental samples were collected within Trench 3. Decision I sampling activities included collecting biased soil samples. Biasing factors included stained soil (samples 561G001 and 561G004), debris (samples 561G002, 561G005 through 561G007), and a location beneath one lead brick (561G002).

Four samples were collected to define the extent of contamination (samples 561G015 through 561G018) within the west end of the trench. Four additional samples (561G033 through 561G036) were collected and analyzed for metals and hexavalent chromium. The samples were collected at the bottom of the excavation and on the southeast, west, and northeast walls of the excavation. One verification sample (561G041) was collected from 4.5 to 5 ft bgs.

Four Decision II environmental samples (561G037 through 561G040) were collected to define the extent of contamination within the east end of the trench. Soil was excavated from the north side of the trench from an area 7 by 9 by 10 ft deep. Samples were then collected at the bottom of the excavation (561G037) from 9 to 10 ft bgs, and from the west (561G038), east (561G039), and north (561G040) walls at a depth of 6 to 7 ft bgs, and analyzed for polychlorinated biphenyls (PCBs).

Trench 5

Seventeen environmental samples were collected within Trench 5. Three Decision I biased samples (561G012 through 561G014) were collected at areas of debris within the trench. Five Decision II environmental samples (561G019 through 561G023) were collected to define the extent of contamination. One sample was collected from 1 to 1.5 ft bgs (561G020), and three additional sample locations were selected at distances ranging from approximately 15 to 45 ft laterally in three directions from this location; surface soil samples (561G019, 561G021 through 561G023) were collected from these locations. An area around the location was excavated, and five additional soil samples (561G024 through 561G028) were collected. One sample was collected from the bottom of the excavation (561G024), and four samples (561G025 through 561G028) were collected from the four corners of the excavation, with depths ranging from 2 to 3 ft bgs. Four verification samples were collected—one sample (561G029) from the bottom of the excavation from 5 to 5.5 ft bgs; and one each from the east (561G030), west (561G031), and north (561G032) walls of the excavation—with depths ranging from 3 to 5.5 ft bgs.

Trench 6

Decision I environmental sampling activities at Trench 6 included collecting biased samples at three locations within the trench. Debris (wood and metal) was observed on the surface of the trench, but not within the excavation. Four samples (561G008 through 561G011) were collected from Trench 6. A small soil pile (approximately 8 inches [in.] tall) was observed east of Trench 6. The soil pile was composed of non-native soil and was not considered stained. Some rusty bolts were observed on the soil pile, so sample 561G003 was collected from beneath the bolts.

2.1.7.4 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal

based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.8 Waste Dump (CAS 25-08-02)

The following subsections summarize the activities conducted at CAS 25-08-02.

2.1.8.1 Radiological Survey

A gamma radiological walkover survey was performed in 2006. No areas of elevated radioactivity that exceeded background were identified.

2.1.8.2 Visual Inspection

The waste piles at this CAS were inspected for any stained soil or biasing factors. A dark gray concrete-like material was observed on the southern end of the waste dump at location H03.

A pile of batteries and debris was also observed at location H08 on the east side of the waste dump. Two outlier piles were observed on the north end (location H16) and south end (location H01) of the main waste dump. Numerous piles were observed that contained asphalt, concrete, rebar, and other construction-like material; samples were collected from these piles (see [Figures A.10-1 through A.10-3](#)).

2.1.8.3 Sample Collection

Twenty-six judgmental soil samples were collected from 23 locations. Decision I environmental sampling activities included collecting surface samples at the two outlier piles (samples 561H002 and 561H010), at the pile of concrete-like material (561H001), and at the pile that contained batteries and debris (sample 561H017). Decision I sampling activities also included collecting randomly located samples from piles that were identified using the VSP software (PNNL, 2005).

Soil samples were collected at depths ranging from 0 to 4.5 ft within the piles based on biasing factors, such as debris or stained soil. Several locations were sampled at the native soil interface (561H002, 561H006, 561H009, and 561H012), while the other locations were sampled within the piles (561H001, 561H003 through 561H005, 561H007, 561H008, 561H010, 561H011, and 561H013 through 561H017).

Four Decision II environmental samples were collected to define the vertical and lateral extent of contamination. One sample (561H021) was collected from 1.5 to 2 ft bgs within the concrete-like material pile. Three additional sample locations were selected at distances ranging from approximately 20 to 50 ft laterally in three directions from the pile; samples 561H018 through H020 were collected from these locations. The concrete-like material was removed and disposed of, and five verification samples (561H022 through 561H026) were collected at four locations under the pile.

Waste characterization samples were collected from two locations, one within the concrete-like pile and one from a construction waste pile. Both samples were analyzed for TCLP metals.

2.1.8.4 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.9 Radioactive Waste Dump (CAS 25-23-21)

The following subsections summarize the activities conducted at CAS 25-23-21. Two components of this CAS were investigated: the main waste dump and the second parcel (see [Figure A.11-1](#)).

2.1.9.1 Radiological Survey

A gamma radiological walkover survey was performed in 2005 at the waste dump. The results of the survey identified an area (outside the posted RMA) of radioactivity from 2 to 5 times higher than background. This area was not located during the field activities in 2010.

In 2008, partially buried pipes were observed inside the two posted RMAs. The pipes exhibited surface contamination readings above background. Samples 561I030 and 561I033 through 561I0035 were collected based on radiological survey of the pipes.

2.1.9.2 Geophysical Survey

Geophysical surveys were performed at the waste dump but did not identify buried waste. No geophysical surveys were performed at the second parcel.

2.1.9.3 Visual Inspection

The piles at both the main waste dump and at the second parcel were inspected for any stained soil or biasing factors. Of the 17 Decision I samples collected at the main waste dump, 5 biased samples were collected. Biasing factors included the area downgradient in the wash from the main waste dump to investigate potential migration (sample 561I024 at location I31), and the two posted RMAs (samples 561I030 and 561I033 through 561I035 from locations I30, I32, and I33 [see [Figure A.11-2](#)]). Of the 18 Decision I samples collected at the second parcel, 7 biased samples were collected. Biasing factors included cement wash-out area (sample 561I003 at location I16); areas where paint cans were identified (sample 561I006 at location I07); black staining on a soil pile (samples 561I009 and 561I010 at location I03); tar paper (561I017 at location I11); a pile of asphalt (561I018 at location I17); and a pile of magnetite (561I007 at location I04 [see [Figure A.11-3](#)]).

2.1.9.4 Field Screening

Investigation samples were field screened for alpha and beta/gamma radiation. Sample locations I30, I32, and I33 were selected based on the radiological field screening.

2.1.9.5 Sample Collection

A total of 56 environmental samples (including 4 field duplicates [FDs]) were collected from 49 locations during Decision I and Decision II sampling activities. Decision I environmental sampling activities included collecting biased and probabilistic soil samples at the main waste dump and at the second parcel. Probabilistic sample locations were identified using the VSP software (PNNL, 2005).

Main Waste Dump

Seventeen Decision I samples were collected from the main waste dump. Decision I soil samples (561I019 through 561I023, and 561I0025 through 561I035) were collected at depths ranging from 0 to 3.5 ft within the piles. One surface soil sample (561I024) was collected from 0 to 0.5 ft bgs downgradient of the waste dump. Twelve samples were randomly located; these locations were on individual waste piles. Five samples were collected based on biasing factors; three samples were collected at the posted RMA piles, and two samples were collected downgradient of the waste dump to investigate potential migration.

Decision II samples were collected at the main waste dump at the southern RMA and at the northern RMA. At the southern RMA, seven Decision II soil samples were collected (561I036 through 561I041 and 561I046). Four sample locations were selected at distances ranging from approximately 2.5 to 10 ft laterally in four directions from locations on the RMA; surface soil samples (0 to 0.5 ft bgs) were collected. The southern RMA soil pile was removed and disposed of, and verification samples (561I051 through 561I056) were collected at six locations at depths ranging from 0.5 to 1.5 ft bgs.

At the northern RMA, four Decision II soil samples were collected (561I042 through 561I045). Three additional sample locations were selected at distances ranging from approximately 2 to 8 ft laterally in three directions from the pile; surface soil samples (0 to 0.5 ft bgs) were collected. The soil pile was removed and disposed of, and verification samples (561I047 through 561I050) were collected at three locations from 0 to 0.5 ft bgs.

Second Parcel

Eighteen Decision I samples (561I001 through 561I018) were collected from the second parcel. Seven Decision I samples were collected from 0 ft down to 3 ft within the piles. The remaining samples were collected either from the surface (0 to 0.5 ft bgs) or from the shallow subsurface at depths ranging from 1 to 6 ft bgs. Eleven samples were randomly located, while seven samples were based on biasing factors.

2.1.9.6 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.1.10 Hydrocarbon Stains and Trench (CAS 25-25-19)

The following subsections summarize the activities conducted at CAS 25-25-19. The following components of this CAS were investigated, based on a visual inspection: (1) north trench, (2) motor pool area (stained soil), (3) asphalt and tar spills, (4) two soil mounds, and (5) two lead bricks (see [Figure A.12-1](#)).

2.1.10.1 Radiological Survey

A gamma radiological walkover survey of the area was performed at CAS 25-25-19 in 2008. No areas of elevated radioactivity were identified.

2.1.10.2 Geophysical Survey

Geophysical surveys were performed in 2007 and did not identify buried metallic debris in any areas of this CAS.

2.1.10.3 Visual Inspection

The visual inspection identified five areas of potential concern: (1) north trench, (2) motor pool area (stained soil), (3) asphalt and tar spills, (4) two soil mounds, and (5) two lead bricks. The surface soil within the motor pool area was inspected for any stained soil or biasing factors. Stained surface soil

was observed at various locations within the area of the former motor pool; samples 561J001 through 561J004 were collected at these locations.

In the north trench, asphalt was observed at sample location J05 at a depth of 1 to 2 ft bgs. Stained soil and a diesel/solvent odor were observed at the same location from 5 to 5.5 ft bgs. Stained soil and asphalt were also observed at sample location J07 from 0 to 3.5 ft bgs, but no samples were collected at this interval because samples within the asphalt horizon had been collected in potholes at locations J04, J05, and J06.

In the southern portion of the CAS in a wash exiting the area, two areas were observed to have an asphalt spill (sample 561J012) and a tar spill (sample 561J013).

Two lead bricks were discovered at locations J14 and J15; the lead bricks were removed, and the soil beneath the bricks was sampled.

2.1.10.4 Sample Collection

Twenty-two environmental samples were collected from 17 locations within the CAS boundary. Decision I environmental sampling activities included collecting biased surface soil samples at the asphalt spill (561J012) and tar spill (561J013), the motor pool area (561J001 through 561J004), and under the two soil mounds (samples 561J017 and 561J018). Decision I biased subsurface samples were collected from the north trench (561J005 through 561J011, and 561J023, 561J0024) and the suspected backfilled east trench (561J015 and 561J016). At the north trench and soil mounds, samples were collected at various depths based on biasing factors (e.g., stained soil, asphalt). Surface samples were collected at the tar and asphalt spills and the motor pool area.

Waste characterization samples (561J019 and 561J021) were collected from two locations (J14 and J15) where two lead bricks were discovered; the soil directly beneath the lead bricks was sampled and analyzed for TCLP metals. After removal of the soil, two confirmation samples (561J020 and 561J022) were collected from these locations.

2.1.10.5 Conceptual Site Model Validation

A CSM was developed to represent the release mechanisms and potential migration pathways for contaminant releases at CAU 561 CASs. The CSM and associated discussion for this CAS are provided in the CAIP (NNSA/NSO, 2008).

The migration pathway and release mechanism information gathered during the CAI were consistent with the CSM, and all information gathered during the CAI supports and validates the CSM as presented in the CAIP. The CSM assumed that any vertical contaminant migration would be minimal based on the limited infiltration of stormwater (based on low annual precipitation rates and high potential evapotranspiration rates typical of the NNSS environment).

2.2 Results

The data summary provided in [Section 2.2.1](#) defines the magnitude and extent of COCs that were identified within the CAU 561 CASs. [Section 2.2.2](#) summarizes the DQA as detailed in [Appendix B](#) and demonstrates that the investigation results satisfy the DQO data requirements.

2.2.1 Summary of Analytical Data

Chemical and radiological results for environmental samples collected at each of the CASs are summarized in [Sections 2.2.1.1](#) through [2.2.1.10](#). Environmental samples are evaluated against FALs to determine the presence of COCs and the extent of COC contamination, if present.

The PALs for the CAU 561 investigation were determined during the DQO process and are discussed in Section 3.3 of the CAIP (NNSA/NSO, 2008). The FALs used for determining the presence of COCs and for evaluating the need for additional corrective action are defined in [Section 2.3](#). Details about the methods used during this investigation and a comparison of environmental sample results to the FALs are presented in [Appendix A](#).

2.2.1.1 CAS 01-19-01, Waste Dump

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant at this CAS is listed in [Table 2-1](#), and sample locations are shown in [Figure A.3-2](#).

**Table 2-1
Maximum Detected Sample Results for CAS 01-19-01, Waste Dump**

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Ac-228	1.77	561A001	7.5 - 8.0	A01	506.7 ^a	pCi/g
Arsenic	4.7	561A005	5.5 - 6.0	A04	23	mg/kg
Barium	260	561A005	5.5 - 6.0	A04	190,000	mg/kg
Beryllium	0.69	561A005	5.5 - 6.0	A04	2,000	mg/kg
Cadmium	0.22	561A004	6.0 - 6.5	A03	800	mg/kg
Chromium	6.1	561A005	5.5 - 6.0	A04	N/A ^b	mg/kg
Lead	19	561A003	2.0 - 2.5	A02	800	mg/kg
Selenium	0.51	561A002	2.0 - 2.5	A02	5,100	mg/kg
TPH-DRO	3.2 (J)	561A005	5.5 - 6.0	A04	N/A ^c	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

Ac = Actinium

DRO = Diesel-range organics

mg/kg = Milligrams per kilogram

N/A = Not applicable

J = Estimated value

pCi/g = Picocuries per gram

Th = Thorium

TPH = Total petroleum hydrocarbons

2.2.1.2 CAS 02-08-02, Waste Dump and Burn Area

Soil samples were collected from the waste piles within the waste dump and from the burn area to determine the magnitude and extent of site-related contamination.

2.2.1.2.1 Waste Dump Environmental Sample Results

With the exception of the following PAHs—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(ah)anthracene—all soil concentrations of the reported constituents were compared to and were less than FALs.

From the 12 samples collected during characterization of the waste dump, three samples exceeded the PALs for the PAHs. Because the FALs for these constituents were established as the PALs, the following PAHs—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(ah)anthracene—are considered to be COCs at the waste dump. Decision II analytical results

(see [Section A.4.0](#)) indicated that the PAH concentrations were less than FALs, and the extent of contamination was defined.

2.2.1.2.2 Burn Area Environmental Sample Results

With the exception of lead, arsenic, and PAHs, all soil concentrations of the reported constituents were compared to and were less than FALs. Because the FALs for lead and arsenic were established as the PALs, lead and arsenic are considered to be COCs at the burn area.

The PAHs (SVOCs) that were detected at various locations throughout the burn area are considered to be associated with the asphalt that was identified at depths between 0 and 8 in. bgs. The evaluation of the SVOC results has shown that the concentration of the SVOCs do not decrease with increasing distance from the potential sources (burn areas) as would be expected if the burn areas were the source of the PAHs. Aerial photos of the Area 2 camp from September 1971 (H&N, 1971) were reviewed and show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities. Therefore, the PAHs that exceeded the FALs are not considered to be site related.

The maximum concentration of each detected COPC at this CAS is listed in [Table 2-2](#), and sample locations are shown in [Figure A.4-1](#).

2.2.1.3 CAS 03-19-02, Debris Pile

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant at this CAS is listed in [Table 2-3](#), and sample locations are shown in [Figure A.5-1](#).

2.2.1.4 CAS 05-62-01, Radioactive Gravel Pile

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant at this CAS is listed in [Table 2-4](#), and sample locations are shown in [Figure A.6-1](#).

Table 2-2
Maximum Detected Sample Results for CAS 02-08-02, Waste Dump and Burn Area
(Page 1 of 2)

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	Area	FAL	Units
2-Methylnaphthalene	0.16 (J)	561B050	0.0 - 0.5	B37	Burn Area	4,100	mg/kg
Ac-228	2.32	561B010	4.0 - 5.0 ft into pile	B15	Waste Dump	506.7 ^a	pCi/g
Acenaphthene	0.46 (J)	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	33,000	mg/kg
Am-241	1.49 (J)	561B029	0.0 - 0.5	B01	Burn Area	1,503	pCi/g
Anthracene	2.2	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	170,000	mg/kg
Aroclor 1254	0.084	561B017	0.0 - 0.5	B05	Burn Area	0.74	mg/kg
Aroclor 1260	0.076	561B016	4.0 - 5.0 ft into pile	B11	Waste Dump	0.74	mg/kg
Arsenic	65	561B021	0.0 - 0.5	B02	Burn Area	23	mg/kg
Barium	560	561B004	3.0 - 4.0 ft into pile	B10	Waste Dump	190,000	mg/kg
Benzo(a)anthracene	2.8	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	2.1	mg/kg
Benzo(a)pyrene	2.4	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	0.21	mg/kg
Benzo(b)fluoranthene	3.7	561B069	0.0 - 0.5	B50	Burn Area	2.1	mg/kg
Benzo(ghi)perylene	3.4	561B069	0.0 - 0.5	B50	Burn Area	17,000	mg/kg
Benzo(k)fluoranthene	1.4 (J)	561B069	0.0 - 0.5	B50	Burn Area	21	mg/kg
Beryllium	0.71	561B013	0.5 - 1.0 ft into pile	B12	Waste Dump	2,000	mg/kg
Bis(2-ethylhexyl)phthalate	0.26 (J)	561B009	5.0 - 6.0 ft into pile	B16	Waste Dump	120	mg/kg
Cadmium	0.91	561B028	0.0 - 0.5	B03	Burn Area	800	mg/kg
Carbazole	0.52	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	95.8	mg/kg
Chromium	58	561B028	0.0 - 0.5	B03	Burn Area	N/A ^b	mg/kg
Hexavalent chromium	1.6 (J)	561B013	0.5 - 1.0 ft into pile	B12	Waste Dump	5.6	mg/kg
Chrysene	2.8	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	210	mg/kg
Cs-137	2.57	561B001	2.0 - 3.0 ft into pile	B07	Waste Dump	72.9	pCi/g
Di-n-butyl phthalate	3.4	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	62,000	mg/kg
Dibenzo(ah)anthracene	1	561B069	0.0 - 0.5	B50	Burn Area	0.21	mg/kg
Dibenzofuran	0.23 (J)	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	1,000	mg/kg
Diethyl phthalate	0.22 (J)	561B052	0.0 - 0.5	B39	Burn Area	490,000	mg/kg
Fluoranthene	8.2	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	22,000	mg/kg
Fluorene	0.55	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	22,000	mg/kg

Table 2-2
Maximum Detected Sample Results for CAS 02-08-02, Waste Dump and Burn Area
 (Page 2 of 2)

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	Area	FAL	Units
Indeno(1,2,3-cd)pyrene	3.3 (J)	561B069	0.0 - 0.5	B50	Burn Area	2.1	mg/kg
Lead	14,000 (J+)	561B021	0.0 - 0.5	B02	Burn Area	800	mg/kg
Mercury	0.028	561B013	0.5 - 1.0 ft into pile	B12	Waste Dump	34	mg/kg
Methylene chloride	0.015	561B015	3.0 - 3.5 ft into pile	B12	Waste Dump	53	mg/kg
Phenanthrene	7.2	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	170,000	mg/kg
Pyrene	6.8	561B005	2.0 - 3.0 ft into pile	B18	Waste Dump	17,000	mg/kg
Selenium	0.6	561B073	0.0 - 0.5	B54	Burn Area	5,100	mg/kg
Silver	0.52	561B021	0.0 - 0.5	B02	Burn Area	5,100	mg/kg
Th-234	3.6 (J)	561B010	4.0 - 5.0 ft into pile	B15	Waste Dump	1,423 ^c	pCi/g
TPH-DRO	320	561B013	0.5 - 1.0 ft into pile	B12	Waste Dump	N/A ^d	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cFAL for Th-234 based on U-238 FAL.

^dPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

Am = Americium

Cs = Cesium

U = Uranium

J = Estimated value

J+ = Result is an estimated quantity, but may be biased high.

Bold indicates the values exceeding the FALs.

Table 2-3
Maximum Detected Sample Results for CAS 03-19-02, Debris Pile

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Ac-228	1.94	561C004	0.0 - 0.5	C02	506.7 ^a	pCi/g
Am-241	2.89 (J)	561C003	0.5 - 1.0	C01	1,503	pCi/g
Cs-137	2.49	561C002	0.5 - 1.0	C01	72.9	pCi/g
Eu-152	0.97 (J)	561C003	0.5 - 1.0	C01	38.2	pCi/g

^aFAL for Ac-228 based on Th-232 FAL.

Eu = Europium

J = Estimated value

Table 2-4
Maximum Detected Sample Results for CAS 05-62-01, Radioactive Gravel Pile

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Ac-228	1.16	561D002	0.0 - 0.5	D02	506.7 ^a	pCi/g
Cs-137	0.196	561D001	0.0 - 0.5	D01	72.9	pCi/g
Pu-239/240	0.087	561D001	0.0 - 0.5	D01	2,207	pCi/g
Th-234	206	561D006	1.0 - 1.5 ft into gravel pile	D05	1,423 ^b	pCi/g
U-234	267	561D006	1.0 - 1.5 ft into gravel pile	D05	18,650	pCi/g
U-235	15.3	561D006	1.0 - 1.5 ft into gravel pile	D05	255.2	pCi/g
U-238	630	561D006	1.0 - 1.5 ft into gravel pile	D05	1,423	pCi/g

^aFAL for Ac-228 based on Th-232 FAL.

^bFAL for Th-234 based on U-238 FAL.

Pu = Plutonium

2.2.1.5 CAS 12-23-09, Radioactive Waste Dump

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant at this CAS is listed in [Table 2-5](#), and sample locations are shown in [Figure A.7-1](#).

2.2.1.6 CAS 22-19-06, Buried Waste Disposal Site

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant at this CAS is listed in [Table 2-6](#), and sample locations are shown in [Figure A.8-1](#).

2.2.1.7 CAS 23-21-04, Waste Disposal Trenches

After removal of the arsenic-, hexavalent chromium-, and PCB-contaminated soil within Trenches 3 and 5, all soil concentrations of the reported constituents were compared to and were less than FALs. Verification samples were collected after the soil removal and indicate that the concentration of the three constituents are now less than the FALs and no COCs remain in the soil at CAS 23-21-04. [Tables A.9-5](#) and [A.9-6](#) present sample locations, sample depths, and concentrations from the

Table 2-5
Maximum Detected Sample Results for CAS 12-23-09, Radioactive Waste Dump

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Ac-228	2.47	561E006	0.0 - 0.5	E03	506.7 ^a	pCi/g
Acetone	0.046 (J)	561E008	0.0 - 0.5	E05	630,000	mg/kg
Am-241	1.23 (J)	561E002	0.0 - 0.5	E01	1,503	pCi/g
Aroclor 1268	0.028 (J)	561E001	0.0 - 0.5	E04	0.74	mg/kg
Arsenic	3.7	561E007	0.0 - 0.5	E06	23	mg/kg
Barium	150	561E006	0.0 - 0.5	E03	190,000	mg/kg
Benzo(a)anthracene	0.086 (J)	561E007	0.0 - 0.5	E06	2.1	mg/kg
Benzo(a)pyrene	0.073 (J)	561E007	0.0 - 0.5	E06	0.21	mg/kg
Benzo(b)fluoranthene	0.16 (J)	561E007	0.0 - 0.5	E06	2.1	mg/kg
Benzo(k)fluoranthene	0.073 (J)	561E007	0.0 - 0.5	E06	21	mg/kg
Beryllium	0.87	561E006	0.0 - 0.5	E03	2,000	mg/kg
Cadmium	0.28	561E008	0.0 - 0.5	E05	800	mg/kg
Chromium	6.3	561E007	0.0 - 0.5	E06	N/A ^b	mg/kg
Hexavalent chromium	0.37 (J-)	561E001	0.0 - 0.5	E04	5.6	mg/kg
Chrysene	0.13 (J)	561E007	0.0 - 0.5	E06	210	mg/kg
Cs-137	8.5	561E005	1.0 - 1.5 ft into soil mound	E07	72.9	pCi/g
Fluoranthene	0.15 (J)	561E007	0.0 - 0.5	E06	22,000	mg/kg
Lead	23	561E002	0.0 - 0.5	E01	800	mg/kg
Mercury	0.052	561E008	0.0 - 0.5	E05	34	mg/kg
P-Isopropyltoluene	0.01	561E008	0.0 - 0.5	E05	11,000	mg/kg
Pyrene	0.13 (J)	561E007	0.0 - 0.5	E06	17,000	mg/kg
Selenium	0.32	561E005	1.0 - 1.5 ft into soil mound	E07	5,100	mg/kg
Toluene	0.0044 (J)	561E007	0.0 - 0.5	E06	45,000	mg/kg
Total xylenes	0.0044 (J)	561E008	0.0 - 0.5	E05	2,700	mg/kg
TPH-DRO	17	561E003	0.0 - 0.5	E02	N/A ^c	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

Table 2-6
Maximum Detected Sample Results for CAS 22-19-06, Buried Waste Disposal Site

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Ac-228	0.69	561F004	7.0 - 7.5	F03	506.7 ^a	pCi/g
Arsenic	6.2	561F004	7.0 - 7.5	F03	23	mg/kg
Barium	89	561F004	7.0 - 7.5	F03	190,000	mg/kg
Barium	89	561F005	8.0 - 8.5	F04	190,000	mg/kg
Cadmium	0.27	561F005	8.0 - 8.5	F04	800	mg/kg
Chromium	5.1 (J)	561F002	1.5 - 2.0	F01	N/A ^b	mg/kg
Lead	17 (J)	561F004	7.0 - 7.5	F03	800	mg/kg
Selenium	0.29	561F001	1.5 - 2.0	F01	5,100	mg/kg
TPH-DRO	11	561F003	2.5 - 3.0	F02	N/A ^c	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

verification samples. The maximum concentration of each detected contaminant remaining in the soil at this CAS is listed in [Table 2-7](#), and sample locations are shown in [Figure A.9-1](#).

2.2.1.8 CAS 25-08-02, Waste Dump

After removal of the arsenic-contaminated concrete-like material, all soil concentrations of the reported constituents were compared to and were less than FALs. Verification samples were collected after the pile was removed and indicate that the concentration of the arsenic is now less than the FALs and no COCs remain in the soil at CAS 25-08-02. [Table A.10-5](#) presents sample locations, sample depths, and concentrations from the verification samples. The maximum concentration of each detected contaminant remaining in the soil at this CAS is listed in [Table 2-8](#), and sample locations are shown in [Figure A.10-1](#). Because all of the waste piles were removed and disposed of, the maximum detected sample results are from the verification samples only.

Table 2-7
Maximum Detected Sample Results for CAS 23-21-04, Waste Disposal Trenches

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	Trench	FAL	Units
Ac-228	1.43	561G003	0.0 - 0.5	G03	6	506.7 ^a	pCi/g
Acetone	0.062 (J)	561G014	0.0 - 0.5	G13	5	630,000	mg/kg
Am-241	0.53 (J)	561G012	0.5 - 1.0	G11	5	1,503	pCi/g
Aroclor 1260	0.027 (J)	561G005	7.5 - 8.0	G05	3	0.74	mg/kg
Arsenic	18	561G005	7.5 - 8.0	G05	3	23	mg/kg
Barium	190	561G014	0.0 - 0.5	G13	5	190,000	mg/kg
Benzoic acid	1.7	561G005	7.5 - 8.0	G05	3	2,500,000	mg/kg
Beryllium	0.69	561G003	0.0 - 0.5	G03	6	2,000	mg/kg
Bis(2-ethylhexyl)phthalate	3.1 (J)	561G005	7.5 - 8.0	G05	3	120	mg/kg
Cadmium	5.3 (J)	561G003	0.0 - 0.5	G03	6	800	mg/kg
Chromium	8.7	561G003	0.0 - 0.5	G03	6	N/A ^b	mg/kg
Hexavalent chromium	2.4 (J)	561G009	0.0 - 0.5	G09	6	5.6	mg/kg
Cs-137	0.51	561G012	0.5 - 1.0	G11	5	72.9	pCi/g
Di-n-butyl phthalate	0.072 (J)	561G005	7.5 - 8.0	G05	3	62,000	mg/kg
Lead	120(J)	561G011	0.5 - 1.0	G10	6	800	mg/kg
Mercury	0.045	561G014	0.0 - 0.5	G13	5	34	mg/kg
Methylene chloride	0.0049 (J)	561G003	0.0 - 0.5	G03	6	53	mg/kg
Selenium	0.47	561G014	0.0 - 0.5	G13	5	5,100	mg/kg
Toluene	0.0022 (J)	561G009	0.0 - 0.5	G09	6	45,000	mg/kg
Total xylenes	0.0029 (J)	561G011	0.0 - 0.5	G10	6	2,700	mg/kg
TPH-DRO	270	561G006	7.5 - 8.0	G06	3	N/A ^c	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

Table 2-8
Maximum Detected Sample Results for CAS 25-08-02, Waste Dump

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
Arsenic	4.2	561H025	0.0 - 0.5	H22	23	mg/kg
Barium	140	561H025	0.0 - 0.5	H22	190,000	mg/kg
Cadmium	0.071	561H025	0.0 - 0.5	H22	800	mg/kg
Chromium	5.2	561H025	0.0 - 0.5	H22	N/A ^a	mg/kg
Lead	9.4 (J)	561H025	0.0 - 0.5	H22	800	mg/kg
Mercury	0.015 (J)	561H020	0.0 - 0.5	H19	34	mg/kg

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

2.2.1.9 CAS 25-23-21, Radioactive Waste Dump

After removal of the Cs-137- and PCB-contaminated RMA piles, all soil concentrations of the reported constituents were compared to and were less than FALs. Verification samples were collected after these RMA piles were removed and indicate that the concentrations of Cs-137 and PCBs are now less than the FALs and no COCs remain in the soil at CAS 25-23-21. [Tables A.11-6](#) and [A.11-7](#) present sample locations, sample depths, and PCB and Cs-137 concentrations from the from the verification samples.

Soil concentrations of the reported constituents at the second parcel were compared to and were less than PALs. The maximum concentration of each detected contaminant remaining in the soil at this CAS at both the main waste dump and the second parcel is listed in [Table 2-9](#), and sample locations are shown in [Figures A.11-2](#) and [A.11-3](#).

2.2.1.10 CAS 25-25-19, Hydrocarbon Stains and Trench

All soil concentrations of the reported constituents were compared to and were less than FALs. The maximum concentration of each detected contaminant remaining in the soil at this CAS is listed in [Table 2-10](#), and sample locations are shown in [Figure A.12-1](#). Two lead bricks were removed, and verification samples were collected beneath the bricks. The verification samples indicated that the concentration of lead is now less than the FALs and no COCs remain in the soil at CAS 25-25-19.

**Table 2-9
Maximum Detected Sample Results for CAS 25-23-21, Radioactive Waste Dump**

Contaminant	Maximum Result	Sample Number	Depth (ft into pile)	Location	Area	FAL	Units
Ac-228	2.64	561I011	0.0 - 1.0	I02	Second Parcel	506.7 ^a	pCi/g
Aroclor 1254	0.12	561I021	2.5 - 3.0	I26	Waste Dump	0.74	mg/kg
Arsenic	16	561I017	0.0 - 0.5 ft bgs	I11	Second Parcel	23	mg/kg
Barium	300	561I017	0.0 - 0.5 ft bgs	I11	Second Parcel	190,000	mg/kg
Beryllium	1.1	561I003	1.0 - 1.5	I16	Second Parcel	2,000	mg/kg
Cadmium	1.5	561I015	2.0 - 2.5	I13	Second Parcel	800	mg/kg
Chromium	44	561I009	0.0 - 0.5	I03	Second Parcel	N/A ^b	mg/kg
Hexavalent chromium	0.52 (J-)	561I015	2.0 - 2.5	I13	Second Parcel	5.6	mg/kg
Co-60	1.77	561I034	0.0 - 0.5	I30	Waste Dump	18.33	pCi/g
Cs-137	2.85	561I039	0.0 - 0.5	I36	Waste Dump	72.9	pCi/g
Lead	32	561I017	0.0 - 0.5 ft bgs	I11	Second Parcel	800	mg/kg
Mercury	0.1	561I015	2.0 - 2.5	I13	Second Parcel	34	mg/kg
Methylene chloride	0.013	561I009	0.0 - 0.5	I03	Second Parcel	53	mg/kg
PCBs (low risk)	0.084	561I015	2.0 - 2.5	I13	Second Parcel	21	mg/kg
Selenium	0.44	561I005	0.0 - 0.5	I06	Second Parcel	5,100	mg/kg
Th-234	5.6 (J)	561I011	0.0 - 1.0	I02	Second Parcel	1,423 ^c	pCi/g
TPH-DRO	73	561I015	2.0 - 2.5	I13	Second Parcel	N/A ^d	mg/kg
U-235	3.9 (J)	561I033	0.0 - 0.5	I30	Waste Dump	255.5	pCi/g

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cFAL for Th-234 based on U-238 FAL.

^dPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

Table 2-10
Maximum Detected Sample Results for CAS 25-25-19,
Hydrocarbon Stains and Trench

Contaminant	Maximum Result	Sample Number	Depth (ft bgs)	Location	FAL	Units
2-Butanone	0.011 (J)	561J001	0.0 - 0.5	J01	200,000	mg/kg
Ac-228	2.07	561J006	4.0 - 4.5	J04	506.7 ^a	pCi/g
Acetone	0.036 (J)	561J002	0.0 - 0.5	J02	630,000	mg/kg
Aroclor 1260	0.5 (J)	561J007	1.0 - 2.0	J05	0.74	mg/kg
Arsenic	3.2	561J001	0.0 - 0.5	J01	23	mg/kg
Barium	200	561J002	0.0 - 0.5	J02	190,000	mg/kg
Beryllium	0.46 (J-)	561J018	0.0 - 1.0	J13	2,000	mg/kg
Bis(2-ethylhexyl)phthalate	0.068 (J)	561J005	0.5 - 1.5	J04	120	mg/kg
Cadmium	0.71	561J020	0.5 - 1.0	J14	800	mg/kg
Chromium	6.3	561J024	6.0 - 6.5	J17	N/A ^b	mg/kg
Lead	420 (J)	561J002	0.0 - 0.5	J02	800	mg/kg
Mercury	0.066	561J010	5.0 - 5.5	J06	34	mg/kg
Selenium	0.36	561J003	0.0 - 0.5	J03	5,100	mg/kg
Silver	0.16	561J020	0.5 - 1.0	J14	5,100	mg/kg
Th-234	3 (J)	561J008	5.0 - 5.5	J05	1,423 ^c	pCi/g
TPH-DRO	1,900	561J008	5.0 - 5.5	J05	N/A ^d	mg/kg

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cFAL for Th-234 based on U-238 FAL.

^dPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

2.2.2 Data Assessment Summary

The DQA process as presented in [Appendix B](#) is composed of the following steps:

- Step 1: Review DQOs and Sampling Design.
- Step 2: Conduct a Preliminary Data Review.
- Step 3: Select the Test.
- Step 4: Verify the Assumptions.
- Step 5: Draw Conclusions from the Data.

The results of the DQI evaluation show that precision was the only indicator that did not meet the associated criterion. The only analyte that failed to meet the precision criterion was lead. As presented in [Appendix B](#), there is a negligible potential for this precision deficiency to cause a false negative decision error. All other DQI criteria were met. The DQA determined that information generated during the investigation supports the CSM assumptions, and the data collected support their intended use in the decision-making process. Based on the results of the DQA presented in [Appendix B](#), the DQO requirements have been met.

Sample locations that support the presence and/or extent of contamination at each CAS are shown in [Appendix A](#). Based on the results of the DQA presented in [Appendix B](#), the DQO requirements have been met. The DQA also determined that information generated during the investigation supports the revised CSM assumptions, and the data collected support their intended use in the decision-making process.

2.3 Justification for No Further Action

No further corrective action is justified based on an evaluation of risk to ensure protection of the public and the environment in accordance with *Nevada Administrative Code* (NAC) 445A (NAC, 2008a), feasibility, and cost effectiveness. The decision that no further action is needed was determined from DQO decision statements based on a comparison of the analyte concentrations detected in CAI soil samples to the FALs defined in [Section 2.3.1](#).

No further corrective action is required at CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06 because COCs were not identified in sample results. [Appendix C](#) presents the evaluation of the risk assessment with the detected constituents and supports the recommendation of no further action.

All COC-impacted soil and PSM at CASs 23-21-04, 25-08-02, 25-23-21, and 25-25-19 was removed during the corrective action activities of clean closure discussed in [Appendix D](#), and final verification sample results did not exceed FALs.

As part of a closure in place corrective action for CAS 02-08-02, an FFACO use restriction (UR) was implemented for contaminants identified at concentrations exceeding FALs. The UR will prevent unauthorized intrusive activities.

Best management practices (BMPs) were implemented at several of the CASs. [Appendix D](#) provides additional detail on the BMP activities performed at CAU 561 CASs.

2.3.1 Final Action Levels

The CAU 561 FALs are risk-based cleanup goals that, if met, will ensure that each release site will not pose an unacceptable risk to human health and the environment and that conditions at each site are in compliance with all applicable laws and regulations. The risk-based corrective action (RBCA) process used to establish FALs is described in the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006). This process conforms with NAC Section 445A.227, which lists the requirements for sites with soil contamination (NAC, 2008b). For the evaluation of corrective actions, NAC Section 445A.22705 (NAC, 2008c) requires the use of ASTM International (ASTM) Method E1739 (ASTM, 1995) to “conduct an evaluation of the site, based on the risk it poses to public health and the environment, to determine the necessary remediation standards (i.e., FALs) or to establish that corrective action is not necessary.”

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

- Tier 1 evaluation – sample results from source areas (highest concentrations) are compared to action levels based on generic (non-site-specific) conditions (i.e., the PALs established in the CAIP [NNSA/NSO, 2008]). The FALs may then be established as the Tier 1 action levels, or the FALs may be calculated using a Tier 2 evaluation.
- Tier 2 evaluation – conducted by calculating Tier 2 Site-Specific Target Levels (SSTLs) using site-specific information as inputs to the same or similar methodology used to calculate Tier 1 action levels. The Tier 2 SSTLs are then compared to individual sample results from reasonable points of exposure (as opposed to the source areas as is done in Tier 1) on a point-by-point-basis. Total TPH concentrations will not be used for risk-based decisions under Tier 2 or Tier 3. Rather, the individual chemicals of concern will be compared to the SSTLs.

- Tier 3 evaluation – conducted by calculating Tier 3 SSTLs on the basis of more sophisticated risk analyses using methodologies described in Method E1739 that consider site-, pathway-, and receptor-specific parameters.

A Tier 1 evaluation was conducted for all COPCs to determine whether contaminant levels satisfy the criteria for a quick regulatory closure or warrant a more site-specific assessment. This was accomplished by comparing individual source area contaminant concentration results to the Tier 1 action levels (the PALs established in the CAIP [NNSA/NSO, 2008]).

The only constituent detected at CAU 561 for which a PAL was not established was phenanthrene. The surrogate chemical used was anthracene because this surrogate is based on structural similarity. The difference between the two chemicals is the position of the benzene rings. Under the same conditions, these chemicals react similarly. Phenanthrene is more polar and therefore more reactive than anthracene. The FALs for all constituents were established at the PAL concentrations.

3.0 Recommendation

No further corrective action beyond what is described in this CADD/CR document is required at CAU 561 based on implementation of the following corrective actions:

- No further action for CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06.
- Closure in place with an FFACO UR at CAS 02-08-02 for the lead-, arsenic-, and PAH-impacted soil. An FFACO UR was implemented and filed in the NNSA/NSO Facility Information Management System, the FFACO database, and the NNSA/NSO CAU/CAS files.
- Clean closure for CAS 23-21-04, as the arsenic- and PCB-impacted soil and lead brick and counterweights have been removed.
- Clean closure for CAS 25-08-02, as the arsenic-impacted concrete-like material and lead-acid batteries have been removed.
- Clean closure for CAS 25-23-21, as the PCB- and Cs-137-impacted soil has been removed.
- Clean closure for CAS 25-25-19, as the lead bricks have been removed.

The following BMPs were also conducted:

- At CAS 23-21-04, removed and disposed of housekeeping debris in and around the trenches, and backfilled all open trenches.
- At CAS 25-08-02, removed and disposed of all sanitary waste piles and debris, and leveled the area to ground surface.
- At CAS 25-23-21, the remaining piles at main waste dump were leveled and contoured to the original grade, and housekeeping debris was removed from the second parcel.
- At CAS 25-25-19, removed and disposed of housekeeping debris.

The NNSA/NSO requests that NDEP issue a Notice of Completion for this CAU and approval to move the CAU from Appendix III to Appendix IV of the FFACO.

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Appendix A

Corrective Action Investigation Results

A.1.0 Introduction

This appendix presents the CAI activities and analytical results for CAU 561. The 10 CASs that make up CAU 561 are located in Areas 1, 2, 3, 5, 12, 22, 23, and 25 of the NNSS ([Figure 1-1](#)) and are listed below:

- 01-19-01, Waste Dump
- 02-08-02, Waste Dump and Burn Area
- 03-19-02, Debris Pile
- 05-62-01, Radioactive Gravel Pile
- 12-23-09, Radioactive Waste Dump
- 22-19-06, Buried Waste Disposal Site
- 23-21-04, Waste Disposal Trenches
- 25-08-02, Waste Dump
- 25-23-21, Radioactive Waste Dump
- 25-25-19, Hydrocarbon Stains and Trench

Corrective Action Site 01-19-01 is located in Area 1 and consists of a fenced area approximately 20 ft east of Building 1-31-2.e1. The CAS was originally identified as a subsurface waste dump, but no waste dump was found during the CAI. During excavation activities, a building foundation from Building 31.1-b1, constructed for the Apple-2 test, was uncovered. There was visible debris on the ground surface consisting of concrete chunks, rebar, wood, and red bricks.

Corrective Action Site 02-08-02 is located in the dry wash southeast of the Area 2 Camp, and consists of a waste dump and burn area. The waste dump contains piles of dirt and boulders with scattered debris, including metal cables, wires, wooden planks, tires, sheet metal, and a crushed 30-gal drum which contained a very small amount of grease. A review of historical air photographs show that the material was placed at this location between 1983 and 1985 (NNSA/NSO, 2008). The burn area, located northwest of the waste dump, contains scattered nails, metal, wood, bits of charcoal, and melted lead.

Corrective Action Site 03-19-02 is located in Area 3. It consists of a pile of concrete debris believed to be associated with the Pommard test, which was conducted on March 14, 1968. A large piece of concrete has Trinity glass adhered to its surface. The CAS is surrounded by “Caution Radioactive Material” postings but is not fenced.

Corrective Action Site 05-62-01 consists of a radioactive gravel pile located approximately 1,000 ft west of the Gravel Gertie in Area 5. The pile contains visible concrete and metal debris, which is believed to be from the Gravel Gertie testing events. The CAS is fenced and posted as an RMA.

Corrective Action Site 12-23-09 is located approximately 150 ft northwest of Stockade Wash Road, just north of the E-Tunnel Road in Area 12. The CAS consists of two separate fenced areas (north and south) and was labeled as a radioactive waste dump on a topographic map; however, interviews with past employees suggest that the site was used as an electricians' laydown yard.

Corrective Action Site 22-19-06 is located at the southeast end of Camp Desert Rock in Area 22 of the NNSS and consists of buried debris identified by a geophysical survey. Excavation activities uncovered a manhole cover and a concrete-filled piece of corrugated pipe. Camp Desert Rock has been identified as eligible for inclusion in the National Register of Historic Places (Jones, 2010).

Corrective Action Site 23-21-04 consists of six potential waste disposal trenches and one potential covered trench located approximately 1,500 ft northeast of Building 23-160 in Area 23. Three of the trenches contained debris (wood, metal, cables/wire, lead bricks and lead counterweights, nails and bolts). There was also stained soil near two of the trenches.

Corrective Action Site 25-08-02 is located north of G Road between the RCP and R-MAD complex in Area 25, and consists of a large waste dump. The waste dump consists of piles of construction debris, such as concrete, metal, rebar, wood, batteries, 5-gal buckets, an empty cable spool, rusted cans, and pipes.

Corrective Action Site 25-23-21 consists of a radioactive waste dump located within Topopah Wash, northeast of the E-MAD Facility in Area 25. A second parcel is upstream from the waste dump parcel within Topopah Wash and extends further upstream north of H Road. The waste dump contains numerous dirt mounds and piles within a posted "Controlled Area," along with miscellaneous piles extending up through Topopah Wash to H Road. Within the waste dump, there are two specific piles that are posted with "Caution Radioactive Material" signs. The signs referred to the pieces of cast-iron pipe that were located on and within the soil piles. The second parcel contains typical waste piles, along with concrete, asphalt, and magnetite piles.

Corrective Action Site 25-25-19 encompasses approximately 8 acres and is located southeast of the intersection of C Road and G Road in Area 25, across from the RCP. The CAS consists of surface soil stains, a tar spill, an asphalt spill, a trench, concrete pads, debris, rock, and soil piles.

Additional information regarding the history of each site, planning, and the scope of the investigation is presented in the CAU 561 CAIP (NNSA/NSO, 2008).

A.1.1 Project Objectives

The primary objective of the investigation was to provide sufficient information to complete corrective actions for each CAS in CAU 561 and to support a recommendation for closure of the CASs in CAU 561. This objective was achieved by identifying the nature and extent of COCs and by evaluating, selecting, and implementing corrective action alternatives (CAAs).

A.1.2 Content

This appendix describes the investigation and presents the results. The contents of this appendix are as follows:

- [Section A.1.0](#) describes the investigation background, objectives, and content.
- [Section A.2.0](#) provides an investigation overview.
- [Sections A.3.0](#) through [A.12.0](#) provide CAS-specific information regarding the field activities, sampling methods, and laboratory analytical results from investigation sampling.
- [Section A.13.0](#) summarizes waste management activities.
- [Section A.14.0](#) discusses the QA and QC processes followed and the results of QA/QC activities.
- [Section A.15.0](#) provides a summary of the investigation results.
- [Section A.16.0](#) lists the cited references.

The complete field documentation and laboratory data—including field activity daily logs (FADLs), sample collection logs (SCLs), analysis request/chain-of-custody forms, soil sample descriptions, laboratory certificates of analyses, analytical results, and surveillance results—are retained in project files as hard copy files or electronic media.

A.2.0 Investigation Overview

Field investigation and sampling activities for the CAU 561 CAI were conducted from August 2, 2010, through June 28, 2011. [Table A.2-1](#) lists the CAI activities that were conducted at each of the CASs.

Table A.2-1
CAI Activities Conducted at Each CAS To Meet CAIP Requirements for CAU 561

CAI Activities	CAS									
	01-19-01	02-08-02	03-19-02	05-62-01	12-23-09	22-19-06	23-21-04	25-08-02	25-23-21	25-25-19
Inspected and verified the CAS components identified in the CAIP.	X	X	X	X	X	X	X	X	X	X
Performed site walkovers to identified biased sampling locations.	X	X	X	X	X	X	X	X	X	X
Conducted scanning radiological walkover surveys (i.e., soil, concrete surfaces, debris) using a handheld detector.	--	--	X	X	--	--	--	--	X	--
Collected biased (judgmental) soil samples.	X	X	X	X	X	X	X	X	X	X
Collected randomly located (probabilistic) soil samples.	--	X	--	--	X	--	--	X	X	--
Collected soil samples from step-out locations (Decision II) based on the outer boundary sample locations where COCs were detected in Decision I soil samples.	--	X	--	--	--	--	X	X	X	--
Field screened samples for alpha and beta/gamma radiation using a hand-held survey instrument.	--	--	--	X	--	--	--	--	X	--
Submitted select samples for offsite laboratory analysis.	X	X	X	X	X	X	X	X	X	X
Collected GPS coordinates for sample locations and points of interest.	X	X	X	X	X	X	X	X	X	X
Removed debris for disposal, as BMP.	--	X	--	--	--	--	X	X	X	X
Removed melted lead, lead bricks/counterweights, and lead-acid batteries for recycle.	--	X	--	--	--	--	X	X	--	X

GPS = Global Positioning System

-- = Not applicable

The investigation and sampling program was managed in accordance with the requirements set forth in the CAIP (NNSA/NSO, 2008). Samples were collected and documented following the CAIP. Quality control samples (e.g., field blanks, equipment rinsate blanks, trip blanks, and duplicate samples) were collected as required by the Industrial Sites QAPP (NNSA/NV, 2002a) and the CAIP. During field activities, waste minimization practices were followed according to approved procedures, including segregation of waste by waste type.

Except as noted in the following CAS-specific sections, CAU 561 Decision I sampling locations were accessible and sampling activities at planned locations were not restricted. Decision II sample locations were accessible and remained within the anticipated CAS-specific spatial boundaries.

[Sections A.2.1](#) through [A.2.4](#) provide the investigation methodology, site geology and hydrology, and laboratory analytical information.

A.2.1 Sample Locations

Sampling locations were selected based on interpretation of historical aerial photographs, interviews with former and current site employees, information presented in the Preliminary Assessments Site Reference Summary (SNJV, 2006), information obtained during site visits, and site conditions as presented in the CAIP (NNSA/NSO, 2008). Sampling points for each site were selected based on the approach provided in the CAIP. The planned judgmental and random sample locations are presented on figures in the CAIP. Actual environmental sample locations and reasons for deviations from the CAIP plans are shown on the figures and discussed in [Sections A.3.0](#) through [A.12.0](#). Some locations were modified slightly from planned positions due to field conditions and observations. In some cases, field observations and laboratory analytical results determined the need for step-out (Decision II) sampling. All sample locations were staked, labeled, and the survey coordinates recorded using a GPS unit. [Appendix E](#) presents these data in a tabular format.

A.2.2 Investigation Activities

The investigation activities performed at CAU 561, listed in [Table A.2-1](#), were consistent with the field investigation activities stipulated in the CAIP (NNSA/NSO, 2008) and the FI ROTC-1 (NNES, 2010). The investigation strategy resulted in the accurate delineation of the nature and extent

of COCs associated with each CAS. The following sections describe the CAU 561-specific investigation activities.

A.2.2.1 Radiological Surveys

Radiological surveys (i.e., scanning) were performed at CASs 03-19-02 and 05-62-01 during the CAI. The surveys were performed to identify the presence, the nature, and the extent of radiological contaminants at activities statistically distinguishable from background activities (more than two times background levels). These radiological surveys were used as biasing factors to locate samples at the two CASs. The radiological surveys were conducted using a handheld plastic scintillation detector in conjunction with a GPS receiver and datalogger.

A.2.2.2 Geophysical Surveys

Geophysical walkover surveys were conducted at some of the CASs during the preliminary assessments as specified in CAIP (NNSA/NSO, 2008). The surveys were reviewed to determine investigation areas and potential sample locations. No additional surveys were required during the CAI effort.

A.2.2.3 Field Screening

Field-screening activities for alpha and beta/gamma radiation were performed as specified in the CAIP (NNSA/NSO, 2008). The CAS-specific sections of this document identify where field screening was conducted and how the FSLs were used to aid in the selection of samples to be submitted for analysis. Field-screening results (FSRs) are recorded on SCLs that are retained in project files.

Samples collected from CASs 22-19-06 and 25-25-19 were screened for VOCs using a Mini-RAE 2000 photoionization detector (PID) due to the possible presence of volatile hydrocarbons in the soil. A Q-RAE Plus Four-Gas Monitor was used to screen soil samples from CASs 25-25-19 and 22-19-06.

A.2.2.4 Surface and Subsurface Soil Sampling

The CASs were investigated by conducting radiological and visual surveys to identify biasing factors, and sampling potential contaminant sources, surface and subsurface soils. Surface soil samples were collected using hand sampling techniques. Subsurface soil samples were collected using a backhoe. The soil samples were field screened at all locations for alpha and beta/gamma radiation. The results were compared against FSLs to guide in the CAS-specific investigations. Samples of various media (e.g., concrete) were collected to support both environmental and waste characterization using scabbling techniques.

Soil samples were collected using “scoop and trowel” (surface hand-grab sampling), a backhoe, and a scabbler (concrete samples). Radiological screening was conducted during sample collection to select sample locations. Labeled sample containers were filled according to the following sequence: VOCs sample containers were filled with soil directly from the sample location or from the decontaminated backhoe bucket, for the CASs specified in the CAIP (NNSA/NSO, 2008). Additional soil was transferred into a an aluminum pan and homogenized. Remaining sample containers were then filled with the homogenized soil. Excess soil was returned to its original location.

Surface soil samples were collected from 0 to 1 ft bgs at biased locations as determined in the field based on the presence of stained soil, PSM, areas with elevated radiological measurements, or other biasing factors as specified in the CAIP. Subsurface soil samples were collected from 1 to 8.5 ft bgs at locations in excavations that showed biasing (e.g., debris, stained soil) factors, and at the native soil interface.

A.2.2.5 Waste Characterization Sampling

Characterization of CAS-specific materials (e.g., lead bricks, concrete, magnetite) and the underlying soil was conducted to support the potential disposal of these items.

Samples were analyzed in accordance with the CAIP (NNSA/NSO, 2008). The specific analyses for each CAS are listed in CAS-specific sections, and the analytical results are compared to the federal limits for hazardous waste, landfill acceptance criteria, and the limits in the NNSS performance objective criteria (POC) (BN, 1995). The POC limits have been established for

NNSS hazardous waste generators to ensure that all hazardous waste being shipped off site contains no “added radioactivity.”

Specific waste characterization sampling and analysis was conducted on the following potential waste streams:

- Soil samples from Trenches 3 and 5 at CAS 23-21-04, which were analyzed for TCLP metals.
- Samples of the concrete-like material pile and a pile of typical construction debris at CAS 25-08-02, which were analyzed for TCLP metals.
- Soil samples from all CASs, which were analyzed for TPH-DRO.

A.2.3 Laboratory Analytical Information

Radiological and chemical analyses were performed by Paragon Analytics, Inc., of Fort Collins, Colorado. Dioxin analyses were performed by TestAmerica, of Knoxville, Tennessee. The analytical suites and laboratory analytical methods used to analyze investigation samples are listed in [Table A.2-2](#). Analytical results are reported in this appendix if they were detected above the minimum detectable concentrations (MDCs). The complete laboratory data packages are available in the project files.

Table A.2-2
Laboratory Analyses and Methods, CAU 561 Investigation Samples^a
(Page 1 of 2)

Analysis	Analytical Method^b
VOCs	Aqueous/Non-aqueous - EPA SW-846 ^c 8260
SVOCs	Aqueous/Non-aqueous - EPA SW-846 ^c 8270
PCBs	Aqueous/Non-aqueous - EPA SW-846 ^c 8082
TPH-DRO	Aqueous/Non-aqueous - EPA SW-846 ^c 8015 Modified
Metals plus beryllium	Aqueous - EPA SW-846 ^c 6010/6020/7470 Non-aqueous - EPA SW-846 ^c 6010/6020/7471
TCLP metals	EPA SW-846 ^c 1311/6010/7470
Hexavalent chromium	EPA SW-846 ^c 7196A
Dioxins	EPA SW-846 ^c 8280A/8290

Table A.2-2
Laboratory Analyses and Methods, CAU 561 Investigation Samples^a
(Page 2 of 2)

Analysis	Analytical Method ^b
Isotopic U	Aqueous/Non-aqueous - DOE EML HASL-300 ^d U-02-RC
Isotopic Pu	Aqueous - DOE EML HASL-300 ^d Pu-10-RC Non-aqueous - DOE EML HASL-300 ^d Pu-02-RC
Gamma spectroscopy	Aqueous - EPA 901.1 ^e Non-aqueous - DOE EML HASL-300 ^d , Ga-01-R
Sr-90	Aqueous - EPA 905.0 ^e Non-aqueous - DOE EML HASL-300 ^d Sr-02-RC

^aInvestigation samples include both environmental and waste characterization samples and associated QC samples.

^bThe most current EPA, DOE, ASTM, NIOSH, or equivalent accepted analytical method may be used.

^c*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA, 2009).

^d*The Procedures Manual of the Environmental Measurements Laboratory* (DOE, 1997).

^e*Prescribed Procedures for Measurement of Radioactivity in Drinking Water* (EPA, 1980).

EML = Environmental Measurements Laboratory

EPA = U.S. Environmental Protection Agency

HASL = Health and Safety Laboratory

NIOSH = National Institute for Occupational Safety and Health

Sr = Strontium

The analytical parameters are CAS-specific and were selected through the application of site process knowledge as described in the CAIP DQOs (NNSA/NSO, 2008). Samples collected during step-out sampling were only analyzed for the COCs that were identified in the original characterization samples.

A.2.4 Comparison to Action Levels

A COC is defined as any contaminant present in environmental media at a concentration exceeding a FAL. A COC may also be defined as a contaminant that, in combination with other like contaminants, is determined to jointly pose an unacceptable risk based on a multiple constituent analysis (NNSA/NSO, 2006).

If COCs are determined to be present, a corrective action must be considered for the CAS. The FALs for the CAU 561 investigation are defined for each CAS in [Section 2.3.1](#). Results that are equal to or greater than FALs are identified by bold text in the CAS-specific results tables ([Sections A.3.0 through A.12.0](#)).

The evaluation of the need for corrective action includes the potential for wastes that are present at a site to cause the future contamination of site environmental media if the wastes were to be released. To evaluate the potential for waste to result in the introduction of a COC to the surrounding media, the following conservative assumptions were made:

- The containment would fail at some point and the contents would be released to the surrounding media.
- The resulting concentration of contaminants in the surrounding media would be equal to the concentration of contaminants in the waste.
- Any liquid contaminant in the waste exceeding the RCRA toxicity characteristic concentration can result in a COC's introduction to the surrounding media.

For example, sludge containing a contaminant at concentrations exceeding an equivalent FAL concentration would be considered to be PSM requiring a corrective action. Waste liquids with contaminant concentrations exceeding an equivalent toxicity characteristic action level were also considered to be PSM requiring a corrective action.

A.3.0 CAS 01-19-01, Waste Dump

Corrective Action Site 01-19-01 is located east of Building 1-31.2e1 in Area 1. It was believed that the CAS consisted of a fenced subsurface waste dump which contained construction debris from a former two-story brick house associated with the Apple II test. Visible surface debris consisted of red bricks, rebar, wood, and concrete chunks. During excavation activities, it was discovered that the area contained the foundation for Building 31.1-b1, along with a stairwell, a part of a red brick chimney and burned wood. This site was determined not to be a waste dump.

A.3.1 Corrective Action Investigation

A total of five characterization samples (including one FD) were collected from four locations at CAS 01-19-01 ([Figure A.3-1](#)). The samples were collected at the location of geophysical anomalies. The sample identifications (IDs), locations, types, and analyses are listed in [Table A.3-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.3.1.1 Radiological Surveys

A gamma radiological walkover survey was performed during the preliminary assessment within the fenced area at CAS 01-19-01 to identify biased sampling locations. No areas of elevated radioactivity were identified at this CAS, and no samples were collected based on the radiological survey results.

A.3.1.2 Geophysical Surveys

Geophysical surveys were performed in 2004. Based on the survey results, two primary trenches across the anomalies were excavated. Based on the results of the excavation, soil samples were collected from these anomalies at locations A01 through A04 at varying depths as determined by visual screening ([Figure A.3-1](#)).

A.3.1.3 Visual Inspections

Visual inspections were conducted of the surface soil within the fenced area for any stained soil or other biasing factors. Concrete, rebar, and red bricks were observed on the surface soil, but there was

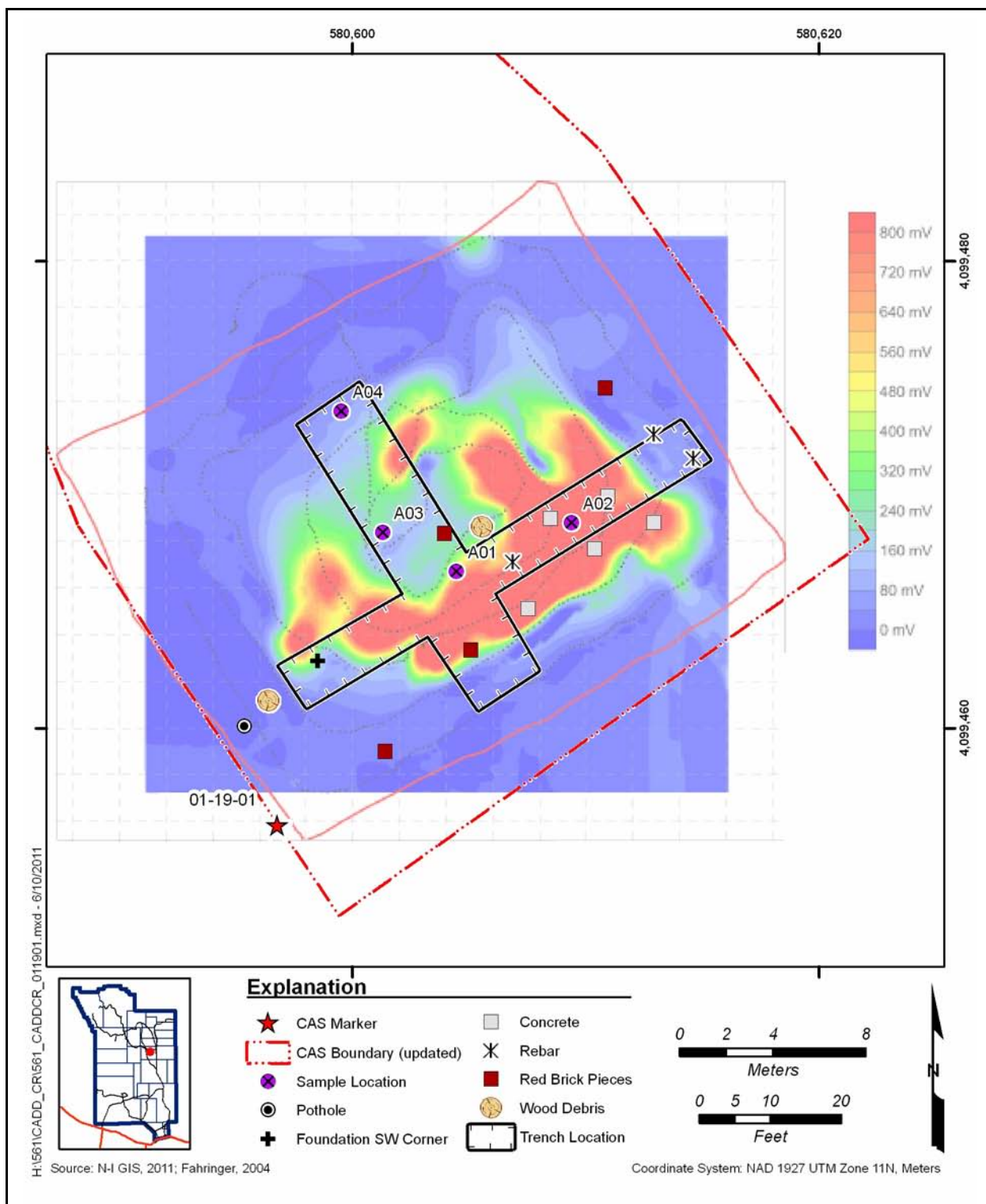


Figure A.3-1
Sample Locations at CAS 01-19-01, Waste Dump

Table A.3-1
Samples Collected at CAS 01-19-01, Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
A01	561A001	7.5 - 8.0	Soil	Environmental	X	X	X	X	X	X	X	X
A02	561A002	2.0 - 2.5	Soil	Environmental	X	X	X	X	X	X	X	X
	561A003	2.0 - 2.5	Soil	FD of #561A002	X	X	X	X	X	X	X	X
A03	561A004	6.0 - 6.5	Soil	Environmental	X	X	X	X	X	X	X	X
A04	561A005	5.5 - 6.0	Soil	Environmental	X	X	X	X	X	X	X	X
N/A	561A301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561A302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561A303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561A304	N/A	Water	Field Blank	X	X	X	X	X	X	X	X
N/A	561A305	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	X
N/A	561A306	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X

-- = Not required

no visible surface staining. During the excavation, the subsurface soil was also inspected for staining and other biasing factors. There was no waste in the excavation, and the building foundation and red brick chimney were the only anomalies identified. Samples 561A001 and 561A004 were collected at the base of the foundation, samples 561A002 and 561A003 were collected because of debris and burned wood. [Figure A.3-2](#) shows a typical biased sample location at the base of the building foundation.

A.3.1.4 Sample Collection

Decision I environmental sampling activities were conducted in the area of the geophysical anomalies to determine whether there has been a release from what was believed to be a buried waste dump. Subsurface soil samples were collected from the northeast-southwest trench and the northwest-southeast trench in the areas of the geophysical anomalies. In addition to the trenches, numerous potholes were excavated to determine the type of buried material that could be present. Five environmental samples (including one FD) were collected from four locations (location A01



Figure A.3-2
Building Foundation with Red Bricks at CAS 01-19-01, Waste Dump

through A04) in the location of the geophysical anomaly ([Figure A.3-1](#)). Samples were collected from depths ranging from 2 to 8 ft bgs. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary.

A.3.1.5 Deviations

The CSM was revised because the excavation activities uncovered the foundation of a building and not a waste dump. The CSM was revised to include potentially contaminated subsurface media from building materials and from burning of wood in fireplaces. The number of samples was decreased from the CAIP because the site was discovered to be the foundation of a building, instead of a waste dump. The sampling plan fit the new CSM and there were no impacts to the CSM. The analyses were conducted as outlined in the CAIP (NNSA/NSO, 2008).

A.3.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities. Environmental samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only), RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.3-1](#) lists the analytical suite for CAS 01-19-01.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. The procedure of establishing the FALs is presented in [Appendix C](#).

A.3.2.1 Volatile Organic Compounds

Volatile organic compounds were not detected at concentrations exceeding the MDCs in soil samples. Therefore, the FALs were established at the corresponding PAL concentrations.

A.3.2.2 Semivolatile Organic Compounds

Semivolatile organic compounds were not detected at concentrations exceeding the MDCs in any of the soil samples collected at CAS 01-19-01. Therefore, the FALs were established at the corresponding PAL concentrations.

A.3.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.3-2](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.3-2
Sample Results for TPH-DRO at CAS 01-19-01, Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO
A01	561A001	7.5 - 8.0	1.5 (J)
A02	561A003	2.0 - 2.5	1.6 (J)
A03	561A004	6.0 - 6.5	1.6 (J)
A04	561A005	5.5 - 6.0	3.2 (J)

J = Estimated value

A.3.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.3-3](#). No metals, beryllium, or hexavalent chromium were detected at concentrations exceeding their PALs and the FALs were established at the corresponding PAL concentrations.

Table A.3-3
Sample Results for Metals Detected above MDCs at CAS 01-19-01, Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)						
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Selenium
FALs			23	190,000	2,000	800	N/A ^a	800	5,100
A01	561A001	7.5 - 8.0	3.9	210	0.6	0.21	5.9	11	0.46
A02	561A002	2.0 - 2.5	4.5	170	0.62	0.19	6.1	9.1	0.51
	561A003	2.0 - 2.5	4.3	240	0.62	0.19	6	19	--
A03	561A004	6.0 - 6.5	3.5	210	0.61	0.22	5.9	8.5	--
A04	561A005	5.5 - 6.0	4.7	260	0.69	0.21	6.1	9.4	0.44

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

-- = Not detected above MDCs.

A.3.2.5 Polychlorinated Biphenyls

Polychlorinated biphenyls were not detected at concentrations exceeding the MDCs. Therefore, the FALs were established at the corresponding PAL concentrations.

A.3.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.3-4](#). Because gamma-emitting radionuclides were not detected at concentrations exceeding their PALs, the FALs were established at the corresponding PAL concentrations.

Table A.3-4
Sample Results for Gamma-Emitting Radionuclides
Detected above MDC at CAS 01-19-01, Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPC (pCi/g)
			Ac-228
FAL			506.7 ^a
A01	561A001	7.5 - 8.0	1.77
A02	561A002	2.0 - 2.5	1.57
	561A003	2.0 - 2.5	1.72
A03	561A004	6.0 - 6.5	1.68
A04	561A005	5.5 - 6.0	1.73

^aFAL for Ac-228 based on Th-232 FAL.

A.3.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 01-19-01, there has not been a release of contaminants to the environmental media.

A.3.4 Revised Conceptual Site Model

Because the CAS was discovered to be a building foundation and not a waste dump, the CSM was revised to include contaminated subsurface media from building materials and from burning of wood in fireplaces. After revision of the CSM, the CAIP requirements (NNSA/NSO, 2008) were met at this CAS.

A.4.0 CAS 02-08-02, Waste Dump and Burn Area

Corrective Action Site 02-08-02 is located at the southern end of Area 2 Camp the NNSS. The CAS consists of two components, a burn area as evidenced by melted lead and stained soil, and piles of construction debris and trash throughout the area. The waste dump contains piles of dirt and boulders with scattered construction debris consisting of metal cables, wire, wooden planks, metal, a tire, pipes, sheet metal, and a crushed 30-gal drum containing a small amount of grease. The burn area is located northwest of the waste dump and contains visibly stained surface soil and scattered debris including nails, metal, charred wood, and melted lead on the ground surface.

A.4.1 Corrective Action Investigation

A total of 73 environmental samples (including 4 FDs) were collected from 54 locations during investigation activities at the two components of CAS 02-08-02 ([Figure A.4-1](#)). Twenty three samples were collected from the perimeter of the waste dump, two samples were collected downgradient of the waste dump, and 41 samples were collected within the burn area. Seven samples were collected from the northeast and southwest side of the burn area to delineate the extent of lead and PAH contamination. The sample IDs, locations, types, and analyses are listed in [Table A.4-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.4.1.1 Radiological Surveys

A gamma walkover survey was performed over the piles and at the burn area at CAS 02-08-02 during the preliminary assessment. No areas of elevated radioactivity were identified.

A.4.1.2 Geophysical Surveys

Geophysical surveys were performed at the burn area only, and identified surface and near-surface buried metallic debris (melted lead). Based on the survey results and a visual inspection of the anomalies, soil samples were collected from locations B02, B03, B04, B05, B21, B22, B24, and B25 ([Figures A.4-1](#) and [A.4-2](#)).

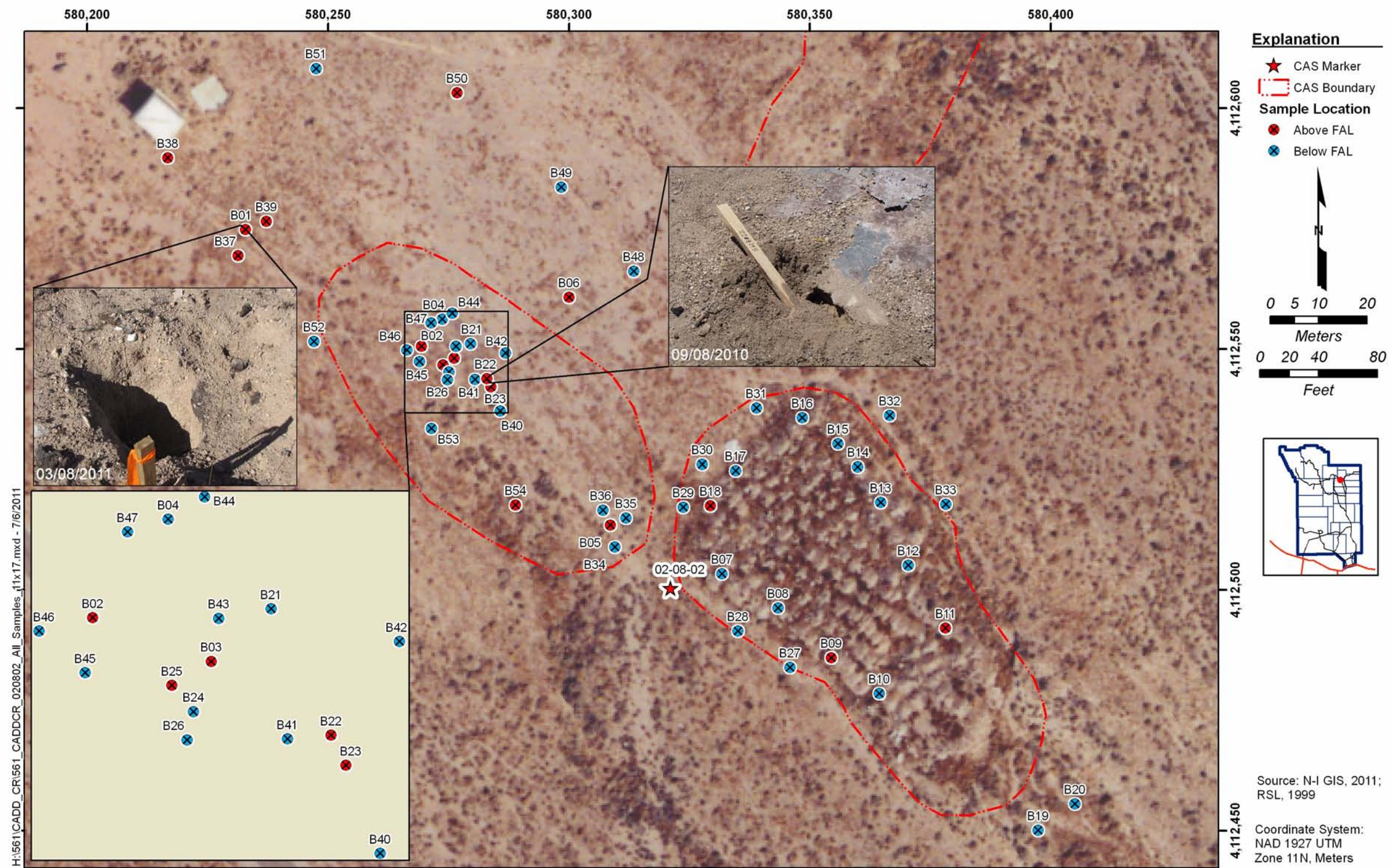


Figure A.4-1
Sample Locations at CAS 02-08-02, Waste Dump and Burn Area

Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 1 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
Burn Area	B01	561B029	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B032	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
		561B053	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B02	561B021	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B033	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
		561B065	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Burn Area	B03	561B028	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B034	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
		561B066	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B04	561B020	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B035	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
Burn Area	B05	561B017	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B049	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B06	561B018	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B036	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 2 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
Waste Dump	B07	561B001	2.0 - 3.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B08	561B002	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B09	561B003	3.0 - 4.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B12	561B013	0.5 - 1.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump		561B014	1.0 - 1.5 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump		561B015	3.0 - 3.5 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B13	561B012	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B14	561B011	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B15	561B010	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B16	561B009	5.0 - 6.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B17	561B008	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X

Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 3 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
Waste Dump	B18	561B005	2.0 - 3.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump		561B006	2.0 - 3.0 ft into pile	Soil	FD of #561B005	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump		561B007	4.0 - 5.0 ft into pile	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B19	561B030	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B20	561B031	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Burn Area	B21	561B019	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B037	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
		561B038	0.0 - 0.5	Soil	FD of #561037	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
Burn Area	B22	561B024	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B055	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B23	561B025	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B026	0.0 - 0.5	Soil	FD of #561B025	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
		561B061	1.0 - 1.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B24	561B023	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Burn Area	B25	561B022	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X

Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 4 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
Burn Area	B26	561B027	0.0 - 0.5	Soil	Environmental	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
Waste Dump	B27	561B039	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B28	561B040	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B29	561B041	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B30	561B042	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B31	561B043	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B32	561B044	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Waste Dump	B33	561B045	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B34	561B046	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B35	561B047	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B36	561B048	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B37	561B050	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B38	561B051	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B39	561B052	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B40	561B056	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--

Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 5 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
Burn Area	B41	561B054	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B42	561B057	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--
Burn Area	B43	561B059	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B43	561B060	0.0 - 0.5	Soil	FD of #561B059	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B44	561B058	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B45	561B062	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Burn Area	B46	561B063	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Burn Area	B47	561B064	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Burn Area	B48	561B067	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B49	561B068	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B50	561B069	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B51	561B070	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B52	561B071	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B53	561B072	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--
Burn Area	B54	561B073	0.0 - 0.5	Soil	Environmental	--	--	--	--	--	--	--	--	X	--	--	--	X	--	--	--

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Table A.4-1
Samples Collected at CAS 02-08-02, Waste Dump and Burn Area
(Page 6 of 6)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Americium	Beryllium	Dioxinsfurans	TPH-DRO	Explosives	Gamma	Gross Alpha/Beta	Hexavalent Chromium	Metals	PCBs	Plutonium	Strontium	SVOCs	Tritium	Uranium	VOCs
N/A	N/A	561B301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B304	N/A	Water	Equipment Rinsate	--	X	--	X	--	X	--	X	X	X	--	--	X	--	--	X
N/A	N/A	561B305	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B306	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B307	N/A	Water	Field Blank	--	X	X	X	--	X	--	X	X	X	--	--	X	--	--	X
N/A	N/A	561B308	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X
N/A	N/A	561B309	N/A	Water	Source material QC	X	X	--	X	X	X	X	X	X	X	X	X	X	X	X	X

-- = Not required

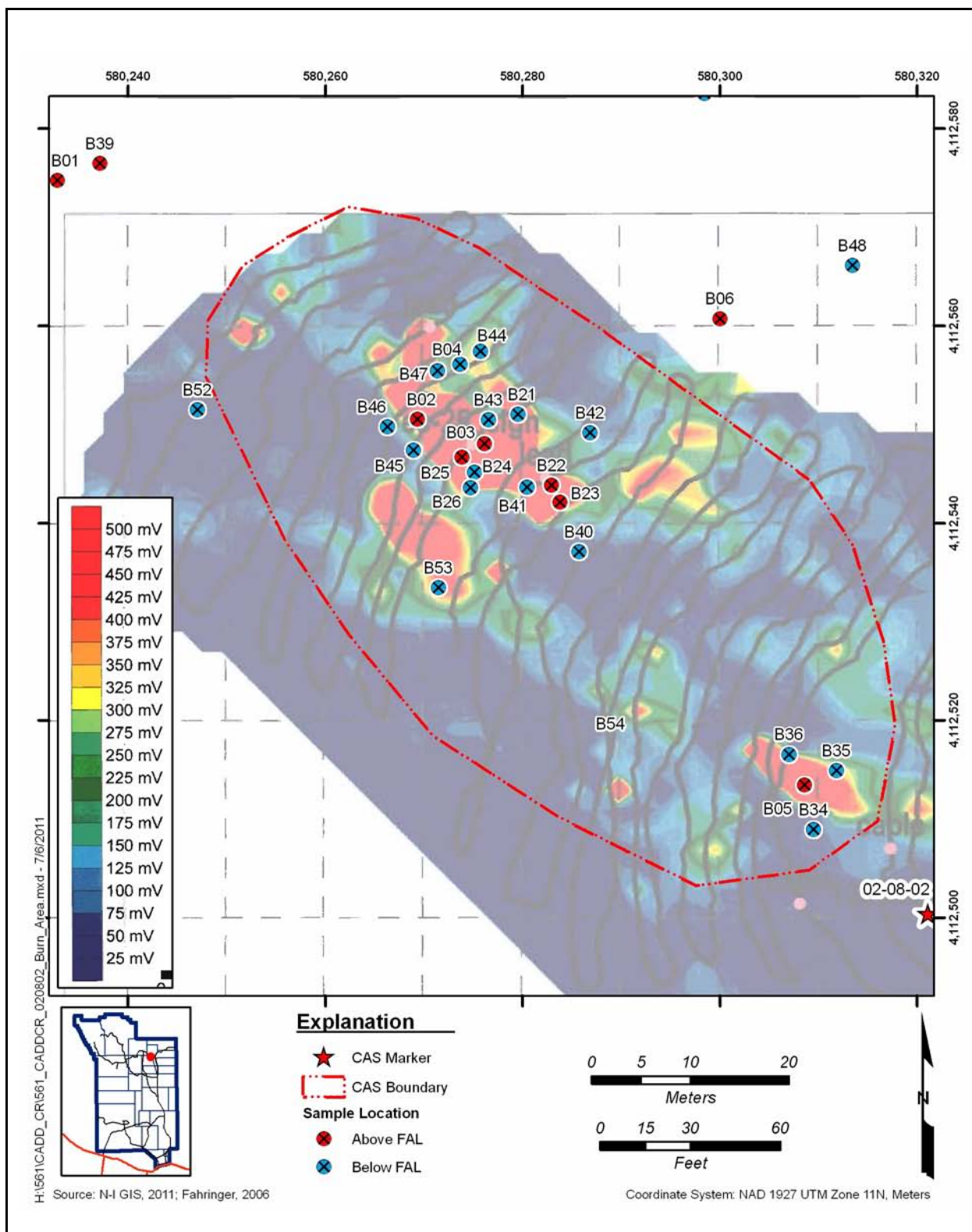


Figure A.4-2
Geophysical Survey Showing Sample Locations at the Burn Area
CAS 02-08-02, Waste Dump and Burn Area

A.4.1.3 Visual Inspections

The waste piles were visually inspected for stained soil, debris, or other biasing factors. One pile (location H18) had stained soil (samples 561B005 through 561B007), while at another pile (location H12) a 30-gal crushed grease drum and soil staining was observed (samples 561B013 through 561B015) ([Figure A.4-3](#)). The surface soil within the burn area was inspected for any stained soil or biasing factors. Stained soil, nails, and melted lead were observed at various locations throughout the burn area. Sample locations B02, B03, B04, and B21 were areas of stained soil and nails. Sample locations B22, B24, and B25 were directly under the melted lead.



Figure A.4-3
Crushed 30-Gal Grease Drum Discovered in Waste Pile
CAS 02-08-02, Waste Dump and Burn Area

A.4.1.4 Sample Collection

Seventy-three environmental samples (including four FDs) were collected from 54 locations (locations B01 through B54) to identify and delineate the contamination associated with the waste piles and burn area.

Waste Dump

Decision I environmental sampling activities included the collection of 16 randomly selected soil samples from 12 locations within the waste piles (locations B07 through B18), and two biased surface soil samples downgradient of the waste pile (locations B19 and B20) (Figure A.4-1). Sample depths at the waste piles ranged from 0.5 to 6 ft into the pile. The randomly selected samples were identified using the VSP software (PNNL, 2005).

Three of the Decision I samples were judgmental based on visual observations at the randomly selected locations B12 and B18. At location B12, a crushed 30-gal drum was observed that contained a small quantity of grease. To determine whether any migration has occurred, two additional samples were collected from this location, (samples 562B014 and 561B015) 1 to 1.5 ft bgs, and 3 to 3.5 ft bgs, respectively. Soil samples collected below the crushed 30-gal grease drum were field screened for VOCs using a Mini-RAE 2000 PID; however, no VOCs were detected.

At randomly selected location B18 stained soil was observed at a depth of 2 to 3 ft bgs into the pile (samples 561B005 and 561 B006). To determine whether any migration had occurred one additional biased sample (561B007) was collected from this location at a depth of 4 to 5 ft bgs into the pile.

The Decision I analytical results showed that concentrations of various PAHs in four samples from four locations (sample 561B003 at location B09, sample 561B005 at location B18, sample 561B013 at location B12, and sample 561B016 at location B11) exceeded the PALs, and it was determined that Decision II sampling was necessary. Seven Decision II surface (0 to 0.56 ft bgs) samples (561B039 through 561B045) were collected along the outside perimeter of the waste dump. All Decision II samples analytical results showed that the PAHs had not migrated from the waste piles.

Burn Area

At the burn area, Decision I environmental sampling activities included the collection of 20 biased surface and shallow subsurface soil samples (samples 561B017 through 561B029 and 561B032 through 561B038) (Figure A.4-1). Biasing factors included stained soil and debris on the surface (nails, melted lead, stained soil). At six locations (B01 through B04, B06, and B21), seven surface samples were collected and analyzed for dioxins, because dioxins are a typical by-product of burning.

The analytical results indicated that concentrations of the PAH benzo(a)pyrene exceeded the PAL at five sample locations (locations B01, B03, B05, B22, and B23). The concentration of lead exceeded the PAL in four samples (locations B02, B03, B06, and B25), while the concentration of arsenic exceeded the PAL in one location (B02). Therefore, it was determined that Decision II sampling was necessary for SVOCs and metals.

Decision II samples, to define the extent of lead contamination, were collected from the surface soil at locations B45, B46, B47, and B48. In addition to the surface soil samples, subsurface samples were collected at locations B02 and B03 from 1 to 1.5 ft bgs to determine the vertical extent of the lead contamination. Results indicated that no lead was identified above action levels in the surface soil samples but the lead concentration in the shallow subsurface soil samples at location B02 exceeded the action level. Samples collected from locations B02, B45, B46, and B47 were also used to define the extent of the arsenic contamination. Arsenic was not detected in these samples at concentrations exceeding the PALs.

Samples were also collected from 1 to 1.5 ft bgs and analyzed for SVOCs at locations B01, B05, B22, and B23. Surface soil samples were collected from locations B34 through B42, which were located in triangular patterns around the original sample locations. The results indicated that PAHs were still present in the soil at concentrations above FALs at numerous locations. Seven surface samples were collected around the perimeter of the burn area and analyzed for metals and SVOCs, in an attempt to bound the contamination. The sample results from locations B50 and B54 indicated that PAHs were present in the soil in concentrations that exceeded the action levels.

During Decision II sampling, a layer of asphalt was discovered approximately 0 to 8 in. bgs in numerous locations at the burn area. The PAHs (SVOCs) that were detected at various locations throughout the burn area are considered to be associated with this asphalt. The evaluation of the SVOC results has shown that the concentration of the SVOCs does not decrease with increasing distance from the potential sources (burn areas) as would be expected if the burn areas were the source of the PAHs. Aerial photos of Area 2 camp were also reviewed. The September 1971 aerial photo (H&N, 1971) shows a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this

information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities.

A.4.1.5 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 02-08-02. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.4.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only), RCRA metals, beryllium, hexavalent chromium, PCBs, and gamma-emitting radionuclides. Dioxin samples were collected only from the surface soil within the burn area. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.4-1](#) lists the sample-specific analytical suite for CAS 02-08-02.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.4.2.1 Volatile Organic Compounds

The only VOC detected at a concentration exceeding the MDC was methylene chloride at a concentration of 0.015 mg/kg at a depth of 3.0 to 3.5 ft bgs ([Table A.4-2](#)). This concentration is well below the PAL of 53 mg/kg. Therefore, the FALs were established at the corresponding PAL.

Table A.4-2
Sample Results for VOCs Detected above MDC
at CAS 02-08-02, Waste Dump and Burn Area

Area	Sample Location	Sample Number	Depth (ft bgs)	COPC (mg/kg)
				Methylene Chloride
FAL				53
Waste Dump	B12	561B015	3.0 - 3.5 ft into pile	0.015

A.4.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.4-3](#). Sixteen samples were collected from the waste dump and three samples exceeded the PALs for various SVOCs. The FALs were established at the PAL concentrations; therefore, SVOCs are considered a COC at the waste dump. Decision II samples were collected from around the perimeter of the waste dump and showed that the PAH contamination is not migrating from the waste piles.

Numerous soil samples collected from the burn area showed PAHs present in the soil as indicated in [Table A.4-3](#). A layer of asphalt approximately 0 to 8 in. bgs was discovered at various locations throughout the burn area. Aerial photos of the Area 2 camp were reviewed. The aerial photos from September 1971 (H&N, 1971) show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. The PAHs in the soil samples that were above action levels are commonly associated with asphalt. Additionally, the analytical results from the Decision II sampling showed the concentrations of PAHs not decreasing with distance from the burn area. Therefore, it has been determined that the presence of PAHs in the soil samples is attributed to the asphalt and is not a release from the burn area.

A.4.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.4-4](#). Samples were analyzed for TPH-DRO for waste management purposes only, as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because

Table A.4-3
Sample Results for SVOCs Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 1 of 2)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)																			
				2-Methylnaphthalene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Carbazole	Chrysene	Dibenzo(ah)anthracene	Dibenzofuran	Diethyl phthalate	Di-n-butyl phthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
FALs				4,100	33,000	170,000	2.1	0.21	2.1	17,000	21	120	95.8	210	0.21	1,000	490,000	62,000	22,000	22,000	2.1	170,000	17,000
Burn Area	B01	561B029	0.0 - 0.5	--	--	--	0.25 (J)	0.32	0.52	0.47	0.28 (J)	--	--	0.29 (J)	0.1 (J)	--	--	0.8	0.61	--	0.44	0.35	0.86
Burn Area	B02	561B021	0.0 - 0.5	--	--	--	0.13 (J)	0.12 (J)	0.21 (J)	0.17 (J)	0.12 (J)	--	--	0.14 (J)	--	--	--	0.61	0.35	--	0.13 (J)	0.26 (J)	0.47
Burn Area	B03	561B028	0.0 - 0.5	--	--	--	0.22 (J)	0.23	0.35 (J)	0.28 (J)	0.19 (J)	--	--	0.25 (J)	--	--	--	0.85	0.6	--	0.25 (J)	0.37 (J)	0.69
Burn Area	B05	561B017	0.0 - 0.5	--	--	0.1 (J)	0.39	0.42	0.65	0.44	0.31 (J)	--	0.13 (J)	0.38	0.11 (J)	--	--	1.8	0.95	--	0.42	0.8	1.1
Burn Area	B06	561B018	0.0 - 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.086 (J)	--	--	--	--	0.1 (J)
Waste Dump	B09	561B003	3.0 - 4.0 ft into pile	0.15 (J)	0.12 (J)	0.21 (J)	0.33 (J)	0.27	0.38	0.16 (J)	0.17 (J)	0.13 (J)	0.13 (J)	0.34 (J)	--	0.15 (J)	--	1.2	1	0.14 (J)	0.18 (J)	1.1	0.75
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	--	--	--	0.17 (J)	0.17 (J)	0.31 (J)	0.13 (J)	0.091 (J)	--	--	0.21 (J)	--	--	--	0.74	0.48	--	0.14 (J)	0.33 (J)	0.39
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	--	--	0.1 (J)	0.28 (J)	0.28	0.47	0.12 (J)	0.18 (J)	--	0.076 (J)	0.33 (J)	--	--	--	0.92	0.73	--	0.15 (J)	0.57	0.61
Waste Dump	B13	561B012	4.0 - 5.0 ft into pile	--	--	--	--	0.074 (J)	0.12 (J)	0.077 (J)	--	--	--	0.084 (J)	--	--	--	0.12 (J)	0.12 (J)	--	0.079 (J)	--	0.1 (J)
Waste Dump	B15	561B010	4.0 - 5.0 ft into pile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.18 (J)	0.14 (J)	--	--	0.13 (J)	0.11 (J)
Waste Dump	B16	561B009	5.0 - 6.0 ft into pile	--	--	--	--	--	--	--	--	0.26 (J)	--	--	--	--	--	--	--	--	--	--	--
Waste Dump	B17	561B008	4.0 - 5.0 ft into pile	--	--	--	--	0.078 (J)	0.16 (J)	0.17 (J)	0.1 (J)	--	--	0.084 (J)	--	--	--	0.12 (J)	0.12 (J)	--	0.17 (J)	--	0.11 (J)
Waste Dump	B18	561B005	2.0 - 3.0 ft into pile	0.1 (J)	0.46 (J)	2.2	2.8	2.4	3	1.2	1.4	--	0.52	2.8	0.37 (J)	0.23 (J)	--	3.4	8.2	0.55	1.4	7.2	6.8
		561B006	2.0 - 3.0 ft into pile	--	--	--	0.13 (J)	0.15 (J)	0.28 (J)	0.2 (J)	0.098 (J)	--	--	0.17 (J)	--	--	--	0.2 (J)	0.26 (J)	--	0.2 (J)	0.13 (J)	0.25 (J)
		561B007	4.0 - 5.0 ft into pile	--	--	--	0.1 (J)	0.14 (J)	0.27 (J)	0.21 (J)	0.11 (J)	--	--	0.15 (J)	--	--	--	0.2 (J)	0.2 (J)	--	0.21 (J)	0.099 (J)	0.19 (J)
Waste Dump	B19	561B030	0.0 - 0.5	--	--	--	--	--	0.069 (J)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07 (J)
Waste Dump	B20	561B031	0.0 - 0.5	--	--	--	0.21 (J)	0.17 (J)	0.27 (J)	0.13 (J)	0.11 (J)	--	--	0.23 (J)	--	--	--	0.47	0.53	--	0.12 (J)	0.45	0.42
Burn Area	B22	561B024	0.0 - 0.5	--	--	0.12 (J)	0.45	0.42	0.63	0.47	0.23 (J)	--	0.098 (J)	0.39	0.12 (J)	--	--	0.96	1	--	0.43	0.6	1.1
Burn Area	B23	561B025	0.0 - 0.5	--	--	--	0.098 (J)	0.11 (J)	0.17 (J)	0.11 (J)	--	--	--	0.1 (J)	--	--	--	0.27 (J)	0.22 (J)	--	0.098 (J)	0.19 (J)	--
		561B026	0.0 - 0.5	--	--	--	0.3 (J)	0.3	0.44	0.22 (J)	0.14 (J)	--	--	0.3 (J)	--	--	--	0.25 (J)	0.49	--	0.2 (J)	0.21 (J)	0.59
Burn Area	B24	561B023	0.0 - 0.5	--	--	--	--	--	0.081 (J)	--	--	--	--	--	--	--	--	0.1 (J)	0.085 (J)	--	--	0.086 (J)	0.12 (J)
Burn Area	B25	561B022	0.0 - 0.5	--	--	--	--	0.078 (J)	0.12 (J)	0.079 (J)	--	--	--	--	--	--	--	0.13 (J)	0.14 (J)	--	--	0.098 (J)	0.15 (J)
Burn Area	B26	561B027	0.0 - 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.14 (J)	0.071 (J)	--	--	--	0.086 (J)
Waste Dump	B27	561B039	0.0 - 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.19 (J)	0.12 (J)	--	--	--	0.096 (J)

Table A.4-3
Sample Results for SVOCs Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 2 of 2)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)																			
				2-Methylnaphthalene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Carbazole	Chrysene	Dibenzo(ah)anthracene	Dibenzofuran	Diethyl phthalate	Di-n-butyl phthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
FALs				4,100	33,000	170,000	2.1	0.21	2.1	17,000	21	120	95.8	210	0.21	1,000	490,000	62,000	22,000	22,000	2.1	170,000	17,000
Waste Dump	B28	561B040	0.0 - 0.5	--	--	--	0.083 (J)	0.093 (J)	0.17 (J)	0.083 (J)	0.07 (J)	--	--	0.1 (J)	--	--	--	0.44	0.27 (J)	--	0.072 (J)	0.15 (J)	0.22 (J)
Waste Dump	B29	561B041	0.0 - 0.5	--	--	--	--	--	0.081 (J)	--	--	--	--	--	--	--	--	0.17 (J)	0.11 (J)	--	--	--	0.08 (J)
Waste Dump	B30	561B042	0.0 - 0.5	--	--	--	0.071 (J)	0.084 (J)	0.16 (J)	0.089 (J)	--	--	--	0.075 (J)	--	--	--	0.26 (J)	0.17 (J)	--	0.077 (J)	0.088 (J)	0.17 (J)
Waste Dump	B31	561B043	0.0 - 0.5	--	--	--	0.12 (J)	0.16 (J)	0.35 (J)	0.21 (J)	0.11 (J)	--	--	0.13 (J)	--	--	--	0.42	0.29 (J)	--	0.17 (J)	0.13 (J)	0.3 (J)
Waste Dump	B32	561B044	0.0 - 0.5	--	--	--	0.19 (J)	0.2 (J)	0.32 (J)	0.16 (J)	0.11 (J)	0.11 (J)	--	0.19 (J)	--	--	--	0.9	0.55	--	0.14 (J)	0.36	0.63 (J)
Waste Dump	B33	561B045	0.0 - 0.5	--	--	--	--	--	0.11 (J)	--	--	0.17 (J)	--	--	--	--	--	0.18 (J)	0.13 (J)	--	--	0.076 (J)	0.14 (J)
Burn Area	B34	561B046	0.0 - 0.5	--	--	--	--	--	0.099 (J)	--	--	--	--	--	--	--	--	0.25 (J)	0.16 (J)	--	--	0.097 (J)	0.13 (J)
Burn Area	B36	561B048	0.0 - 0.5	--	--	--	0.13 (J)	0.14 (J)	0.24 (J)	0.15 (J)	0.1 (J)	--	--	0.13 (J)	--	--	--	0.44	0.4	--	0.12 (J)	0.25 (J)	0.37
Burn Area	B37	561B050	0.0 - 0.5	0.16 (J)	0.19 (J)	0.27 (J)	0.66	0.68 (J)	0.96 (J)	0.82 (J)	0.41 (J)	--	0.29 (J)	0.69	0.21 (J)	0.1 (J)	--	2.8	1.8	0.15 (J)	0.83 (J)	1.8	3.4 (J)
Burn Area	B38	561B051	0.0 - 0.5	--	--	0.12 (J)	0.5	0.54	0.9	0.21 (J)	0.4	--	0.11 (J)	0.54	--	--	--	2.5	1.5	--	0.22 (J)	0.89	1.3
Burn Area	B39	561B052	0.0 - 0.5	--	--	--	0.23 (J)	0.33 (J)	0.7 (J)	0.98 (J)	0.32 (J)	--	--	0.21 (J)	--	--	0.22 (J)	0.65	0.34 (J)	--	0.7 (J)	0.19 (J)	0.44 (J)
Burn Area	B40	561B056	0.0 - 0.5	--	--	--	0.1 (J)	0.12 (J)	0.29 (J)	0.097 (J)	0.08 (J)	--	--	0.11 (J)	--	--	--	0.37	0.31 (J)	--	0.073 (J)	0.13 (J)	0.27 (J)
Burn Area	B41	561B054	0.0 - 0.5	--	--	--	--	--	0.089 (J)	--	--	0.13 (J)	--	--	--	--	--	0.34 (J)	0.19 (J)	--	--	0.17 (J)	0.15 (J)
Burn Area	B44	561B058	0.0 - 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.32 (J)	0.14 (J)	--	--	0.1 (J)	0.11 (J)
Burn Area	B48	561B067	0.0 - 0.5	--	--	--	0.15 (J)	0.13 (J)	0.19 (J)	0.2 (J)	0.09 (J)	--	--	0.16 (J)	0.17 (J)	--	--	1	0.49	--	0.27 (J)	0.42	0.41
Burn Area	B50	561B069	0.0 - 0.5	--	--	0.31 (J)	0.77	1.8 (J)	3.7	3.4	1.4 (J)	--	0.16 (J)	0.52 (J)	1	--	--	1.5	1.2	--	3.3 (J)	0.33 (J)	2.1
Burn Area	B51	561B070	0.0 - 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12 (J)	--	--	0.14 (J)	--	--
Burn Area	B52	561B071	0.0 - 0.5	--	--	--	0.19 (J)	0.2 (J)	0.33 (J)	0.16 (J)	0.11 (J)	--	--	0.22 (J)	0.17 (J)	--	--	0.88	0.63	--	0.26 (J)	0.32 (J)	0.48
Burn Area	B53	561B072	0.0 - 0.5	--	--	--	0.1 (J)	0.13 (J)	0.22 (J)	0.17 (J)	0.12 (J)	--	--	0.11 (J)	0.17 (J)	--	--	0.37	0.23 (J)	--	0.26 (J)	0.097 (J)	0.18 (J)
Burn Area	B54	561B073	0.0 - 0.5	--	--	--	0.28 (J)	0.26	0.45	0.23 (J)	0.17 (J)	--	--	0.29 (J)	0.19 (J)	--	--	0.39	0.64	--	0.32 (J)	0.2 (J)	0.54

J = Estimated value
-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

Table A.4-4
Sample Results for TPH-DRO at CAS 02-08-02, Waste Dump and Burn Area

Area	Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
Burn Area	B01	561B029	0.0 - 0.5	25
Burn Area	B02	561B021	0.0 - 0.5	5.1 (J)
Burn Area	B03	561B028	0.0 - 0.5	9.4
Burn Area	B05	561B017	0.0 - 0.5	12
Burn Area	B06	561B018	0.0 - 0.5	3.1 (J)
Waste Dump	B07	561B001	2.0 - 3.0 ft into pile	4.4 (J)
Waste Dump	B08	561B002	4.0 - 5.0 ft into pile	1.8 (J)
Waste Dump	B09	561B003	3.0 - 4.0 ft into pile	7.3
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	11
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	17
Waste Dump	B12	561B015	3.0 - 3.5 ft into pile	5.8
Waste Dump		561B014	1.0 - 1.5 ft into pile	9.2
Waste Dump		561B013	0.5 - 1.0 ft into pile	320
Waste Dump	B13	561B012	4.0 - 5.0 ft into pile	2.1 (J)
Waste Dump	B14	561B011	4.0 - 5.0 ft into pile	5.5
Waste Dump	B15	561B010	4.0 - 5.0 ft into pile	7.7
Waste Dump	B16	561B009	5.0 - 6.0 ft into pile	8.5
Waste Dump	B17	561B008	4.0 - 5.0 ft into pile	9.7
Waste Dump	B18	561B005	2.0 - 3.0 ft into pile	11
		561B006	2.0 - 3.0 ft into pile	18
		561B007	4.0 - 5.0	16
Waste Dump	B19	561B030	0.0 - 0.5	4.7 (J)
Waste Dump	B20	561B031	0.0 - 0.5	6
Burn Area	B22	561B024	0.0 - 0.5	9.4
Burn Area	B23	561B025	0.0 - 0.5	2.7 (J)
		561B026	0.0 - 0.5	5.3
Burn Area	B24	561B023	0.0 - 0.5	2.9 (J)
Burn Area	B25	561B022	0.0 - 0.5	2.2 (J)
Burn Area	B26	561B027	0.0 - 0.5	1.5 (J)

J = Estimated value

VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

A.4.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.4-5](#). Of the samples collected at the burn area, five samples exceeded the PAL (800 mg/kg) for lead with concentrations above PALs ranging from 1,200 to 14,000 mg/kg. Arsenic was detected in sample 561B021 (collected at the burn area) at a concentration of 65 mg/kg, which exceeds the PAL of 23 mg/kg. Therefore, lead and arsenic are considered COCs at this CAS.

A.4.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.4-6](#). No PCBs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.4.2.6 Dioxins

Dioxins were not detected at concentration exceeding the MDCs. Therefore, the FALs were established at the corresponding PALs.

A.4.2.7 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.4-7](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs; therefore, FALs were established at the corresponding PALs.

A.4.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 02-08-02, the only COCs that were identified within the waste dump were various PAHs, with lead and arsenic being identified at the burn area. Decision II sampling around the perimeter of the waste dump indicated that the PAHs were not migrating out of the piles. The melted lead which could not be removed from the site is

Table A.4-5
Sample Results for Metals Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 1 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Burn Area	B01	561B029	0.0 - 0.5	1.8	120	0.58	0.56	3.8	--	22 (J+)	--	--	--
Burn Area	B02	561B021	0.0 - 0.5	65	120	0.67	0.78	48	0.34 (J-)	14,000 (J+)	--	--	0.52
		561B065	1.0 - 1.5	13	84	--	0.083	5.2	--	2,800 (J)	0.0054 (J-)	--	--
Burn Area	B03	561B028	0.0 - 0.5	4.8	370	0.5 (J-)	0.91	58	--	1,200 (J+)	--	--	--
Burn Area	B04	561B020	0.0 - 0.5	2	260	0.68	--	6.9	--	170 (J+)	--	--	--
Burn Area	B05	561B017	0.0 - 0.5	2	110	0.53	--	5	--	59 (J+)	--	--	--
Burn Area	B06	561B018	0.0 - 0.5	2	110	0.47 (J-)	--	7.5	--	2,000 (J+)	--	--	--
Waste Dump	B07	561B001	2.0 - 3.0 ft into pile	2.4	96	0.61	0.11	3.3	--	9.5 (J)	0.017	--	--
Waste Dump	B08	561B002	4.0 - 5.0 ft into pile	2.4	100	0.67	0.11	3.9	--	8.7 (J)	0.016	--	--
Waste Dump	B09	561B003	3.0 - 4.0 ft into pile	2.1	110	0.58	0.15	13	--	11 (J)	0.014	--	--
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	2.3	560	0.6	0.19	4	--	16 (J)	0.02	--	--
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	1.8	170	0.59	0.26	3.5	--	42 (J)	0.018	--	--
Waste Dump	B12	561B013	0.5 - 1.0 ft into pile	2.6	100	0.71	0.095	4.8	1.6 (J)	17 (J)	0.028	--	--
		561B014	1.0 - 1.5 ft into pile	2.2	96	0.67	0.18	3.3	--	9.6 (J)	0.015	--	--
		561B015	3.0 - 3.5 ft into pile	2.5	96	0.69	0.11	4.1	--	9.8 (J)	0.02	--	--
Waste Dump	B13	561B012	4.0 - 5.0 ft into pile	2.6	100	0.67	0.1	3.7	--	9.2 (J)	0.016	--	--
Waste Dump	B14	561B011	4.0 - 5.0 ft into pile	2.4	130	0.64	0.11	3.5	--	22 (J)	0.016	--	--

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Table A.4-5
Sample Results for Metals Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 2 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Waste Dump	B15	561B010	4.0 - 5.0 ft into pile	2.5	99	0.65	0.22	3.4	--	13 (J)	0.026	--	--
Waste Dump	B16	561B009	5.0 - 6.0 ft into pile	2.2	97	0.65	0.068	3.2	--	9.5 (J)	0.018	--	--
Waste Dump	B17	561B008	4.0 - 5.0 ft into pile	2.2	110	0.62	0.098	3.7	0.79 (J)	13 (J)	0.015	--	--
Waste Dump	B18	561B005	2.0 - 3.0 ft into pile	2.3	99	0.59	0.14	7.6	--	27 (J)	0.016	--	--
		561B006	2.0 - 3.0 ft into pile	2.4	97	0.6	0.15	5.5	--	22 (J)	0.015	--	--
		561B007	4.0 - 5.0 ft into pile	2.7	100	0.61	0.22	7.2	--	64 (J)	0.015	--	--
Waste Dump	B19	561B030	0.0 - 0.5	2.1	150	0.58	--	2.8	--	12 (J+)	--	--	--
Waste Dump	B20	561B031	0.0 - 0.5	2.1	150	0.55	--	2.7	--	12 (J+)	--	--	--
Burn Area	B21	561B019	0.0 - 0.5	3.2	140	0.62	0.56	35	--	190 (J+)	--	--	--
Burn Area	B22	561B024	0.0 - 0.5	2.3	110	0.59	--	4.9	--	320 (J+)	--	--	--
Burn Area	B23	561B025	0.0 - 0.5	2.5	150	0.57	--	3.7	--	78 (J+)	--	--	--
Burn Area		561B026	0.0 - 0.5	2.1	140	0.54 (J-)	--	4.2	--	90 (J+)	--	--	--
Burn Area	B24	561B023	0.0 - 0.5	3.3	99	0.63	--	4.4	--	260 (J+)	--	--	--
Burn Area	B25	561B022	0.0 - 0.5	5.3	120	0.67	--	6.3	--	1,600 (J+)	--	--	--
Burn Area	B26	561B027	0.0 - 0.5	2.8	120	0.68	--	3.6	--	40 (J+)	--	--	--
Burn Area	B43	561B059	0.0 - 0.5	3	110	--	0.17	7.6	--	19 (J)	0.0053 (J-)	--	--
Burn Area		561B060	0.0 - 0.5	2.2	95	--	0.12	3.7	--	21 (J)	0.0053 (J-)	--	--

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Table A.4-5
Sample Results for Metals Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 3 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Burn Area	B44	561B058	0.0 - 0.5	2.3	110	--	0.18	4.5	--	24 (J)	0.0053 (J-)	--	--
Burn Area	B45	561B062	0.0 - 0.5	1.7	130	--	0.11	3	--	34 (J)	0.0034 (J-)	--	--
Burn Area	B46	561B063	0.0 - 0.5	1.4	99	--	0.14	2.5	--	19 (J)	0.0051 (J-)	--	--
Burn Area	B47	561B064	0.0 - 0.5	2.6	120	--	0.14	3.5	--	30 (J)	0.0018 (J-)	--	--
Burn Area	B48	561B067	0.0 - 0.5	2.2	88	--	0.14 (J-)	4.5	--	10 (J)	0.018 (J-)	--	--
Burn Area	B49	561B068	0.0 - 0.5	2.3	88	--	0.058 (J-)	3.7	--	10 (J)	0.0018 (J-)	--	--
Burn Area	B50	561B069	0.0 - 0.5	2.8	130	--	0.14 (J-)	4.2	--	13 (J)	--	--	--
Burn Area	B51	561B070	0.0 - 0.5	2 (J+)	96	--	0.12 (J-)	3.9	--	9.5 (J)	0.0054 (J-)	--	--
Burn Area	B52	561B071	0.0 - 0.5	3	170	--	0.13 (J-)	3	--	17 (J)	--	--	--
Burn Area	B53	561B072	0.0 - 0.5	1.4 (J+)	150	--	0.072 (J-)	2.3	--	9.9 (J)	--	--	--
Burn Area	B54	561B073	0.0 - 0.5	2.5	110	--	0.16 (J-)	6.7	--	19 (J)	--	0.6	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

J+ = Result is an estimated quantity, but may be biased high.

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

Table A.4-6
Sample Results for PCBs Detected above MDCs
at CAS 02-08-02, Waste Dump and Burn Area

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)	
				Aroclor 1254	Aroclor 1260
FALs				0.74	0.74
Burn Area	B01	561B029	0.0 - 0.5	--	0.022 (J)
Burn Area	B05	561B017	0.0 - 0.5	0.084	--
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	--	0.016 (J)
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	--	0.076
Burn Area	B22	561B024	0.0 - 0.5	0.046	--

J = Estimated value

-- = Not detected above MDCs.

Table A.4-7
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 1 of 2)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)			
				Ac-228	Am-241	Cs-137	Th-234
FALs				506.7 ^a	1,503	72.9	1,423 ^b
Burn Area	B01	561B029	0.0 - 0.5	0.94	1.49 (J)	1.9 (J)	--
Burn Area	B02	561B021	0.0 - 0.5	1.91	--	0.571 (J)	--
Burn Area	B03	561B028	0.0 - 0.5	1.8	--	0.37 (J)	--
Burn Area	B04	561B020	0.0 - 0.5	2.12	--	--	3.3 (J)
Burn Area	B05	561B017	0.0 - 0.5	1.63	--	1.2 (J)	2.47 (J)
Burn Area	B06	561B018	0.0 - 0.5	1.84	--	1.38 (J)	2.43 (J)
Waste Dump	B07	561B001	2.0 - 3.0 ft into pile	2.29	1.33 (J)	2.57	--
Waste Dump	B08	561B002	4.0 - 5.0 ft into pile	2.04	--	2.24	3.1 (J)
Waste Dump	B09	561B003	3.0 - 4.0 ft into pile	1.88	--	1.24	--
Waste Dump	B10	561B004	3.0 - 4.0 ft into pile	1.87	--	1.49	--
Waste Dump	B11	561B016	4.0 - 5.0 ft into pile	1.91	--	1.07	2.53 (J)

Table A.4-7
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 02-08-02, Waste Dump and Burn Area
(Page 2 of 2)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)			
				Ac-228	Am-241	Cs-137	Th-234
FALs				506.7 ^a	1,503	72.9	1,423 ^b
Waste Dump	B12	561B013	0.5 - 1.0 ft into pile	2.07	--	0.63	3.1 (J)
		561B014	1.0 - 1.5 ft into pile	2.09	--	1.67	2.7
		561B015	3.0 - 3.5 ft into pile	2.16	--	1.54	2.55 (J)
Waste Dump	B13	561B012	4.0 - 5.0 ft into pile	2.14	--	0.169	2.23 (J)
Waste Dump	B14	561B011	4.0 - 5.0 ft into pile	2.19	--	1.17	2.58 (J)
Waste Dump	B15	561B010	4.0 - 5.0 ft into pile	2.32	--	0.87	3.6 (J)
Waste Dump	B16	561B009	5.0 - 6.0 ft into pile	2.13	--	1.5	--
Waste Dump	B17	561B008	4.0 - 5.0 ft into pile	2.07	--	1.11	--
Waste Dump	B18	561B005	2.0 - 3.0 ft into pile	2.18	--	0.63	2.5
		561B006	2.0 - 3.0 ft into pile	2.19	--	1.04	2.32 (J)
		561B007	4.0 - 5.0 ft into pile	2.11	--	1.85	--
Waste Dump	B19	561B030	0.0 - 0.5	1.88	--	0.3 (J)	--
Waste Dump	B20	561B031	0.0 - 0.5	1.85	--	0.223 (J)	--
Burn Area	B21	561B019	0.0 - 0.5	1.95	--	--	--
Burn Area	B22	561B024	0.0 - 0.5	1.97	--	0.537 (J)	2.4 (J)
Burn Area	B23	561B025	0.0 - 0.5	2.07	--	0.266 (J)	--
Burn Area		561B026	0.0 - 0.5	1.87	--	0.31 (J)	--
Burn Area	B24	561B023	0.0 - 0.5	1.93	--	0.247 (J)	2.54 (J)
Burn Area	B25	561B022	0.0 - 0.5	2.13	--	0.8 (J)	2.77 (J)
Burn Area	B26	561B027	0.0 - 0.5	2.12	--	0.73 (J)	--

^aFAL for Ac-228 based on the Th-232 FAL.

^bFAL for Th-234 based on U-238 FAL.

J = Estimated value

-- = Not detected above MDCs.

considered PSM. The PAHs (SVOCs) associated with several samples in the burn area are attributed to asphalt located throughout the area, and are not considered to originate from releases associated with burn area activities. The asphalt was discovered throughout the area at depths ranging from 0 to 8 in. bgs. Aerial photos from September 1971 (H&N, 1971) show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities.

A.4.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS. Because the PAHs reported at this CAS within the burn area were attributed to the presence of asphalt, no revisions were necessary to the CSM.

A.5.0 CAS 03-19-02, Debris Pile

Corrective Action Site 03-19-02 is located in the north-central portion of Area 3 of the NNSS.

The CAS consists of a surface debris pile containing large pieces of rebar, concrete, and steel, and is believed to be associated with the Pommard test. There are “Caution Radioactive Material” postings placed around the debris pile, but no fencing.

A.5.1 Corrective Action Investigation

A total of four characterization samples (including one FD) were collected during investigation activities at CAS 03-19-02 ([Figure A.5-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.5-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

Table A.5-1
Samples Collected at CAS 03-19-02, Debris Pile

Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Gamma
C01	561C001	N/A	Solid	PSM	X
	561C002	0.5 - 1.0	Soil	Environmental	X
	561C003	0.5 - 1.0	Soil	FD of #561C002	X
C02	561C004	0.0 - 0.5	Soil	Environmental	X
N/A	561C301	N/A	Water	Field Blank	X

A.5.1.1 Radiological Surveys

In 2007, a gamma radiological walkover survey was performed at the site. No areas of elevated radioactivity in the soil were identified; however, two locations on the concrete debris contained fixed readings above background. During the field investigation in 2010, a gamma walkover survey was performed and only one location on the concrete was identified as having fixed readings above background; the concrete was coated with Trinity glass. Based on the results of the radiological surveys, concrete (561C001) and soil (561C002 and 561C003) samples were collected from this sample location (C01) ([Figure A.5-1](#)).

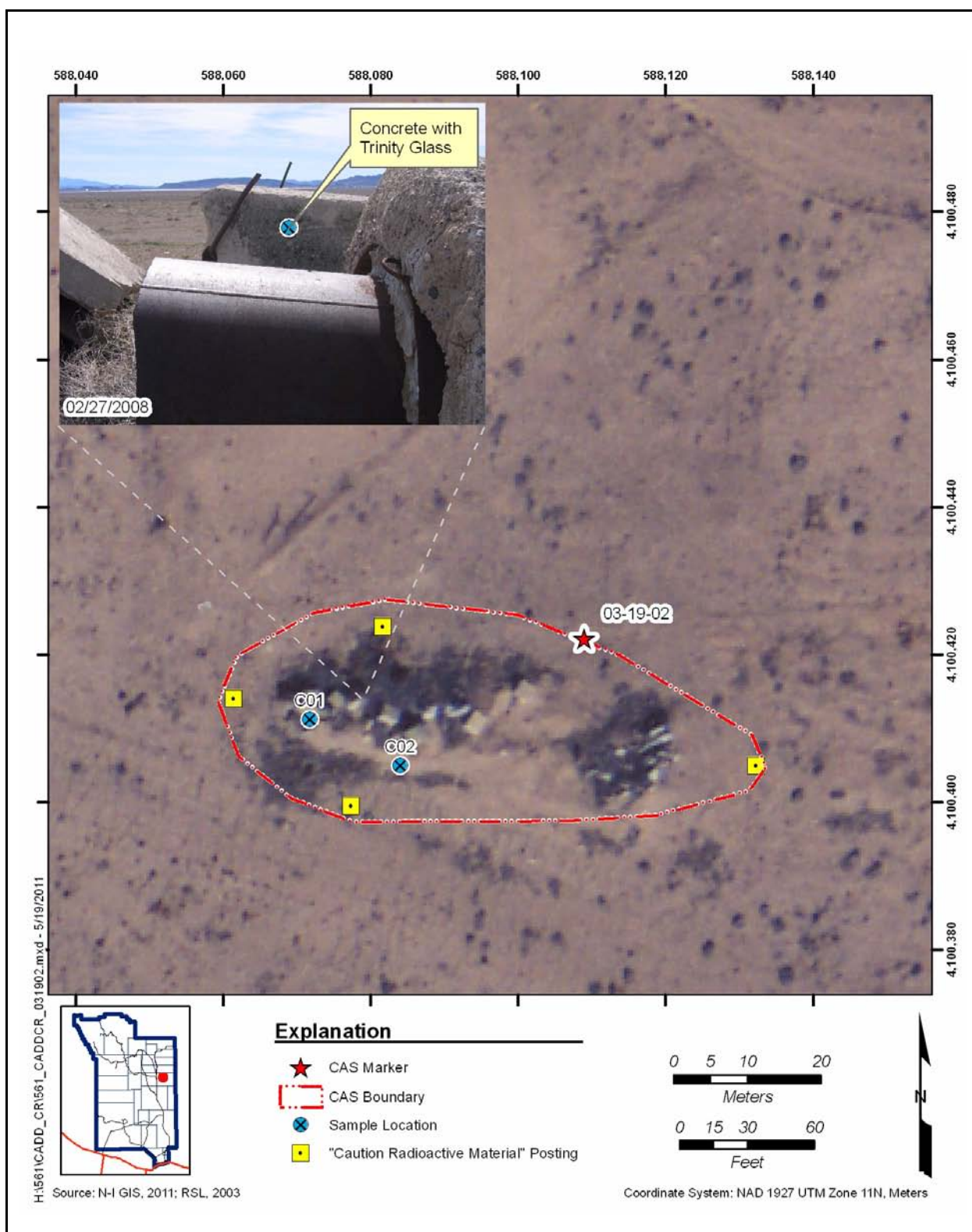


Figure A.5-1
Sample Locations at CAS 03-19-02, Debris Pile

A.5.1.2 Visual Inspections

The debris within the pile and the surface soil was visually inspected for Trinity glass or stained soil. Because the radiological survey could not identify the second location of concrete with fixed readings, two pieces of concrete were moved and/or overturned to inspect the concrete and soil underneath. Trinity glass was discovered after one of these pieces of concrete was overturned. Sample location C02 (sample 561C004) was based on these visual inspections ([Figure A.5-2](#)).



Figure A.5-2
Sample Location C02 at CAS 03-19-02, Debris Pile

A.5.1.3 Sample Collection

Decision I environmental sampling activities included the collection of biased concrete samples on the western concrete block, and collection of soil samples beneath two concrete blocks ([Figure A.5-1](#)). Four environmental samples were collected from two locations (C01 and C02). A concrete sample was scabbled off a large concrete block where Trinity glass was and elevated radiological readings were observed (sample 561C001) to determine whether the concrete was PSM. Two surface soil samples (561C002 and 561C003) were collected below this block to verify that no

radiological contamination had migrated from the block into the soil. A second sample location was sited from beneath an overturned concrete block where a nickel-sized piece of Trinity glass was discovered. A surface soil sample (561C004) was collected near the Trinity glass to verify that there was no migration of radiological contamination from the Trinity glass. The soil samples were collected using the scoop and trowel hand sampling method at depths of 0 to 1 ft bgs. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary. No waste characterization samples were collected.

A.5.1.4 Deviations

The CAIP stated that two PSM (concrete) samples and two biased surface samples from beneath the PSM locations were to be collected. Because no other elevated readings were discovered on the concrete slabs, there was a deviation in the number of samples collected at this CAS. Instead of collecting two PSM samples and the corresponding soil samples, one PSM sample and the corresponding soil sample was collected.

A.5.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included only gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.5-1](#) lists the sample-specific analytical suite for CAS 03-19-02.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.5.2.1 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.5-2](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the PAL concentrations.

Table A.5-2
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 03-19-02, Debris Pile

Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)			
			Ac-228	Am-241	Cs-137	Eu-152
FALs			506.7 ^a	1,503	72.9	38.2
C01	561C002	0.5 - 1.0	1.69	2.49 (J)	2.49	0.79 (J)
	561C003	0.5 - 1.0	1.61	2.89 (J)	2.03	0.97 (J)
C02	561C004	0.0 - 0.5	1.94	--	0.72	--

^aFAL for Ac-228 based on Th-232 FAL.

J = Estimated value

-- = Not detected above MDCs.

A.5.2.2 Potential Source Material

Analytical results for PSM samples collected that were detected above MDCs are presented in [Table A.5-3](#). Media sampled included one of the concrete slabs coated with Trinity glass. The concrete sample contained concentrations of Am-241, Co-60, Cs-137, Eu-152, and Eu-154.

Table A.5-3
PSM Results Detected above MDCs for CAS 03-19-02, Debris Pile

Sample Location	Sample Number	Sample Matrix	Parameter	Result	PSM Criteria	Unit
C01	561C001	Solid	Am-241	7.4 (J)	1,503	pCi/g
			Co-60	0.88	18.33	
			Cs-137	42.1	72.9	
			Eu-152	72 (J)	38.62	
			Eu-154	2.86 (J)	35.7	

J = Estimated value

Bold indicates the values exceeding the FALs.

A.5.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 03-19-02, there has not been a release of contaminants to the environmental media. The analytical results from the concrete slab identified Eu-152 concentrations that exceeded the PSM criteria; therefore, the concrete slab is considered PSM. But soil sampling directly below this slab indicated that no contaminants had migrated from the concrete slab into the soil.

A.5.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.6.0 CAS 05-62-01, Radioactive Gravel Pile

Corrective Action Site 05-62-01 consists of a radioactive gravel pile with debris located approximately 1,000 ft west of the Gravel Gertie in Area 5 of the NNSS. The gravel pile contains what is believed to be concrete and metal debris from the Gravel Gertie experiments and other atmospheric testing activities in Area 5. The CAS is located within a double-strand yellow rope fence with “Caution Radioactive Material” postings.

A.6.1 Corrective Action Investigation

A total of seven characterization samples (including one FD) were collected during investigation activities at CAS 05-62-01 ([Figure A.6-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.6-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.6.1.1 Field Screening

Investigation samples were field screened for alpha and beta/gamma radiation. Alpha FSLs were exceeded at sample location D05 (sample 516D006) from 1 to 1.5 ft within the gravel pile. Beta/gamma FSLs were exceeded in one surface soil sample (location D02, sample 561D003) and within the gravel pile (location D05, sample 516D006). The beta/gamma FSR at location D05 was 15,700 disintegrations per minute per 100 square centimeters (dpm/100 cm²).

A.6.1.2 Radiological Surveys

In 2006, a gamma radiological walkover survey was performed at CAS 05-62-01. No areas of elevated radioactivity were identified. During the field investigation, the sample locations within the gravel pile was surveyed to identify the highest radioactivity within the pile for sampling purposes. Two samples 561D006 and 561D007 were collected from the gravel pile at location with the highest radioactivity ([Figure A.6-1](#)).

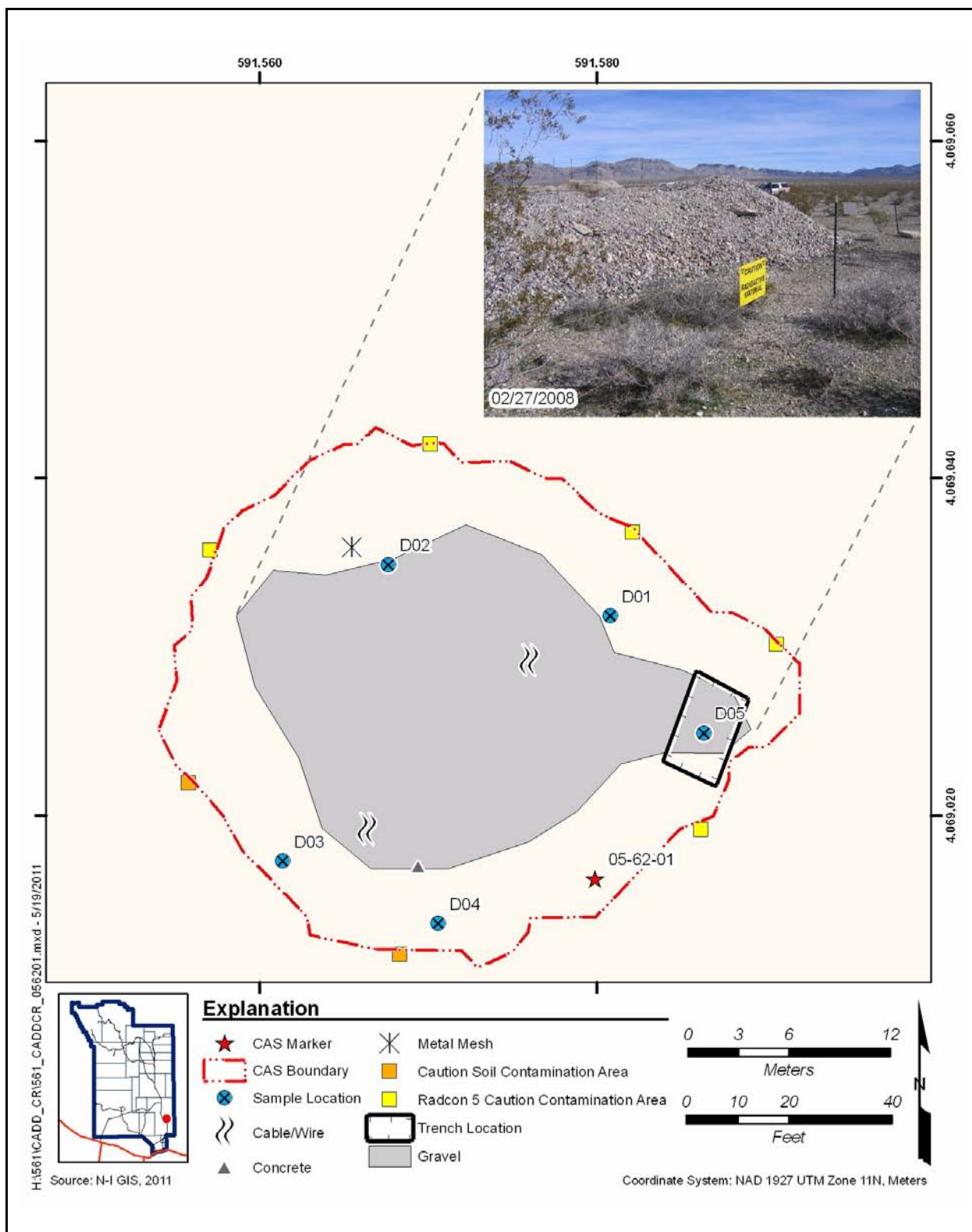


Figure A.6-1
Sample Locations at CAS 05-62-01, Radioactive Gravel Pile

Table A.6-1
Samples Collected at CAS 05-62-01, Radioactive Gravel Pile

Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Gamma	Plutonium	Strontium	Uranium
D01	561D001	0.0 - 0.5	Soil	Environmental	X	X	X	X
D02	561D002	0.0 - 0.5	Soil	Environmental	X	X	X	X
	561D003	0.0 - 0.5	Soil	FD of #561D002	X	X	X	X
D03	561D004	0.0 - 0.5	Soil	Environmental	X	X	X	X
D04	561D005	0.0 - 0.5	Soil	Environmental	X	X	X	X
D05	561D006	1.0 - 1.5 ft into gravel pile	Soil	Environmental	X	X	X	X
	561D007	6.5 - 7.0 ft into gravel pile	Soil	Environmental	X	X	X	X
N/A	561D301	N/A	Water	Field Blank	X	X	X	X
N/A	561D302	N/A	Water	Equipment Rinsate	X	X	X	X

A.6.1.3 Visual Inspections

The gravel pile and surrounding soil was visually inspected for biasing factors. There was no soil staining or other obvious biasing factors. It was observed that there were locations of erosion where the gravel had washed down off the pile. Surface samples were biased to these locations (D01 through D04).

A.6.1.4 Sample Collection

Decision I environmental sampling activities included the collection of biased surface soil samples from around the gravel pile and a biased sample from within the pile at an area of the highest elevated radioactivity. A sample was also collected at the native soil interface below the sample location in the gravel pile ([Figures A.6-1](#) and [A.6-2](#)).

Seven environmental samples (including one FD) were collected from five locations (location D01 through D05). Surface soil samples were collected from four locations around the gravel pile to verify that no radiological contamination had migrated off the pile. Two soil samples were collected from within the pile at one location. One sample was collected from 1 to 1.5 ft into the gravel pile which showed elevated radioactivity within the pile. The second sample was collected at the native



Figure A.6-2
Gravel Pile Showing Area of Elevated Radioactivity
CAS 05-62-01, Radioactive Gravel Pile

soil interface (6.5 to 7 ft into pile) to verify that there was no contamination below the gravel pile. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary. No waste characterization samples were collected.

A.6.1.5 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 05-62-01. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.6.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included gamma-emitting radionuclides, isotopic Pu, isotopic U, and Sr-90. The analytical parameters and laboratory methods used to analyze the

investigation samples are listed in [Table A.2-2](#). [Table A.6-1](#) lists the sample-specific analytical suite for CAS 05-62-01.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.6.2.1 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.6-2](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the PAL concentrations.

Table A.6-2
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 05-62-01, Radioactive Gravel Pile

Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)		
			Ac-228	Cs-137	Th-234
FALs			506.7 ^a	72.9	1,423 ^b
D01	561D001	0.0 - 0.5	0.46	0.196	--
D02	561D002	0.0 - 0.5	1.16	--	--
	561D003	0.0 - 0.5	1.03	--	--
D03	561D004	0.0 - 0.5	0.76	--	--
D04	561D005	0.0 - 0.5	--	--	4.09
D05	561D006	1.0 - 1.5 ft into gravel pile	0.38	--	206
	561D007	6.5 - 7.0 ft into gravel pile	0.73	--	4.75

^aFAL for Ac-228 based on the Th-232 FAL.

^bFAL for Th-234 based on U-238 FAL.

-- = Not detected above MDCs.

A.6.2.2 Plutonium and Uranium Isotopes, and Strontium-90

Analytical results for the Pu and U isotopes and Sr-90 in soil samples collected at this CAS that were detected above MDCs are presented in [Table A.6-3](#). Because Sr-90 was not detected above the MDC, the results are not included in the table.

**Table A.6-3
Sample Results for Isotopes
Detected above MDCs at CAS 05-62-01, Radioactive Gravel Pile**

Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)			
			Pu-239/240	U-234	U-235	U-238
FALs			2,207	18,650	255.5	1,423
D01	561D001	0.0 - 0.5	0.087	1.01	0.046	1.69
D02	561D002	0.0 - 0.5	--	0.65	--	0.74
	561D003	0.0 - 0.5	--	0.6	--	0.72
D03	561D004	0.0 - 0.5	--	0.62	--	0.96
D04	561D005	0.0 - 0.5	--	1.74	0.077	3.14
D05	561D006	1.0 - 1.5 ft into gravel pile	--	267	15.3	630
	561D007	6.5 - 7.0 ft into gravel pile	--	4.22	0.267	9.2

-- = Not detected above MDCs.

A.6.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected at CAS 05-62-01, there has not been a release of contaminants to the surrounding environmental media.

A.6.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.7.0 CAS 12-23-09, Radioactive Waste Dump

Corrective Action Site 12-23-09 is located northwest of Stockade Wash Road, just north of E-Tunnel Road in Area 12 of the NNSS. The CAS consists of two rectangular fenced areas (“north” and “south”). There is a soil mound and a boulder pile located in the northern fenced area. The soil mound has been identified as an area with elevated radioactivity. The site was labeled as a radioactive waste dump on a topographic map; however, it is believed to be an electricians’ laydown yard based on interviews with current and past NNSS employees.

A.7.1 Corrective Action Investigation

A total of eight characterization samples (including one FD) were collected during investigation activities at CAS 12-23-09 ([Figure A.7-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.7-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.7.1.1 Radiological Surveys

A gamma radiological walkover survey was performed of the north fenced area in 2006. The survey results identified an area of radioactivity from 2 to 5 times higher than background levels at the soil mound. Based on the results of this survey, two soil samples (561E004 and 561E005) were collected at location E07 ([Figure A.7-2](#)). In 2008, a gamma walkover survey was performed of the south fenced area; no areas of elevated radioactivity were identified.

A.7.1.2 Geophysical Surveys

Geophysical surveys were performed at this CAS which identified buried metal debris in the area of the soil mound. This is the same area where the elevated radioactivity was identified. The soil mound was investigated using a shovel, and two soil samples (561E004 and 561E005) were collected within the soil mound based on the survey results.

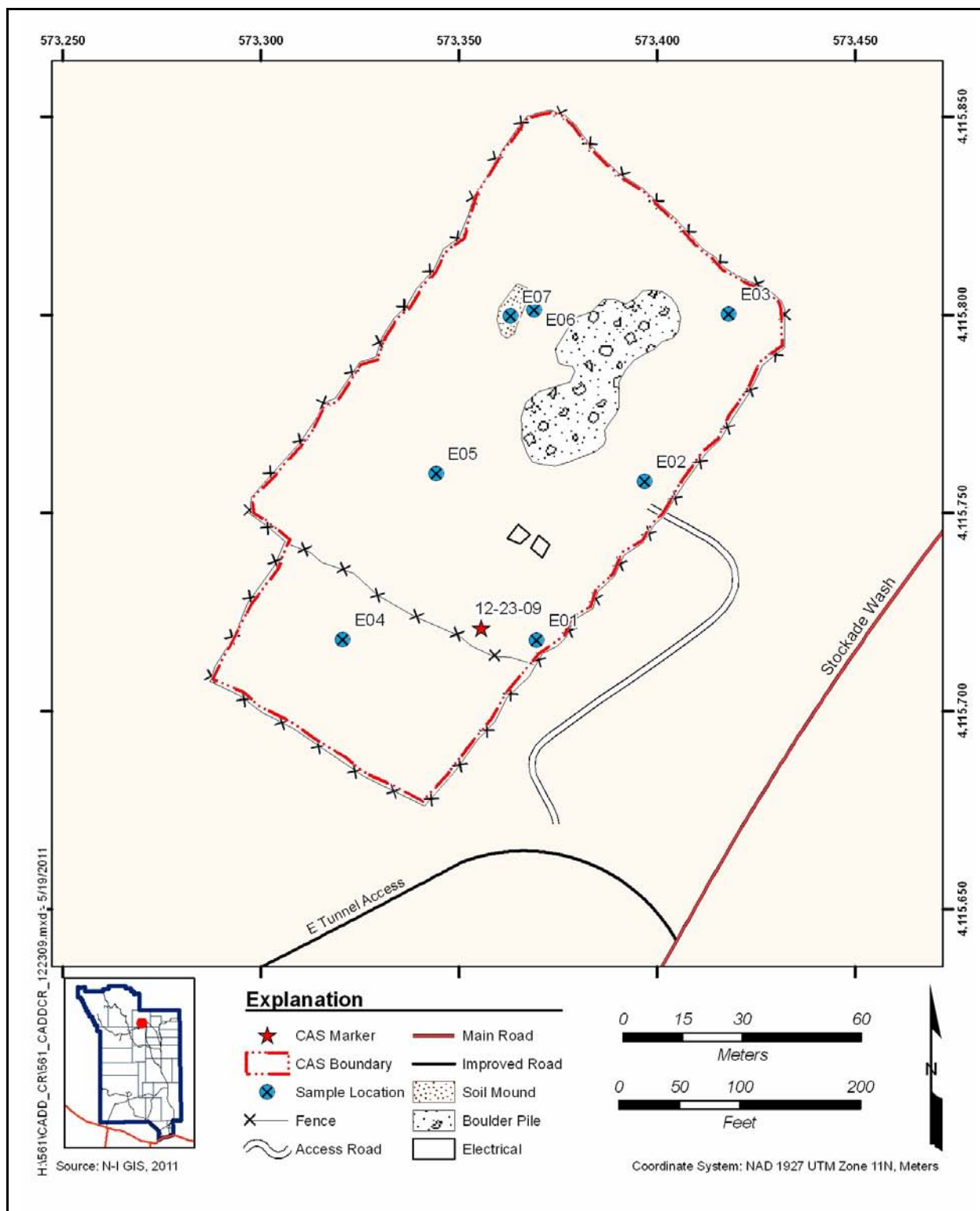


Figure A.7-1
Sample Locations at CAS 12-23-09, Radioactive Waste Dump

Table A.7-1
Samples Collected at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
E01	561E002	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E02	561E003	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E03	561E006	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E04	561E001	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E05	561E008	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E06	561E007	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
E07	561E004	1.0 - 1.5 ft into soil mound	Soil	Environmental	X	X	X	X	X	X	X	X
	561E005	1.0 - 1.5 ft into soil mound	Soil	FD of #561E004	X	X	X	X	X	X	X	X
N/A	561E301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561E302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561E303	N/A	Water	Field Blank	X	X	X	X	X	X	X	X

-- = Not required



Figure A.7-2
Sample Location E07 at Soil Mound CAS 12-23-09, Radioactive Waste Dump

A.7.1.3 Visual Inspections

The surface soil within the two fenced areas and the soil mound was inspected for any stained soil or other biasing factors. No biasing factors were noted.

A.7.1.4 Sample Collection

Decision I environmental sampling activities included the collection of randomly selected soil samples from the north and south fenced area and biased soil samples from the soil mound in the northwest portion of the fenced area ([Figure A.7-1](#)). Eight environmental samples (including one FD) were collected from seven locations (location E01 through E07). Six sample locations were located using VSP software, and one sample location was sited in the soil mound, which showed elevated radioactivity. The six samples were surface samples (0 to 0.5 ft bgs), while the soil mound was sampled at 1 to 1.5 ft into the mound. The soil mound was sampled by digging into the mound with a clean shovel, then collecting the sample using disposable scoops. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary. No waste characterization samples were required or collected.

A.7.1.5 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 12-23-09. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.7.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only), RCRA metals, beryllium, hexavalent chromium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.7-1](#) lists the sample-specific analytical suite for CAS 12-23-09.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.7.2.1 Volatile Organic Compounds

Analytical results for VOCs detected in soil samples above MDCs are presented in [Table A.7-2](#).

No VOCs were detected at concentrations exceeding their respective PALs. The FALs were established at the corresponding PAL concentrations.

Table A.7-2
Sample Results for VOCs Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)			
			Acetone	P-Isopropyltoluene	Toluene	Total Xylenes
FALs			630,000	11,000	45,000	2,700
E01	561E002	0.0 - 0.5	--	--	0.0027 (J)	0.0029 (J)
E02	561E003	0.0 - 0.5	0.014 (J)	--	0.0024 (J)	0.0018 (J)
E03	561E006	0.0 - 0.5	--	--	0.0024 (J)	0.0034 (J)
E04	561E001	0.0 - 0.5	0.039 (J)	--	0.002 (J)	0.0029 (J)
E05	561E008	0.0 - 0.5	0.046 (J)	0.01	0.0037 (J)	0.0044 (J)
E06	561E007	0.0 - 0.5	0.017 (J)	--	0.0044 (J)	0.0037 (J)

J = Estimated value
-- = Not detected above MDCs.

A.7.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.7-3](#).

No SVOCs were detected at concentrations exceeding the respective PALs. The FALs were established at the corresponding PAL concentrations.

Table A.7-3
Sample Results for SVOCs Detected above MDC at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)						
			Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Pyrene
FALs			2.1	0.21	2.1	21	210	22,000	17,000
E06	561E007	0.0 - 0.5	0.086 (J)	0.073 (J)	0.16 (J)	0.073 (J)	0.13 (J)	0.15 (J)	0.13 (J)
E07	561E005	1.0 - 1.5 ft into soil mound	0.081 (J)	--	0.11 (J)	--	0.088 (J)	0.087 (J)	0.084 (J)

J = Estimated value
-- = Not detected above MDC.

A.7.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.7-4](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.7-4
Sample Results for TPH-DRO at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
E01	561E002	0.0 - 0.5	2.3 (J)
E02	561E003	0.0 - 0.5	17
E03	561E006	0.0 - 0.5	4.5 (J)
E04	561E001	0.0 - 0.5	2.8 (J)
E05	561E008	0.0 - 0.5	4.6
E06	561E007	0.0 - 0.5	4.8
E07	561E004	1.0 - 1.5 ft into soil mound	2.7 (J)
	561E005	1.0 - 1.5 ft into soil mound	2.7 (J)

J = Estimated value

A.7.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.7-5](#). No RCRA metals, beryllium, or hexavalent chromium were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.7-5
Sample Results for Metals Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs			23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
E01	561E002	0.0 - 0.5	3.2	140	0.79	0.14	5.8	0.14 (J-)	23	--	--
E02	561E003	0.0 - 0.5	3.2	120	0.76	0.16	5.4	--	15	--	--
E03	561E006	0.0 - 0.5	3.6	150	0.87	0.14	6.1	0.14 (J-)	13	--	--
E04	561E001	0.0 - 0.5	2.8	120	0.78	0.081	2.9	0.37 (J-)	9.6	--	--
E05	561E008	0.0 - 0.5	3.6	82	0.55	0.28	6	0.14 (J-)	12	0.052	--
E06	561E007	0.0 - 0.5	3.7	89	0.61	0.2	6.3	0.26 (J-)	10	0.037	--
E07	561E004	1.0 - 1.5 ft into soil mound	3.3	77	--	0.19	5	0.14 (J-)	11	0.042	--
	561E005	1.0 - 1.5 ft into soil mound	3.3	120	0.77	0.2	5.5	0.14 (J-)	15	0.043	0.32

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

A.7.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.7-6](#). No PCBs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

**Table A.7-6
Sample Results for PCBs Detected above MDC
at CAS 12-23-09, Radioactive Waste Dump**

Sample Location	Sample Number	Depth (ft bgs)	COPC (mg/kg)
			Aroclor 1268
FAL			0.74
E04	561E001	0.0 - 0.5	0.028 (J)

J = Estimated value

A.7.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.7-7](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.7.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 12-23-09, there has not been a release of contaminants to the environmental media.

A.7.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

Table A.7-7
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 12-23-09, Radioactive Waste Dump

Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)		
			Ac-228	Am-241	Cs-137
FALs			506.7 ^a	1,503	72.9
E01	561E002	0.0 - 0.5	1.87	1.23 (J)	6.06
E02	561E003	0.0 - 0.5	1.93	--	6.36
E03	561E006	0.0 - 0.5	2.47	--	3.52
E04	561E001	0.0 - 0.5	2.26	--	--
E05	561E008	0.0 - 0.5	0.84	--	5.81
E06	561E007	0.0 - 0.5	1.01	--	0.36
E07	561E004	1.0 - 1.5 ft into soil mound	0.81	--	8.07
	561E005	1.0 - 1.5 ft into soil mound	0.72	--	8.5

^aFAL for Ac-228 based on the Th-232 FAL.

J = Estimated value

-- = Not detected above MDCs.

A.8.0 CAS 22-19-06, Buried Waste Disposal Site

Corrective Action Site 22-19-06 is located at the southeast end of Camp Desert Rock in Area 22 of the NNSS and consists of a suspected waste dump with buried debris as identified by a geophysical survey. Excavation activities uncovered two manhole covers and a concrete-filled piece of corrugated pipe. Camp Desert Rock has been identified as eligible for inclusion in the National Register of Historic Places (Jones, 2010).

A.8.1 Corrective Action Investigation

A total of five characterization samples (including one FD) were collected during investigation activities at CAS 22-19-06 (Figure A.8-1). The sample IDs, locations, types, and analyses are listed in Table A.8-1. The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

**Table A.8-1
Samples Collected at CAS 22-19-06, Buried Waste Disposal Site**

Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
F01	561F001	1.5 - 2.0	Soil	Environmental	X	X	X	X	X	X	X	X
	561F002	1.5 - 2.0	Soil	FD of #561F001	X	X	X	X	X	X	X	X
F02	561F003	2.5 - 3.0	Soil	Environmental	X	X	X	X	X	X	X	X
F03	561F004	7.0 - 7.5	Soil	Environmental	X	X	X	X	X	X	X	X
F04	561F005	8.0 - 8.5	Soil	Environmental	X	X	X	X	X	X	X	X
N/A	561F301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561F302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561F303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	561F304	N/A	Water	Field Blank	X	X	X	X	X	X	X	X
N/A	561F305	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	X

-- = Not required

A.8.1.1 Geophysical Surveys

Geophysical surveys were performed in 2004 and identified buried metallic debris in the area of the disposal trench (Figure A.8-1). The geophysical anomaly was investigated by trenching through the center of the anomaly. Sample locations F01 through F04 were located along the geophysical anomalies, and five samples (561F001 through 561F005) were collected.

A.8.1.2 Visual Inspections

The surface soil at CAS 22-19-06 was inspected for any stained soil or biasing factors. No biasing factors or stained surface soil was observed. During excavation activities, the subsurface soil was also inspected for staining and other biasing factors; none were found. Two concrete and metal manhole covers were uncovered during the excavation activities at depths ranging from 1 to 3 ft bgs; samples 561F001 through 561F003 were collected from beneath the manhole covers. A corrugated metal conduit pipe was also uncovered at a depth of 6 ft bgs; samples 561F004 and 561F005 were collected from beneath the conduit pipe (Figure A.8-2).

A.8.1.3 Sample Collection

Decision I environmental sampling activities included the collection of biased subsurface soil samples (Figure A.8-1) at this CAS. Environmental samples were collected from the subsurface soil to determine whether there has been a release from what was believed to be a buried waste dump. One northeast-southwest trench was excavated in the area of two geophysical anomalies. The geophysical anomalies were not associated with a buried waste dump, but were instead concrete and metal manhole covers, and a corrugated conduit pipe.

Five environmental samples were collected from four locations (location F01 through F04) in the locations of the geophysical anomaly. Samples 561F001 and 561F002 were collected from beneath a concrete manhole cover at a depth of 1.5 to 2 ft bgs, and sample 561F003 was collected from 2.5 to 3 ft bgs at the same location. Samples were also collected from beneath the corrugated conduit pipe; sample 561F004 was collected from a depth of 7 to 7.5 ft bgs and sample 561F005 was collected from 8 to 8.5 ft bgs. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary. No waste characterization samples were required or collected.

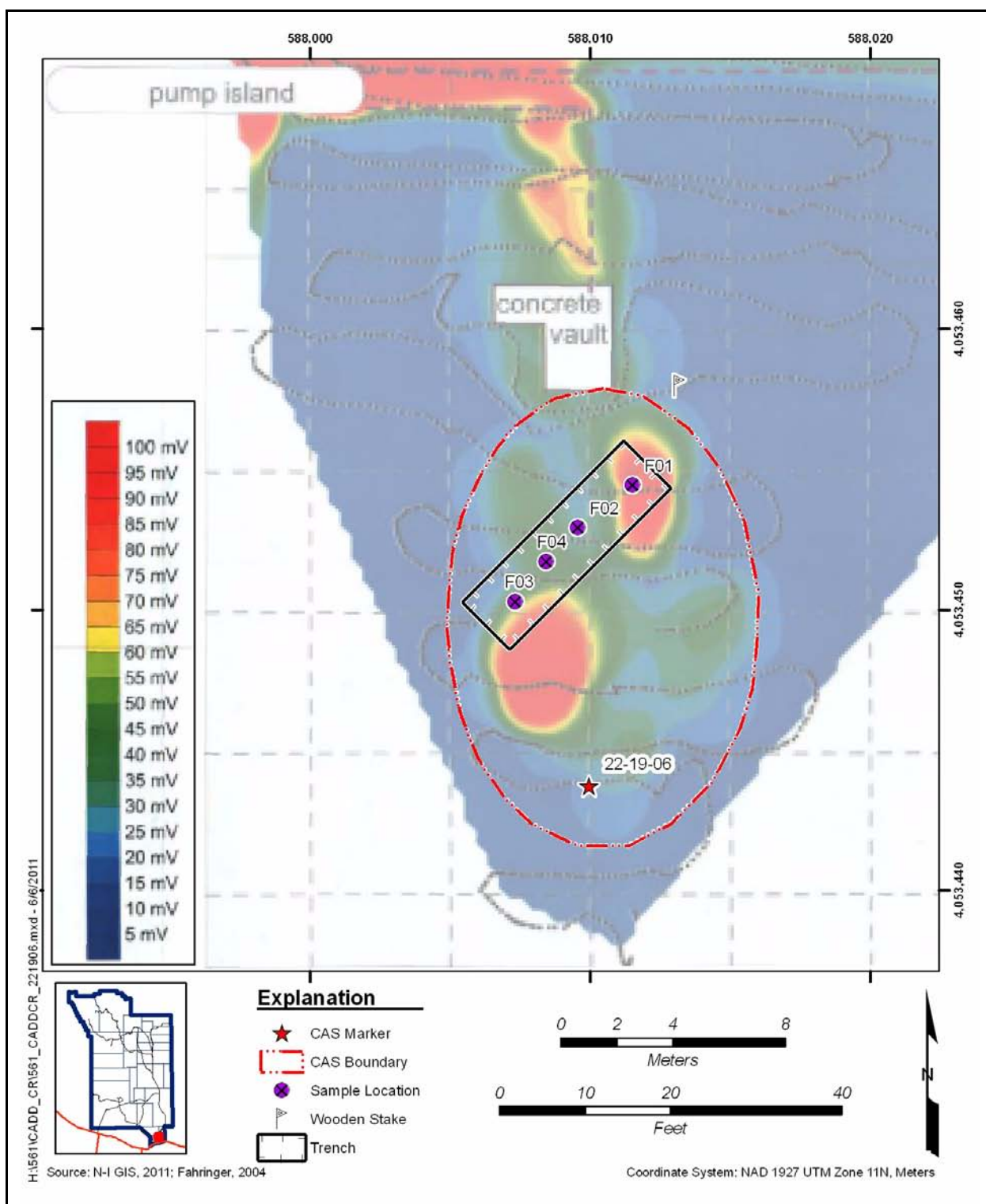


Figure A.8-1
Sample Locations at CAS 22-19-06, Buried Waste Disposal Site

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Figure A.8-2
Metal Conduit Pipe at CAS 22-19-06, Buried Waste Disposal Site

Samples collected from this CAS were screened for VOCs using a Mini-RAE 2000 PID due to the possible presence of volatile hydrocarbons in the soil. No VOCs were detected at this CAS. A Q-RAE Plus Four-Gas Monitor was used to screen soil samples as well; all readings were 0 parts per million (ppm) or 0 percent, except for the oxygen gas (O₂), which was within the acceptable range.

A.8.1.4 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 22-19-06. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.8.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO

(waste management purposes only), RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.8-1](#) lists the sample-specific analytical suite for CAS 22-19-06.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.8.2.1 Volatile Organic Compounds

No VOCs were detected in soil samples above MDCs. Therefore, the FALs were established at the corresponding PAL concentrations.

A.8.2.2 Semivolatile Organic Compounds

No SVOCs were detected in soil samples above MDCs. Therefore, the FALs were established at the corresponding PAL concentrations.

A.8.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.8-2](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.8-2
Sample Results for TPH-DRO at CAS 22-19-06, Buried Waste Disposal Site

Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
F01	561F001	1.5 - 2.0	2.3 (J)
	561F002	1.5 - 2.0	2.1 (J)
F02	561F003	2.5 - 3.0	11
F03	561F004	7.0 - 7.5	7.3
F04	561F005	8.0 - 8.5	11

J = Estimated value

A.8.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.8-3](#). No RCRA metals, beryllium, or hexavalent chromium were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.8-3
Sample Results for Metals Detected above MDCs
at CAS 22-19-06, Buried Waste Disposal Site

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)					
			Arsenic	Barium	Cadmium	Chromium	Lead	Selenium
FALs			23	190,000	800	N/A ^a	800	5,100
F01	561F001	1.5 - 2.0	5.5	78	0.1	4.6 (J)	7 (J)	0.29
	561F002	1.5 - 2.0	5.6	81	0.1	5.1 (J)	7.6 (J)	--
F02	561F003	2.5 - 3.0	5.9	79	0.096	5.1 (J)	6.8 (J)	--
F03	561F004	7.0 - 7.5	6.2	89	0.14	5.1 (J)	17 (J)	--
F04	561F005	8.0 - 8.5	5.7	89	0.27	4.8 (J)	14 (J)	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

-- = Not detected above MDCs.

A.8.2.5 Polychlorinated Biphenyls

No PCBs were detected in soil samples above MDCs. Therefore, the FALs were established at the corresponding PAL concentrations.

A.8.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.8-4](#). The only gamma-emitting radionuclide detected in soil samples above the MDC was Ac-228, with values ranging from 0.47 to 0.69 pCi/g. These values are below the FAL of 5 pCi/g. No other gamma-emitting radionuclides were detected at concentrations exceeding their PALs. Therefore, the FALs were established at the corresponding PAL concentrations.

Table A.8-4
Sample Results for Gamma-Emitting Radionuclides Detected
above MDC at CAS 22-19-06, Buried Waste Disposal Site

Sample Location	Sample Number	Depth (ft bgs)	COPC (pCi/g)
			Ac-228
FAL			506.7 ^a
F01	561F001	1.5 - 2.0	0.61
	561F002	1.5 - 2.0	0.66
F02	561F003	2.5 - 3.0	0.51
F03	561F004	7.0 - 7.5	0.69
F04	561F005	8.0 - 8.5	0.47

^aFAL for Ac-228 based on the Th-232 FAL.

A.8.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 22-19-06, there has not been a release of contaminants to the environmental media.

A.8.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.9.0 CAS 23-21-04, Waste Disposal Trenches

Corrective Action Site 23-21-04 consists of six open trenches and one potential covered trench located approximately 1,500 ft northeast of Building 23-160 in Area 23 of the NNSS. Three of the trenches contained debris (wood, metal, cables/wire, lead bricks and counterweights, aerosol cans, nails and bolts, a drill bit, machine parts, and engine parts) and stained soil. Lead bricks and lead counterweights were discovered on the west end of Trench 3 and on the west end of Trenches 5 and 6. The other three trenches were empty, and the potential covered trench was not a trench, but a natural depression.

A.9.1 Corrective Action Investigation

A total of 41 characterization samples (including two FDs) were collected from 37 locations during investigation activities at CAS 23-21-04 ([Figure A.9-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.9-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections. As a BMP, the six trenches and potential covered trench were backfilled, and housekeeping debris was removed and disposed of after the CAI was completed.

A.9.1.1 Geophysical Surveys

Geophysical surveys were performed in 2006, and no buried waste was identified from these surveys.

A.9.1.2 Visual Inspections

The trenches were inspected for any stained soil or other biasing factors, such as debris, by excavating potholes and transects in each trench and in the potential covered trench. Potholes and transects were excavated across the middle of the trench and at the ends of the trench. No biasing factors were identified in Trenches 1, 2, 4, or at the potential covered trench area; therefore, no samples were collected from these trenches. Stained soil was observed on the west end of Trench 3, and east of Trench 6; both locations were sampled (samples 561G004 and 561G003). Trenches 3, 4, and 6 were inspected by excavating potholes; debris was discovered in all three trenches and samples were collected at the biasing factor location. A lead brick was discovered on

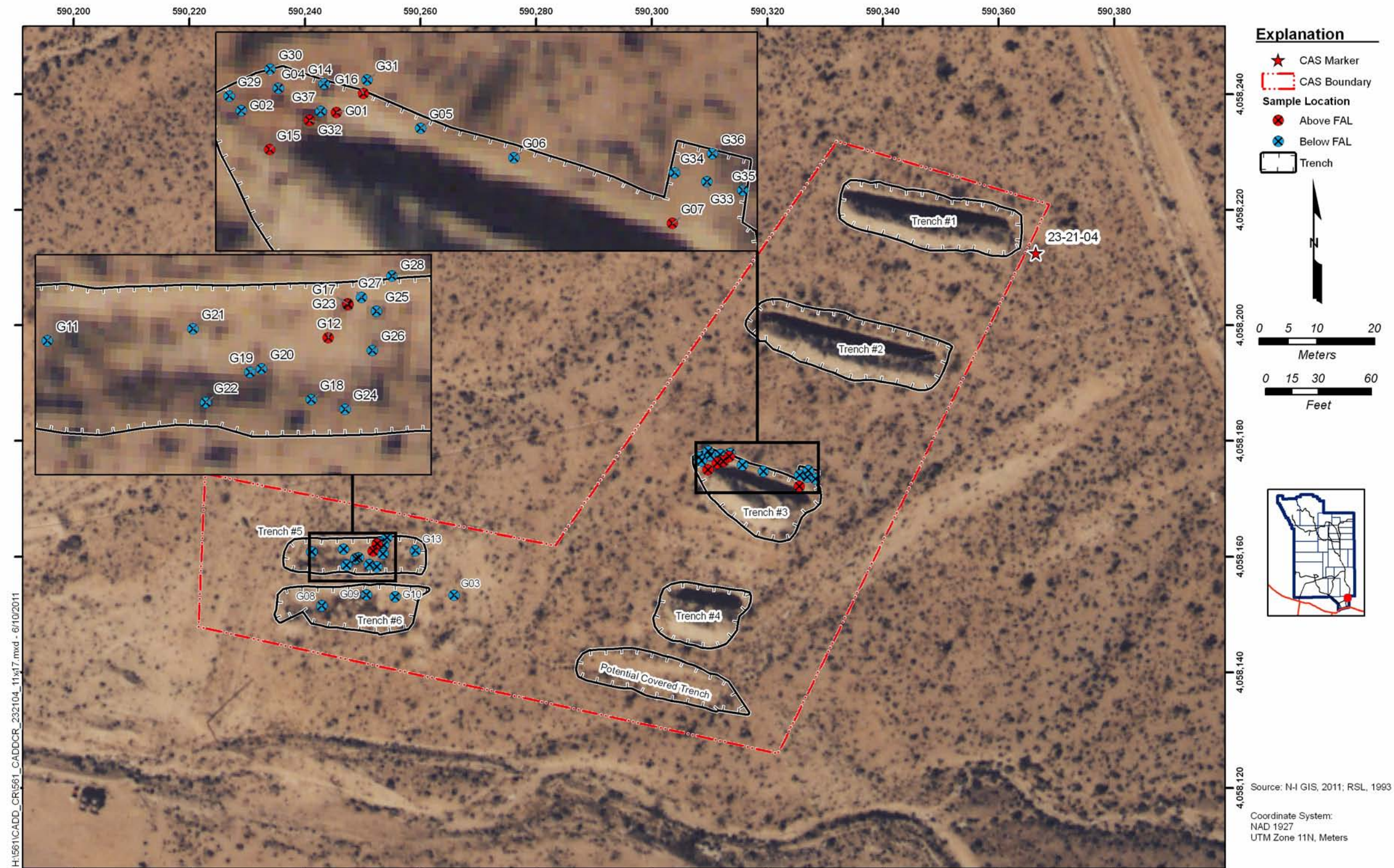


Figure A.9-1
Sample Locations at CAS 23-21-04, Waste Disposal Trenches

Table A.9-1
Samples Collected at CAS 23-21-04, Waste Disposal Trenches
(Page 1 of 2)

Trench	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
3	G01	561G001	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
		561G018	1.0 - 1.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
		561G501	0.0 - 0.5	Soil	Waste Management	--	--	--	--	--	--	--	X	--
3	G02	561G002	0.0 - 0.5	Soil	Environmental	X	--	--	--	X	--	--	--	--
6	G03	561G003	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
3	G04	561G004	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
3	G05	561G005	7.5 - 8.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
3	G06	561G006	7.5 - 8.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
3	G07	561G007	7.5 - 8.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
6	G08	561G008	1.5 - 2.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
6	G09	561G009	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
6	G10	561G010	0.5 - 1.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
		561G011	0.5 - 1.0	Soil	FD of #561G010	X	X	X	X	X	X	X	--	X
5	G11	561G012	0.5 - 1.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
5	G12	561G013	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
		561G020	1.0 - 1.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
		561G502	0.0 - 0.5	Soil	Waste Management	--	--	--	--	--	--	--	X	--
5	G13	561G014	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
3	G14	561G015	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
3	G15	561G016	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
3	G16	561G017	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G17	561G019	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G18	561G021	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G19	561G022	0.0 - 0.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
		561G023	0.0 - 0.5	Soil	FD of #561G022	--	--	--	--	X	--	--	--	--

Table A.9-1
Samples Collected at CAS 23-21-04, Waste Disposal Trenches
(Page 2 of 2)

Trench	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
5	G20	561G024	1.5 - 2.0	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G21	561G025	2.0 - 2.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G22	561G026	2.5 - 3.0	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G23	561G027	2.5 - 3.0	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G24	561G028	2.0 - 2.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G25	561G029	5.0 - 5.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G26	561G030	3.0 - 3.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G27	561G031	5.0 - 5.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
5	G28	561G032	3.0 - 3.5	Soil	Environmental	--	--	--	--	X	--	--	--	--
3	G29	561G033	3.0 - 3.5	Soil	Environmental	--	--	--	X	X	--	--	--	--
3	G30	561G034	3.0 - 3.5	Soil	Environmental	--	--	--	X	X	--	--	--	--
3	G31	561G035	3.0 - 3.5	Soil	Environmental	--	--	--	X	X	--	--	--	--
3	G32	561G036	3.0 - 3.5	Soil	Environmental	--	--	--	X	X	--	--	--	--
3	G33	561G037	9.0 - 10.0	Soil	Environmental	--	--	--	--	--	X	--	--	--
3	G34	561G038	6.0 - 7.0	Soil	Environmental	--	--	--	--	--	X	--	--	--
3	G35	561G039	6.0 - 7.0	Soil	Environmental	--	--	--	--	--	X	--	--	--
3	G36	561G040	6.0 - 7.0	Soil	Environmental	--	--	--	--	--	X	--	--	--
3	G37	561G041	4.5 - 5.0	Soil	Environmental	--	--	--	X	X	--	--	--	--
N/A	N/A	561G301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	N/A	561G302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	N/A	561G303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	N/A	561G304	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	N/A	561G305	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	N/A	561G306	N/A	Water	Field Blank	X	X	X	X	X	X	X	--	X
N/A	N/A	561G307	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	--	X

-- = Not required

the west end of Trench 3, and lead counterweights were found on the west end of Trench 6.

Figures A.9-2 and A.9-3 show trenches with debris before and after excavation.



Figure A.9-2
Debris in Trench 6, Pre-excavation CAS 23-21-04, Waste Disposal Trenches

A.9.1.3 Sample Collection

Forty-one environmental samples (including two FDs) were collected from 37 locations (locations G01 through G37) near and within Trenches 3, 5, and 6. No samples were collected from Trenches 1, 2, 4, or the potential covered trench because the potholing activities did not identify any potential contamination.



Figure A.9-3
Debris in Trench 3, Post-excavation CAS 23-21-04, Waste Disposal Trenches

Two waste characterization samples (see [Section A.13.0](#)) were collected from locations G01 (Trench 3) and G12 (Trench 5) and analyzed for TCLP metals, because the arsenic concentrations exceeded the action levels.

Trench 3

Nineteen environmental samples were collected within Trench 3. Decision I sampling activities included the collection of six biased soil samples. Biasing factors included stained soil (samples 561G001 and 561G004), debris (samples 561G002, 561G005 through 561G007), and a location beneath one lead brick (561G002). The Decision I analytical results showed that the west end of the trench had arsenic and hexavalent chromium contamination (locations G01 and G04), and the east end of the trench had PCB contamination (location G07) at concentrations exceeding the PALs.

The determination was made that the arsenic and hexavalent chromium contaminated soil would be removed to allow for a clean closure of this site. During the soil removal activities samples were collected to define the vertical and lateral extent of the contamination. After the soil excavation was completed to a depth of 4.5 ft bgs, confirmation samples were collected from the sides and bottom of the excavation (561GG033, 561G034, 561G035, and 561G041). Analytical results demonstrated that all the arsenic and hexavalent chromium had been removed from the area around Trench 3.

Because PCBs were identified in sample 561G007 from location G07, four Decision II environmental samples were collected to define the extent of the PCB contamination. Consistent with the decision to clean close this CAS, soil was excavated from the north side of the trench from an area 7 by 9 by 10 ft deep. Samples were then collected at the bottom of the excavation from 9 to 10 ft bgs, and from the north, east, and west walls at a depth of 6 to 7 ft bgs, and analyzed for PCBs. The sample results indicated that PCB-contaminated soil had been removed from the trench.

A lead brick was identified as PSM and removed from the west end of Trench 3 (location G02). A verification soil sample (561G002) was collected from the underlying soil after removing the PSM. The analytical results from the lead brick verification sample demonstrated that there was no residual lead contamination remaining in the soil.

Trench 5

Seventeen total environmental samples were collected within Trench 5. Three Decision I biased samples (561G012 through 561G014) were collected at areas of debris within the trench. The analytical results demonstrated that arsenic was present in the soil within and adjacent to the trench at concentrations exceeding PALs. Based on the Decision I analytical results and the desire to clean close this CAS, Decision II sampling was initiated to define the vertical and horizontal extent of the arsenic contamination and remove the contaminate soil associated with Trench 5. During the excavation operation, confirmation samples were periodically collected to determine whether all the contaminated soil had been removed. When the excavation was completed soil from an area measuring approximately 30 by 16 by 5 ft was removed and disposed of. Confirmation samples (561G029, 561G30, 561G031, and 561G032) collected from the sides and bottom of the excavation confirmed that the arsenic contaminated soil had been removed.

Trench 6

Decision I environmental sampling activities at Trench 6 included the collection of biased samples at three locations within the trench. Debris (wood and metal) was observed on the surface of the trench, but not within the excavation. Four samples (561G008 through 561G011) were collected from Trench 6. A small soil pile (approximately 8 in. tall) was observed east of Trench 6. The soil pile was composed of was non-native soil that showed no staining. Some rusty bolts were observed on the soil pile, so sample 561G003 was collected from beneath the bolts. Decision II samples were not collected from this trench because no COCs were identified during the characterization activities.

A.9.1.4 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 23-21-04. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.9.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only), RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.9-1](#) lists the sample-specific analytical suite for CAS 23-21-04.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.9.2.1 Volatile Organic Compounds

Analytical results for VOCs detected in soil samples above MDCs are presented in [Table A.9-2](#).

No VOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.9-2
Sample Results for VOCs Detected above MDCs
at CAS 23-21-04, Waste Disposal Trenches

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)			
				Acetone	Methylene Chloride	Toluene	Total Xylenes
FALs				630,000	53	45,000	2,700
3	G01	561G001	0 - 0.5	--	0.0044 (J)	--	--
6	G03	561G003	0 - 0.5	--	0.0049 (J)	--	--
3	G04	561G004	1 - 1.5	--	0.0022 (J)	--	--
3	G05	561G005	7.5 - 8.0	--	0.0022 (J)	--	--
3	G06	561G006	7.5 - 8.0	--	0.0018 (J)	--	--
3	G07	561G007	7.5 - 8.0	--	0.0032 (J)	--	--
6	G08	561G008	1.5 - 2.0	0.014 (J)	0.0024 (J)	--	--
6	G09	561G009	0 - 0.5	--	0.0038 (J)	0.0022 (J)	0.0024 (J)
6	G10	561G010	0.5 - 1.0	--	0.0017 (J)	--	--
		561G011	0.5 - 1.0	--	0.0027 (J)	0.0021 (J)	0.0029 (J)
5	G11	561G012	0.5 - 1.0	--	0.0024 (J)	--	--
5	G12	561G013	0 - 0.5	--	0.0039 (J)	0.0053	0.0044 (J)
5	G13	561G014	0 - 0.5	0.062 (J)	0.0034 (J)	--	--

J = Estimated value

-- = Not detected above MDCs.

A.9.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.9-3](#).

No SVOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.9-3
Sample Results for SVOCs Detected above MDCs
at CAS 23-21-04, Waste Disposal Trenches

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)		
				Benzoic Acid	Bis(2-ethylhexyl)phthalate	Di-n-butyl Phthalate
FALs				2,500,000	120	62,000
3	G05	561G005	7.5 - 8.0	1.7	3.1 (J)	0.072 (J)
3	G06	561G006	7.5 - 8.0	--	0.14 (J)	--

J = Estimated value

-- = Not detected above MDCs.

A.9.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.9-4](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

A.9.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.9-5](#).

Of the 39 samples collected at the waste disposal trenches, eight samples exceeded the PAL (23 mg/kg) for arsenic with concentrations ranging from 25 to 2,000 mg/kg. The FALs were

**Table A.9-4
Sample Results for TPH-DRO Detected at CAS 23-21-04, Waste Disposal Trenches**

Trench	Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
6	G03	561G003	0.0 - 0.5	81
3	G05	561G005	7.5 - 8.0	160
3	G06	561G006	7.5 - 8.0	270
6	G09	561G009	0.0 - 0.5	42
6	G10	561G010	0.5 - 1.0	96
		561G011	0.5 - 1.0	110
5	G11	561G012	0.5 - 1.0	19
5	G12	561G013	0.0 - 0.5	170

established at the PAL concentrations; therefore, arsenic is considered a COC at this CAS. One sample exceeded the PAL of 5.6 mg/kg for hexavalent chromium with a concentration of 18 mg/kg. The FAL was established at the PAL concentration; therefore hexavalent chromium is considered a COC. However, the decision was made to clean close the site and all contaminated soil was removed. Confirmation samples collected from the side and bottom of the excavation confirm the effective removal.

A.9.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.9-6](#). Aroclor 1248 was detected at one location within the trenches at a concentration exceeding the PAL of 0.74 mg/kg. The FALs were established at the corresponding PAL concentrations. The soil from the G07 location was excavated and resampled. The verification sample results (561G029, 561G030, 561G031, and 561G032) indicated that the PCB-contaminated soil had been removed from the trench.

A.9.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.9-7](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.9-5
Sample Results for Metals Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches
(Page 1 of 3)

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
3	G01	561G001	0.0 - 0.5	2,000	610	1 (J-)	3.4 (J)	35	18 (J)	190 (J)	1.9	--
		561G018	1.0 - 1.5	53	190	--	0.38 (J-)	8.2	--	21 (J)	0.1	--
3	G02	561G002	0.0 - 0.5	12	150	0.7	0.65 (J)	16	--	68 (J)	--	--
6	G03	561G003	0.0 - 0.5	4.7	140	0.69	5.3 (J)	8.7	--	43 (J)	--	--
3	G04	561G004	1.0 - 1.5	23	160	0.73	0.24 (J)	9	--	19 (J)	0.065	0.29
3	G05	561G005	7.5 - 8.0	18	180	0.52	1.9 (J)	9.5	--	23 (J)	0.051	--
3	G06	561G006	7.5 - 8.0	5.2	58	0.31 (J-)	0.12 (J)	3.8	--	7 (J)	--	--
3	G07	561G007	7.5 - 8.0	5.6	98	0.54	0.2 (J)	8.5	--	19 (J)	0.044	--
6	G08	561G008	1.5 - 2.0	6.3	44	--	0.12 (J)	3.2	--	4.4 (J)	--	--
6	G09	561G009	0.0 - 0.5	5.3	84	--	1 (J)	5.4	2.4 (J-)	21 (J)	--	--
6	G10	561G010	0.5 - 1.0	4.3	95	--	0.31 (J)	6.1	--	35 (J)	--	--
		561G011	0.5 - 1.0	4.5	100	--	0.32 (J)	6.1	0.5 (J-)	120 (J)	--	--
5	G11	561G012	0.5 - 1.0	10	120	--	0.45 (J)	6.6	--	59 (J)	0.047	--
5	G12	561G013	0.0 - 0.5	61	150	--	2.2 (J)	6.5	--	150 (J)	0.058	--
		561G020	1.0 - 1.5	6	45	--	0.095 (J-)	2.6	--	8.9 (J)	0.0055 (J-)	--
5	G13	561G014	0.0 - 0.5	4.3	190	0.52	0.37 (J)	7.9	--	31 (J)	0.045	0.47

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Table A.9-5
Sample Results for Metals Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches
(Page 2 of 3)

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
3	G14	561G015	0.0 - 0.5	6.2	120	--	0.19 (J-)	7.5	--	9.8 (J)	0.02 (J-)	--
3	G15	561G016	0.0 - 0.5	25	110	--	0.35 (J-)	11	--	110 (J)	0.032 (J-)	--
3	G16	561G017	0.0 - 0.5	41	120	--	0.36 (J-)	8.7	--	17 (J)	0.039	--
5	G17	561G019	0.0 - 0.5	68	120	--	0.71	6.5	--	30 (J)	0.059	--
5	G18	561G021	0.0 - 0.5	4	99	--	0.26 (J-)	6	--	17 (J)	0.022 (J-)	--
5	G19	561G022	0.0 - 0.5	18	75	--	0.65	3.4	--	58 (J)	0.0086 (J-)	--
		561G023	0.0 - 0.5	23	80	--	0.67	4	--	58 (J)	0.015 (J-)	--
5	G20	561G024	1.5 - 2.0	16	65	--	0.49 (J-)	3.3	--	23	0.02 (J-)	--
5	G21	561G025	2.0 - 2.5	6.4	26	--	0.083 (J-)	2.1	--	3.4	--	--
5	G22	561G026	2.5 - 3.0	7.7	110	--	0.15 (J-)	4.5	--	6.9	0.0019 (J-)	--
5	G23	561G027	2.5 - 3.0	36	110	--	0.49 (J-)	7.5	--	17	0.093	--
5	G24	561G028	2.0 - 2.5	7.8	51	--	0.077 (J-)	2.3	--	3.7	--	--
5	G25	561G029	5.0 - 5.5	9.7	55	--	0.068 (J-)	2.9	--	3.7	0.0093 (J-)	--
5	G26	561G030	3.0 - 3.5	9.1	31	--	0.11 (J-)	1.9	--	2.9	--	--
5	G27	561G031	5.0 - 5.5	7.3	64	--	0.15 (J-)	2.9	--	6.2	0.0097 (J-)	--
5	G28	561G032	3.0 - 3.5	7.4	53	--	0.075 (J-)	2.6	--	3.7	0.009 (J-)	--

Table A.9-5
Sample Results for Metals Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches
(Page 3 of 3)

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
3	G29	561G033	3.0 - 3.5	5	60	--	0.05 (J-)	3.1	--	4.6	0.014 (J-)	--
3	G30	561G034	3.0 - 3.5	12	62	--	0.064 (J-)	3.5	--	6.8	0.03 (J-)	--
3	G31	561G035	3.0 - 3.5	3.7	58	--	--	2.5	--	2.7	0.02 (J-)	--
3	G32	561G036	3.0 - 3.5	120	130	--	0.53 (J-)	7.3	--	30	0.13	--
3	G37	561G041	4.5 - 5.0	4.8	58 (J)	--	0.26 (J-)	3.6	--	7.7 (J)	0.012	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

Table A.9-6
Sample Results for PCBs Detected above MDCs
at CAS 23-21-04, Waste Disposal Trenches

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)	
				Aroclor 1248	Aroclor 1260
FALs				0.74	0.74
3	G05	561G005	7.5 - 8.0	--	0.027 (J)
3	G07	561G007	7.5 - 8.0	4.3 (J)	--
5	G12	561G013	0.0 - 0.5	--	0.019 (J)

J = Estimated value
-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

Table A.9-7
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 23-21-04, Waste Disposal Trenches

Trench	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)		
				Ac-228	Am-241	Cs-137
FALs				506.7 ^a	1,503	72.9
3	G01	561G001	0.0 - 0.5	1.96	--	--
6	G03	561G003	0.0 - 0.5	1.43	--	0.257
3	G04	561G004	1.0 - 1.5	1.09	--	--
3	G05	561G005	7.5 - 8.0	1	--	--
3	G06	561G006	7.5 - 8.0	--	--	0.134
3	G07	561G007	7.5 - 8.0	--	0.35 (J)	0.58
6	G10	561G010	0.5 - 1.0	0.69	--	0.167
5	G11	561G012	0.5 - 1.0	0.76	0.53 (J)	0.51
5	G12	561G013	0.0 - 0.5	0.76	--	0.62
5	G13	561G014	0.0 - 0.5	1.37	--	--

^aFAL for Ac-228 based on Th-232 FAL.

J = Estimated value
-- = Not detected above MDCs.

A.9.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 23-21-04, the only COCs that were identified were PCBs, arsenic, and hexavalent chromium. The PCBs were located on the east end of Trench 3, arsenic and hexavalent chromium were located on the west end of Trench 3, and arsenic was located in the middle of Trench 5. Soil from the trenches was excavated and verification samples were collected. The verification sampling indicated that the extent of contamination was within the trenches and immediately outside the trench walls, and that the excavating of the soil was successful in removing all the contaminated soil.

A.9.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.10.0 CAS 25-08-02, Waste Dump

Corrective Action Site 25-08-02 is located north of G Road between the RCP and R-MAD complex in Area 25 of the NNSS, and consists of a large waste dump. The waste dump consists of piles of dirt, rock, and construction debris, such as concrete, metal, rebar, wood, batteries, 5-gal buckets, an empty cable spool, rusted cans, and pipes. One pile appeared to be composed of dark gray concrete-like material.

A.10.1 Corrective Action Investigation

A total of 26 characterization samples (including two FDs) were collected during investigation activities at CAS 25-08-02 ([Figure A.10-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.10-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.10.1.1 Radiological Surveys

A gamma radiological walkover survey was performed in 2006. No areas of elevated radioactivity were identified because measured levels from this CAS area were not distinguishable from background levels.

A.10.1.2 Visual Inspections

The waste piles at this CAS were inspected for any stained soil or biasing factors. A dark gray concrete-like material was observed on the southern end of the waste dump at location H03 ([Figure A.10-2](#)). A pile of batteries and debris was also observed at location H08 ([Figure A.10-3](#)). Two outlier piles were observed on the north (location H16) and south end (location H01) of the main waste dump. Samples were collected from these biased locations. Numerous piles were observed that contained asphalt, concrete, rebar and other construction-like material.

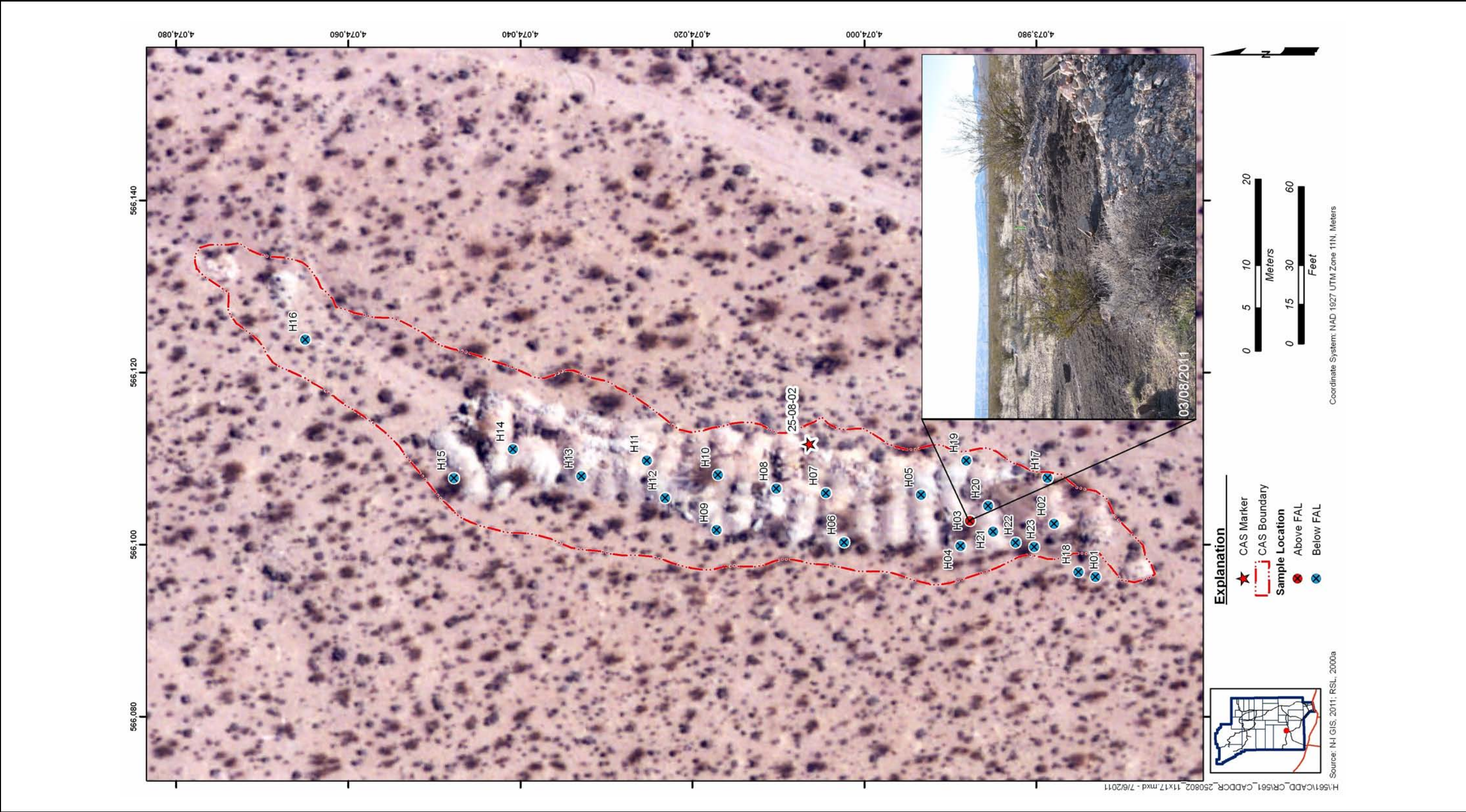


Table A.10-1
Samples Collected at CAS 25-08-02, Waste Dump
(Page 1 of 2)

Sample Location	Sample Number	Depth (ft into pile)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
H01	561H002	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H02	561H003	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H03	561H001	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561H021	1.5 - 2.0	Soil	Environmental	--	--	--	--	X	--	--	--	--
	561H501	0.0 - 0.5	Soil	Waste Management	--	--	--	--	--	--	--	X	--
H04	561H005	2.0 - 2.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H05	561H006	4.0 - 4.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H06	561H004	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H07	561H009	2.0 - 2.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H08	561H017	0.0 - 1.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
H09	561H011	2.0 - 2.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H10	561H012	2.5 - 3.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
H11	561H007	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561H008	0.0 - 0.5	Soil	FD of #561H007	X	X	X	X	X	X	X	--	X
H12	561H013	2.5 - 3.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
H13	561H014	3.0 - 3.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H14	561H015	2.5 - 3.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561H502	0.0 - 0.5	Soil	Waste Management	--	--	--	--	--	--	--	X	--
H15	561H016	2.0 - 2.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H16	561H010	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
H17	561H018	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
H18	561H019	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
H19	561H020	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
H20	561H022	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
	561H023	0.0 - 0.5 ft bgs	Soil	FD of #561H022	--	--	--	--	X	--	--	--	--
H21	561H024	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--

Table A.10-1
Samples Collected at CAS 25-08-02, Waste Dump
(Page 2 of 2)

Sample Location	Sample Number	Depth (ft into pile)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
H22	561H025	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
H23	561H026	0.0 - 0.5 ft bgs	Soil	Environmental	--	--	--	--	X	--	--	--	--
N/A	561H301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561H302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561H303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561H304	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561H305	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561H306	N/A	Water	Field Blank	X	X	X	X	X	X	X	--	X
N/A	561H307	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	--	X

-- = Not required

A.10.1.3 Sample Collection

Twenty-six judgmental and probabilistic environmental samples were collected from the 23 locations (location H01 through H23) shown in [Figure A.10-1](#). Decision I environmental sampling activities included the collection of biased surface samples at the two outlier piles (locations H01 and H16), the concrete-like material (location H03), and at the pile which contained batteries and debris (location H08). Decision I sampling activities also included collecting samples from piles which were identified using the VSP software (PNNL, 2005).

Soil samples were collected from a decontaminated backhoe bucket at depths ranging from 0 to 4.5 ft within the piles. Some samples within piles were collected by excavating into the pile with a shovel, then collecting the sample using disposable scoops and pans. Several locations were sampled at the NSI (locations H01, H05, H07, and H10), while the other locations were sampled within the piles.



Figure A.10-2
Concrete-like Pile at CAS 25-08-02, Waste Dump



Figure A.10-3
Batteries and Debris at CAS 25-08-02, Waste Dump

The Decision I analytical results showed that the concentration of arsenic in one sample 561H001 from location H03 (collected within the concrete-like material) exceeded the PAL and it was determined that Decision II sampling was necessary. Four Decision II environmental samples were collected to define the extent of contamination. One sample (561H021) was collected from 1.5 to 2 ft bgs within the concrete-like material pile. Three additional sample locations (H17 through H19) were selected at distances ranging from approximately 20 to 50 ft laterally in three directions from location H03. The concrete-like material was removed and disposed of, and verification samples were collected at four locations (H20 through H23) under the pile.

Waste characterization samples were collected from locations H03 and H14. At location H03, samples were collected from the concrete-like material because of arsenic concentrations that exceeded the action levels, while at location H14, samples were collected from the waste pile due to mercury concentrations that exceeded the action levels. Both samples were analyzed for TCLP metals.

A.10.1.4 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 25-08-02. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.10.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only), RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.10-1](#) lists the sample-specific analytical suite for CAS 25-08-02.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by

comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.10.2.1 Volatile Organic Compounds

Analytical results for VOCs detected in soil samples above MDCs are presented in [Table A.10-2](#). No VOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.10-2
Sample Results for VOCs Detected above MDCs at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Depth (ft into pile)	COPCs (mg/kg)	
			2-Butanone	Acetone
FALs			200,000	630,000
H03	561H001	0.0 - 0.5	--	0.0086 (J)
H11	561H007	0.0 - 0.5	0.017 (J)	0.051 (J)
	561H008	0.0 - 0.5	0.019 (J)	0.072 (J)

J = Estimated value

-- = Not detected above MDCs.

A.10.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.10-3](#). No SVOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.10-3
Samples Results for SVOCs Detected above MDCs at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Depth (ft into pile)	COPCs (mg/kg)		
			Bis(2-ethylhexyl)phthalate	Phenanthrene	Pyrene
FALs			120	170,000	17,000
H08	561H017	0 - 1.0	0.29 (J)	--	0.088 (J)
H11	561H007	0 - 0.5	0.4 (J)	0.41 (J)	--
	561H008	0 - 0.5	--	0.51 (J)	--

J = Estimated value

-- = Not detected above MDCs.

A.10.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.10-4](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.10-4
Sample Results for TPH-DRO Detected at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Depth (ft into pile)	TPH-DRO (mg/kg)
H02	561H003	1.0 - 1.5	8.3
H08	561H017	0.0 - 1.0	96
H11	561H007	0.0 - 0.5	770 (J)
	561H008	0.0 - 0.5	920 (J)
H14	561H015	2.5 - 3.0	11
H15	561H016	2.0 - 2.5	8.6

J = Estimated value

A.10.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.10-5](#). Of the 17 Decision I samples collected at the waste dump piles, one sample collected at location H03 (within the concrete-like material pile) exceeded the PAL (23 mg/kg) for arsenic with a concentration of 510 mg/kg. The FALs were established at the PAL concentrations; therefore, arsenic is considered a COC at this CAS. During Decision II sampling, a second sample (561H021) was collected within the concrete-like pile; the arsenic concentration in this sample was 60 mg/kg, which also exceeded the FAL.

Table A.10-5
Sample Results for Metals Detected above MDCs at CAS 25-08-02, Waste Dump
(Page 1 of 2)

Sample Location	Sample Number	Depth (ft into pile)	COPCs (mg/kg)								
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs			23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
H01	561H002	0.0 - 0.5	2.6	120 (J)	--	0.049	4.3	--	7	0.0095 (J-)	--
H02	561H003	1.0 - 1.5	2.5	110 (J)	--	0.19	4.8	--	8.7	0.2	--
H03	561H001	0.0 - 0.5	510	190 (J)	--	1.6	7.5	--	320	0.79	--
	561H021	1.5 - 2.0	60	120	--	0.15 (J-)	3.5	--	23	0.033 (J-)	--
H04	561H005	2.0 - 2.5	3	110 (J)	--	0.076	5.6	--	7.2	0.014 (J-)	--
H05	561H006	4.0 - 4.5	1.8	120 (J)	--	0.075	4.4	--	6.3	0.013 (J-)	--
H06	561H004	1.0 - 1.5	3.2	120 (J)	--	0.095	6.2	0.16 (J-)	9.5	0.015 (J-)	--
H07	561H009	2.0 - 2.5	2.3	120 (J)	--	0.12	4.5	--	7.2	0.024 (J-)	--
H08	561H017	0.0 - 1.0	2.7	100 (J)	--	3.3	7.7	--	21	0.034	0.6
H09	561H011	2.0 - 2.5	2.1	89 (J)	--	0.048	3.9	--	4.9	0.0095 (J-)	--
H10	561H012	2.5 - 3.0	1.8	110 (J)	--	0.05	4.9	--	6.1	0.0083 (J-)	--
H11	561H007	0.0 - 0.5	4.1	210 (J)	0.55	0.28	5.7	--	16	0.025 (J-)	0.48
	561H008	0.0 - 0.5	4	380 (J)	0.52	0.22	5.6	--	9.8	0.015 (J-)	0.78
H12	561H013	2.5 - 3.0	2	100 (J)	--	0.082	3.8	--	5.9	0.011 (J-)	--
H13	561H014	3.0 - 3.5	2.6	95 (J)	--	0.069	5.8	0.28 (J-)	5.2	0.017 (J-)	--
H14	561H015	2.5 - 3.0	2.9	120 (J)	--	1.3	10	--	20	20	--

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Table A.10-5
Sample Results for Metals Detected above MDCs at CAS 25-08-02, Waste Dump
(Page 2 of 2)

Sample Location	Sample Number	Depth (ft into pile)	COPCs (mg/kg)								
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium
FALs			23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100
H15	561H016	2.0 - 2.5	2.2	110 (J)	--	0.098	4.7	--	6.8	0.0086 (J-)	--
H16	561H010	1.0 - 1.5	2.9	100 (J)	--	0.073	5.5	--	7.2	0.012 (J-)	--
H17	561H018	0.0 - 0.5 ft bgs	1.4	71	--	0.062 (J-)	2.9	--	4.9	0.014 (J-)	--
H18	561H019	0.0 - 0.5 ft bgs	2.2	88	--	0.046 (J-)	3.6	--	6.4	0.01 (J-)	--
H19	561H020	0.0 - 0.5 ft bgs	2.2	92	--	0.069 (J-)	3.6	--	6.2	0.015 (J-)	--
H20	561H022	0.0 - 0.5 ft bgs	1.9	93	--	0.06	3.7	--	9.1 (J)	--	--
	561H023	0.0 - 0.5 ft bgs	1.7	74	--	0.055	4.6	--	5.5 (J)	--	--
H21	561H024	0.0 - 0.5 ft bgs	2.3	83	--	0.069	3.8	--	5.3 (J)	--	--
H22	561H025	0.0 - 0.5 ft bgs	4.2	140	--	0.071	5.2	--	9.4 (J)	--	--
H23	561H026	0.0 - 0.5 ft bgs	3	99	--	0.067	4.5	--	5.8 (J)	--	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

A.10.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.10-6](#). No PCBs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.10-6
Samples Results for PCBs Detected above MDC at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Depth (ft into pile)	COPC (mg/kg)
			Aroclor 1260
FAL			0.74
H02	561H003	1.0 - 1.5	0.015 (J)
H04	561H005	2.0 - 2.5	0.02 (J)
H08	561H017	0.0 - 1.0	0.011 (J)
H14	561H015	2.5 - 3.0	0.12

J = Estimated value

A.10.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.10-7](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.10.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 25-08-02, the only COC that was identified is the arsenic located within the pile of the concrete-like material. Verification samples were collected once the concrete-like material was removed and the lateral and vertical extent of contamination was defined by the Decision II samples with results less than the FAL. The environmental sample results showed that the contamination in the concrete-like pile has not been released to the underlying soil. As shown by samples collected from other waste piles, the arsenic was limited to the concrete-like material. No other COCs were identified at this CAS.

Table A.10-7
Sample Results for Gamma-Emitting Radionuclides
Detected above MDCs at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Depth (ft into pile)	COPCs (pCi/g)	
			Ac-228	Cs-137
FALs			506.7 ^a	72.9
H01	561H002	0.0- 0.5	1.8	--
H02	561H003	1.0 - 1.5	2	--
H03	561H001	0.0- 0.5	0.67	0.259
H04	561H005	2.0 - 2.5	1.61	--
H05	561H006	4.0 - 4.5	2.06	--
H06	561H004	1.0 - 1.5	1.54	--
H07	561H009	2.0 - 2.5	1.7	--
H08	561H017	0.0 - 1.0	1.88	--
H09	561H011	2.0 - 2.5	1.82	--
H10	561H012	2.5 - 3.0	1.78	--
H11	561H007	0.0- 0.5	1.69	--
	561H008	0.0- 0.5	1.71	--
H12	561H013	2.5 - 3.0	1.78	--
H13	561H014	3.0 - 3.5	1.5	--
H14	561H015	2.5 - 3.0	1.72	--
H15	561H016	2.0 - 2.5	1.46	--
H16	561H010	1.0 - 1.5	1.94	--

^aFAL for Ac-228 based on Th-232 FAL.

-- = Not detected above MDCs.

A.10.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.11.0 CAS 25-23-21, Radioactive Waste Dump

Corrective Action Site 25-23-21 consists of a radioactive waste dump located northeast of the E-MAD Facility in Area 25 of the NNSS within Topopah Wash. A second parcel is upstream from the waste dump and is located within Topopah Wash extending north of H Road. [Figure A.11-1](#) shows the location of the two parcels in relation to each other and surrounding roads. The main waste dump contains numerous dirt mounds and piles within a posted “Controlled Area,” along with miscellaneous piles extending up through Topopah Wash to H Road. Within the main waste dump, there are two specific piles that are posted with “Caution Radioactive Material” signs. The signs referred to the pieces of cast-iron pipe located within the soil piles. The second parcel contains waste piles, along with concrete, asphalt, and magnetite piles.

A.11.1 Corrective Action Investigation

A total of 56 characterization samples (including 4 FDs) were collected during investigation activities at CAS 25-23-21. [Figure A.11-2](#) shows the sample locations at the main waste dump and [Figure A.11-3](#) shows sample locations at the second parcel. The sample IDs, locations, types, and analyses are listed in [Table A.11-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.11.1.1 Field Screening

Investigation samples were field screened for alpha and beta/gamma radiation. Sample locations I30, I32, and I33 were selected based on the radiological field screening. Beta/gamma FSRs exceeded the FSLs at these sample locations.

A.11.1.2 Radiological Surveys

A gamma radiological walkover survey was performed in 2005 at the waste dump. The results of the survey identified an area (outside the posted RMA) of radioactivity from 2 to 5 times higher than background. This area was not found during the field activities in 2010.

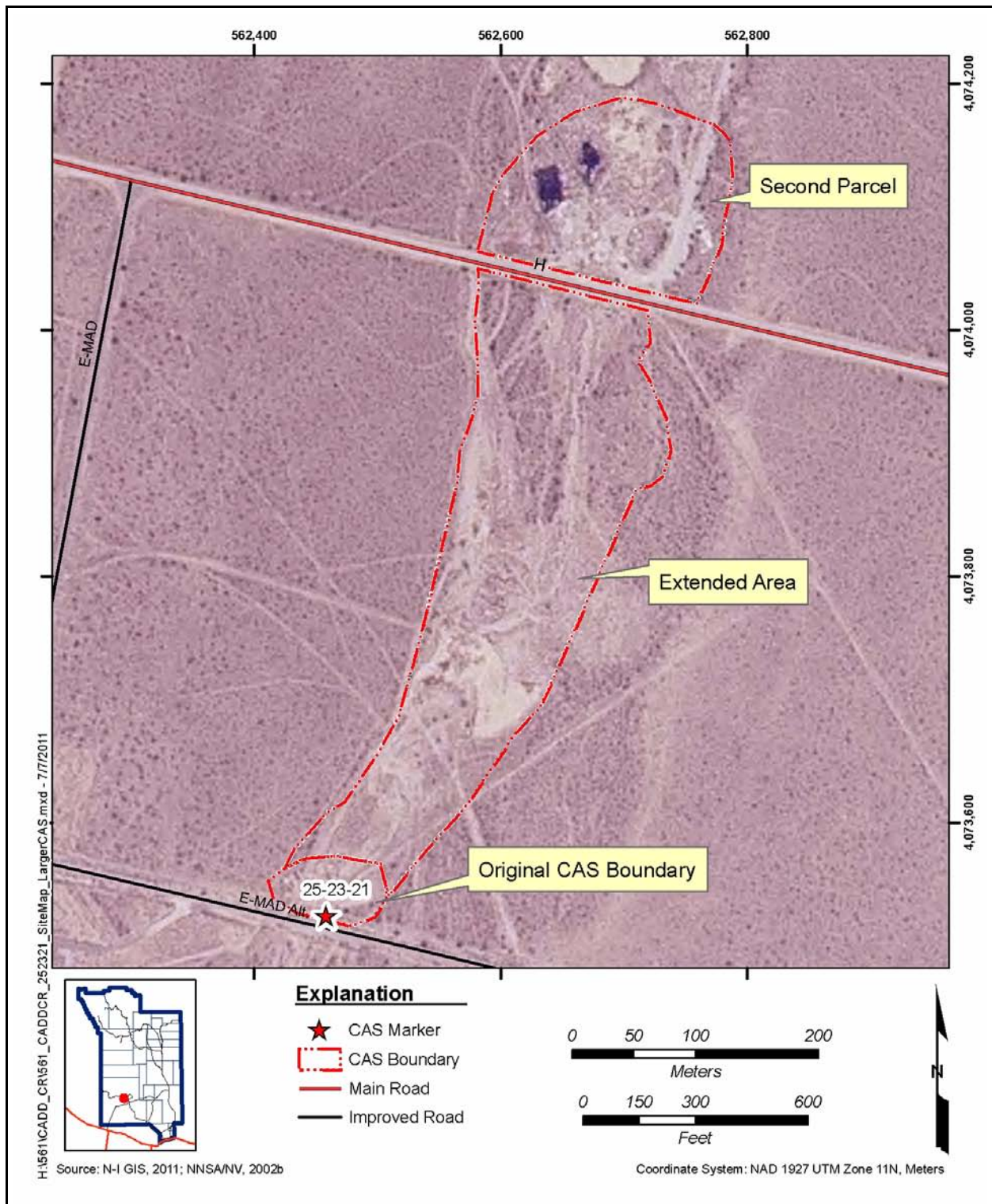


Figure A.11-1
Location of CAS 25-23-21, Radioactive Waste Dump

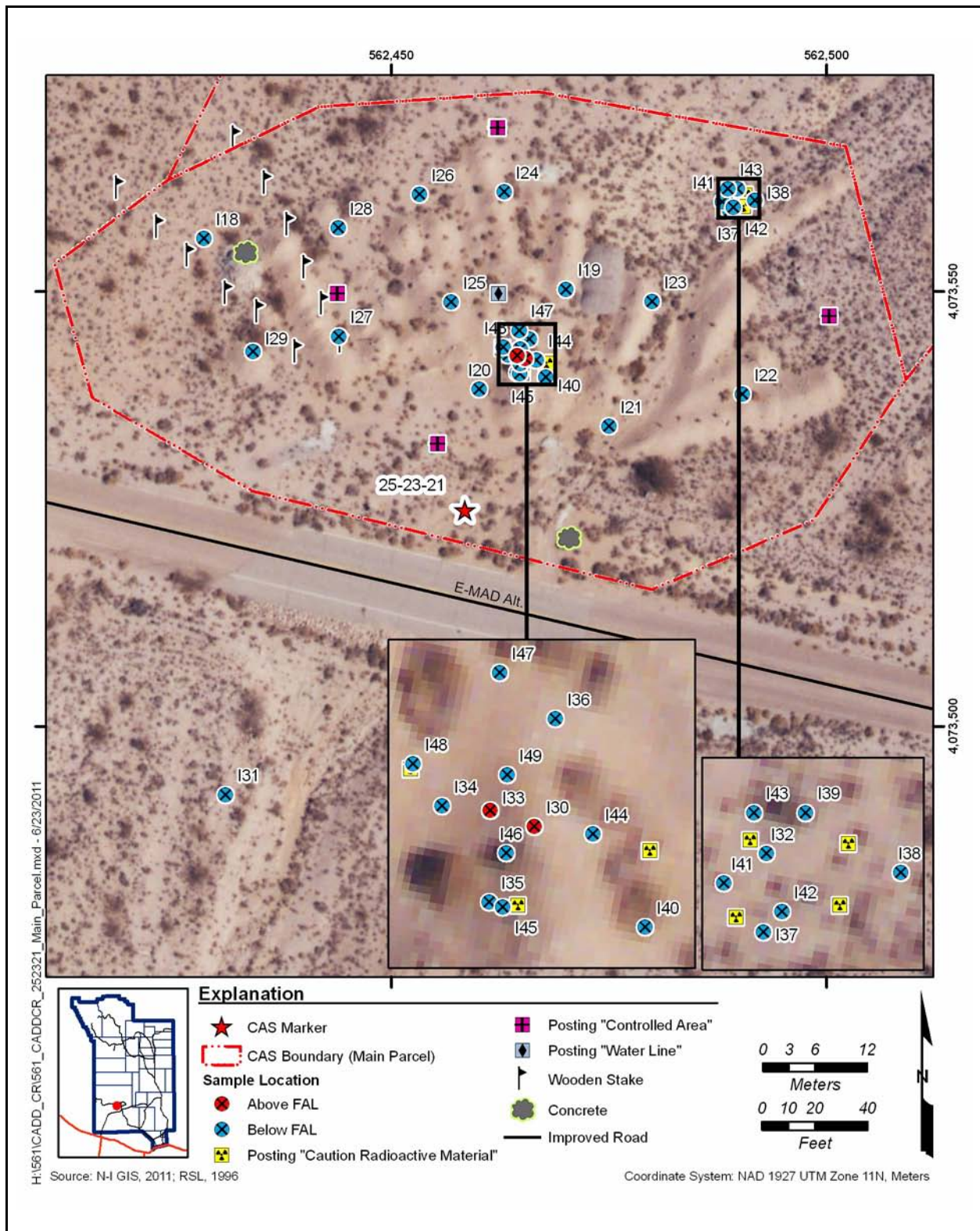


Figure A.11-2
Sample Locations at the Waste Dump CAS 25-23-21, Radioactive Waste Dump

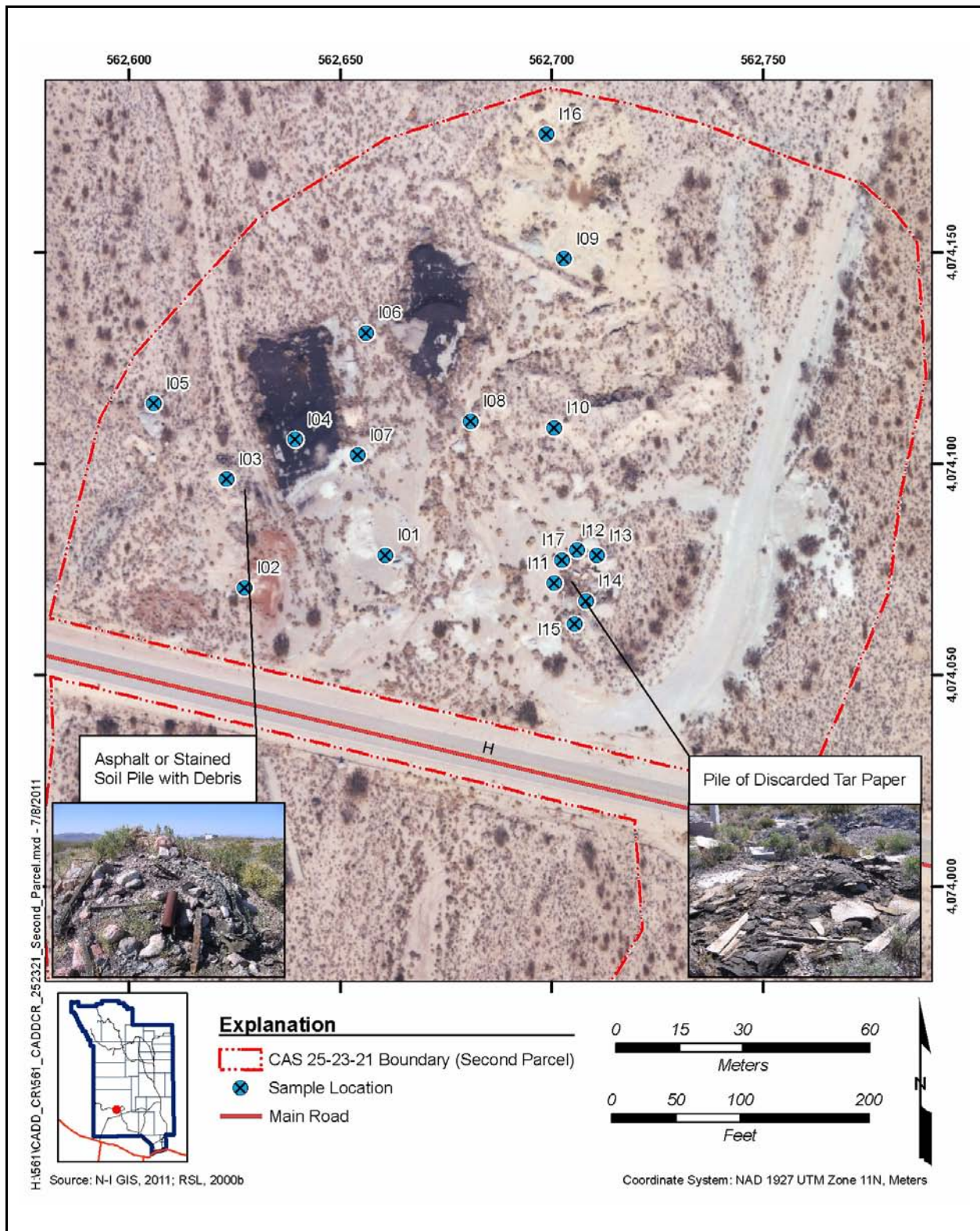


Figure A.11-3
Sample Locations at the Second Parcel CAS 25-23-21, Radioactive Waste Dump

Table A.11-1
Samples Collected at CAS 25-23-21, Radioactive Waste Dump
(Page 1 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
Second Parcel	I01	561I012	0.0 - 1.0	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I02	561I011	0.0 - 1.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I03	561I009	0.0 - 0.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
		561I010	0.0 - 0.5 ft into pile	Soil	FD of #561I009	X	X	X	X	X	X	X	X
Second Parcel	I04	561I007	0.0 - 0.5 ft into pile	Solid	PSM	X	X	X	X	X	X	X	X
Second Parcel	I05	561I008	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I06	561I005	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I07	561I006	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I08	561I004	2.5 - 3.0	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I09	561I002	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I10	561I001	5.0 - 6.0	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I11	561I017	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I12	561I016	1.0 - 2.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I13	561I015	2.0 - 2.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I14	561I014	2.0 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I15	561I013	2.0 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I16	561I003	1.0 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	X
Second Parcel	I17	561I018	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I18	561I019	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I19	561I027	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I20	561I029	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I21	561I031	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I22	561I032	3.0 - 3.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I23	561I028	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I24	561I022	1.5 - 2.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I25	561I026	1.5 - 2.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I26	561I021	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I27	561I025	2.0 - 2.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I28	561I020	2.5 - 3.0 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I29	561I023	3.0 - 3.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X

Table A.11-1
Samples Collected at CAS 25-23-21, Radioactive Waste Dump
(Page 2 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
Waste Dump	I30	561I033	0.0 - 0.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
		561I034	0.0 - 0.5 ft into pile	Soil	FD of #561I033	X	X	X	X	X	X	X	X
		561I040	1.0 - 1.5 ft into pile	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I31	561I024	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	X
Waste Dump	I32	561I030	0.0 - 0.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
		561I045	1.0 - 1.5 ft into pile	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I33	561I035	0.0 - 0.5 ft into pile	Soil	Environmental	X	X	X	X	X	X	X	X
		561I041	1.0 - 1.5 ft into pile	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I34	561I036	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	X	--	--
		561I037	0.0 - 0.5	Soil	FD of #561I036	--	--	X	--	--	X	--	--
Waste Dump	I35	561I038	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I36	561I039	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I37	561I042	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I38	561I043	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I39	561I044	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I40	561I046	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I41	561I047	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I42	561I048	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
		561I049	0.0 - 0.5	Soil	FD of #561I048	--	--	X	--	--	--	--	--
Waste Dump	I43	561I050	0.0 - 0.5	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I44	561I051	0.5 - 1.0	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I45	561I052	0.5 - 1.0	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I46	561I053	1.0 - 1.3	Soil	Environmental	--	--	X	--	--	X	--	--
Waste Dump	I47	561I054	0.5 - 1.0	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I48	561I055	0.5 - 1.0	Soil	Environmental	--	--	X	--	--	--	--	--
Waste Dump	I49	561I056	1.0 - 1.3	Soil	Environmental	--	--	X	--	--	--	--	--
N/A	N/A	561I301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I304	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X

Table A.11-1
Samples Collected at CAS 25-23-21, Radioactive Waste Dump
(Page 3 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	VOCs
N/A	N/A	561I305	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I306	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I307	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I308	N/A	Water	Trip Blank	--	--	--	--	--	--	--	X
N/A	N/A	561I309	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	X
N/A	N/A	561I310	N/A	Water	Field Blank	X	X	X	X	X	X	X	X

-- = Not required

In 2008, partially buried pipes were observed inside the two posted RMAs ([Figure A.11-4](#)). The pipes exhibited surface contamination readings above background. No other radiological surveys were conducted.



Figure A.11-4
Contaminated Pipe Waste Dump CAS 25-23-21, Radioactive Waste Dump

A.11.1.3 Geophysical Surveys

Geophysical surveys were performed at the waste dump but did not identify buried metallic debris. No geophysical surveys were performed at the second parcel.

A.11.1.4 Visual Inspections

The piles at both the main waste dump and at the second parcel were inspected for any stained soil or biasing factors. Of the 17 samples collected at the main waste dump, 5 biased samples were collected. Biasing factors included the area downgradient in the wash from the main waste dump (sample 561I024), and the two RMAs (samples 561I030, 561I033 through 561I035). Of the 18 samples collected at the second parcel, 6 biased samples were collected. Biasing factors included cement wash-out area (sample 561I003), areas where paint cans had been discovered (sample 561I006), black staining on a soil pile (samples 561I009 and 561I010), tar paper (561I017), and a pile of asphalt (561I018) ([Figure A.11-5](#)).



Figure A.11-5
Biased Sample Location at Second Parcel CAS 25-23-21, Radioactive Waste Dump

A.11.1.5 Sample Collection

A total of 56 environmental samples were collected from 49 locations (location I01 through I49) during Decision I and Decision II sampling activities ([Figures A.11-2](#) and [A.11-3](#)). Decision I environmental sampling activities included the collection of biased and probabilistic soil samples at the main waste dump and at the second parcel. Probabilistic sample locations were identified using the VSP software (PNNL, 2005).

Waste Dump

Seventeen Decision I samples were collected from the main waste dump. Decision I soil samples (561I019 through 561I023, and 561I0025 through 561I035) were collected at depths ranging from 0 to 3.5 ft within the piles. One surface soil sample was collected from 0 to 0.5 ft bgs downgradient of the waste dump.

Decision I results showed that two piles in the main waste dump were contaminated with PCBs and Cs-137 (locations I30, I32, and I33). At the southern RMA, seven Decision II soil samples (561I036 through 561I041 and 561I046) were collected to define the extent of the PCB and Cs-137 contamination. Four additional sample locations (I34 through I36 and I) were selected at distances ranging from approximately 2.5 to 10 ft laterally in three directions from locations I30 and I33; surface soil samples (0 to 0.5 ft bgs) were collected. The soil pile was removed and disposed of, and verification samples (561I051 through 561I056) were collected at six locations (I44 through I49) at depths ranging from 0.5 to 1.5 ft bgs.

Cesium-137 concentrations below the PAL were identified at the northern RMA at location I32, which was below the contaminated pipe. Four additional soil samples (561I042 through 561I045) were collected from the pile to verify that no contamination from the pipe had migrated into the soil. Three additional sample locations (I37 through I39) were selected at distances ranging from approximately 2 to 8 ft laterally in three directions from location I32; surface soil samples (0 to 0.5 ft bgs) were collected. The soil pile was removed and disposed of, and verification samples (561I047 through 561I050) were collected at three locations from 0 to 0.5 ft bgs.

Second Parcel

Eighteen Decision I samples (561I001 through 561I018) were collected from the second parcel. Seven Decision I samples were collected from 0 to 3 ft within the piles, while the remaining samples were collected either from the surface (0 to 0.5 ft bgs) or from the shallow subsurface at depths ranging from 1 to 6 ft bgs. Surface samples were collected using hand sampling techniques with disposable scoops, while the shallow subsurface samples were collected from a decontaminated backhoe bucket. Decision II samples were not collected from the second parcel because no COCs were identified during the characterization activities.

No waste characterization samples were collected from either the waste dump or second parcel at this CAS.

A.11.1.6 Deviations

There were no deviations to the CAIP (NNSA/NSO, 2008) associated with CAS 25-23-21. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.11.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only) RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.11-1](#) lists the sample-specific analytical suite for CAS 25-23-21.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.11.2.1 Volatile Organic Compounds

Analytical results for VOCs detected in soil samples above MDCs are presented in [Table A.11-2](#). No VOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.11-2
Sample Results for VOCs Detected above MDC
at CAS 25-23-21, Radioactive Waste Dump

Area	Sample Location	Sample Number	Depth (ft bgs)	COPC (mg/kg)
				Methylene Chloride
FAL				53
Second Parcel	I01	561I012	0.0 - 1.0	0.011
Second Parcel	I02	561I011	0.0 - 1.0	0.0089
Second Parcel	I03	561I009	0.0 - 0.5 ft into pile	0.013
		561I010	0.0 - 0.5 ft into pile	0.011
Second Parcel	I05	561I008	1.0 - 1.5	0.0089
Second Parcel	I06	561I005	0.0 - 0.5	0.0089
Second Parcel	I07	561I006	0.0 - 0.5	0.012
Second Parcel	I08	561I004	2.5 - 3.0	0.008
Second Parcel	I09	561I002	0.0 - 0.5	0.012
Second Parcel	I10	561I001	5.0 - 6.0	0.0075
Second Parcel	I12	561I016	1.0 - 2.0 ft into pile	0.011
Second Parcel	I13	561I015	2.0 - 2.5 ft into pile	0.01
Second Parcel	I14	561I014	2.0 - 3.0 ft into pile	0.0095
Second Parcel	I15	561I013	2.0 - 3.0 ft into pile	0.0096
Second Parcel	I16	561I003	1.0 - 1.5	0.0079
Second Parcel	I17	561I018	0.0 - 0.5	0.0022 (J)

J = Estimated value

A.11.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.11-3](#). No SVOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.11-3
Sample Results for SVOCs Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)											
				Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene	Di-n-butyl Phthalate	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
FALs				2.1	0.21	2.1	17,000	21	120	210	62,000	22,000	2.1	170,000	17,000
Waste Dump	I30	561I033	0.0 - 0.5	0.2 (J)	0.15 (J)	0.44	0.19 (J)	0.13 (J)	0.22 (J)	0.3 (J)	0.17 (J)	0.88	0.17 (J)	0.78	0.93
		561I034	0.0 - 0.5	0.19 (J)	0.17 (J)	0.44	0.18 (J)	0.15 (J)	0.33 (J)	0.29 (J)	0.17 (J)	0.88	0.18 (J)	0.85	0.93
Waste Dump	I33	561I035	0.0 - 0.5	--	--	--	--	--	--	--	0.14 (J)	--	--	--	--

J = Estimated value

-- = Not detected above MDCs.

A.11.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.11-4](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.11-4
Sample Results for TPH-DRO Detected at CAS 25-23-21, Radioactive Waste Dump

Area	Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
Second Parcel	I02	561I011	0.0 - 1.0 ft into pile	1.8 (J)
Second Parcel	I06	561I005	0.0 - 0.5	18
Second Parcel	I07	561I006	0.0 - 0.5	2.3 (J)
Second Parcel	I08	561I004	2.5 - 3.0	6.8
Second Parcel	I09	561I002	0.0 - 0.5	1.6 (J)
Second Parcel	I10	561I001	5.0 - 6.0	1.4 (J)
Second Parcel	I11	561I017	0.0 - 0.5	35 (J)
Second Parcel	I12	561I016	1.0 - 2.0 ft into pile	5.3
Second Parcel	I13	561I015	2.0 - 2.5 ft into pile	73
Second Parcel	I14	561I014	2.0 - 3.0 ft into pile	4.1 (J)
Second Parcel	I15	561I013	2.0 - 3.0 ft into pile	4.9 (J)
Second Parcel	I17	561I018	0.0 - 0.5	57
Waste Dump	I30	561I033	0.0 - 0.5 ft into pile	7.7 (J)
		561I034	0.0 - 0.5 ft into pile	10 (J)

J = Estimated value

A.11.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.11-5](#). No metals were detected at concentrations exceeding their PALs; therefore, the FALs were established at the corresponding PAL concentrations.

Table A.11-5
Sample Results for Metals Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 1 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Second Parcel	I01	561I012	0.0 - 1.0	4	73	--	0.12 (J-)	4.7	--	5.8	--	--	--
Second Parcel	I02	561I011	0.0 - 1.0 ft into pile	5.2	86	--	0.035 (J-)	3.5	--	1.9	--	--	--
Second Parcel	I03	561I009	0.0 - 0.5 ft into pile	--	38 (J-)	0.41 (J-)	0.2 (J-)	44	--	6.3 (J-)	--	--	--
		561I010	0.0 - 0.5 ft into pile	--	63	0.46 (J-)	--	40	--	6.4	--	--	--
Second Parcel	I05	561I008	1.0 - 1.5	4.8	87	--	0.15 (J-)	6.3	--	8.3	--	--	--
Second Parcel	I06	561I005	0.0 - 0.5	4.5	140	--	0.16 (J-)	5.5	--	16	--	0.44	--
Second Parcel	I07	561I006	0.0 - 0.5	2.7	51	--	0.055 (J-)	4.1	--	3.9	--	--	--
Second Parcel	I08	561I004	2.5 - 3.0	3.9	100	--	0.14 (J-)	5.2	0.16 (J-)	7.1	--	--	--
Second Parcel	I09	561I002	0.0 - 0.5	12	160	0.97	0.56	20	--	20	0.087	--	--
Second Parcel	I10	561I001	5.0 - 6.0	4.6	110	0.5	0.2 (J-)	6.9	--	7.3	--	--	--
Second Parcel	I11	561I017	0.0 - 0.5	16	300	--	0.2 (J-)	7.4	--	32	0.046	--	--
Second Parcel	I12	561I016	1.0 - 2.0 ft into pile	3.4	85	--	0.14 (J-)	8.7	0.15 (J-)	9.4	--	--	--
Second Parcel	I13	561I015	2.0- 2.5 ft into pile	3.3	78	--	1.5	12	0.52 (J-)	24	0.1	--	--
Second Parcel	I14	561I014	2.0 - 3.0 ft into pile	4.1	110	--	0.13 (J-)	5.8	--	7.7	0.039	--	--
Second Parcel	I15	561I013	2.0 - 3.0 ft into pile	3.9	130	--	0.098 (J-)	4.8	--	14	--	--	--
Second Parcel	I16	561I003	1.0 - 1.5	9.3	160	1.1	0.5 (J-)	16	--	16	0.068	--	--

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Table A.11-5
Sample Results for Metals Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 2 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Second Parcel	I17	561I018	0.0 - 0.5	4.4	170	0.52	0.23 (J-)	7.8	--	15	--	0.27	--
Waste Dump	I18	561I019	2.5 - 3.0 ft into pile	2.4	89	--	0.097	3.6	--	5.7	--	--	--
Waste Dump	I19	561I027	2.5 - 3.0 ft into pile	1.7 (J-)	71	--	0.077	3.1	--	4.5	--	--	--
Waste Dump	I20	561I029	2.5 - 3.0 ft into pile	2.2	98	--	0.11	3.2	--	4.4	--	--	--
Waste Dump	I21	561I031	2.5 - 3.0 ft into pile	2.3	110	--	0.097	3.2	--	4.8	--	--	--
Waste Dump	I22	561I032	3.0 - 3.5 ft into pile	1.5 (J-)	100	--	0.082	2.8	--	4.2	--	--	--
Waste Dump	I23	561I028	2.5 - 3.0 ft into pile	1.6 (J-)	120	--	0.049	2.2	--	3.9	--	--	--
Waste Dump	I24	561I022	1.5 - 2.0 ft into pile	2.3	60	--	0.049	3.4	--	4.8	--	--	--
Waste Dump	I25	561I026	1.5 - 2.0 ft into pile	1.9 (J-)	74	--	0.081	3.3	--	4.4	--	--	--
Waste Dump	I26	561I021	2.5 - 3.0 ft into pile	2.3	69	--	0.088	3.9	--	6.6	--	--	--
Waste Dump	I27	561I025	2.0 - 2.5 ft into pile	1.9 (J-)	100	--	0.085	3.4	--	5.4	--	--	--
Waste Dump	I28	561I020	2.5 - 3.0 ft into pile	1.8 (J-)	88	--	0.099	3.1	--	4.8	--	--	--
Waste Dump	I29	561I023	3.0 - 3.5 ft into pile	1.4 (J-)	63	--	0.069	2.9	--	4.5	--	--	--
Waste Dump	I30	561I033	0.0 - 0.5 ft into pile	1.6 (J-)	100	--	0.74	6.5	--	17	--	--	0.21
Waste Dump		561I034	0.0 - 0.5 ft into pile	2.3	91	--	0.32	7.2	--	28	--	0.3	0.16
Waste Dump	I31	561I024	0.0 - 0.5	2.4	68	--	0.11	4.2	--	4.8	--	--	--

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Table A.11-5
Sample Results for Metals Detected above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 3 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)									
				Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Selenium	Silver
FALs				23	190,000	2,000	800	N/A ^a	5.6	800	34	5,100	5,100
Waste Dump	I32	561I030	0.0 - 0.5 ft into pile	2.7	66	--	0.15	4.3	--	5.4	--	--	--
Waste Dump	I33	561I035	0.0 - 0.5 ft into pile	2.1	90	--	0.098	3.5	--	7.7	--	--	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

A.11.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.11-6](#). One sample (and its FD) exceeded the PAL (0.74 mg/kg) for Aroclor 1206 with a concentration of 1.2 mg/kg. The FD had a concentration above the PAL of 2.9 mg/kg. The FALs were established at the PAL concentrations; therefore, Aroclor 1260 is considered a COC at this CAS.

Table A.11-6
Sample Results for PCBs Detected above
MDCs at CAS 25-23-21, Radioactive Waste Dump

Area	Sample Location	Sample Number	Depth (ft into pile)	COPCs (mg/kg)		
				Aroclor 1254	Aroclor 1260	PCBs (low risk)
FALs				0.74	0.74	21
Second Parcel	I13	561I015	2.0 - 2.5	--	0.034 (J)	0.084
Waste Dump	I26	561I021	2.5 - 3.0	0.12	--	--
Waste Dump	I30	561I033	0.0 - 0.5	--	1.2 (J)	--
		561I034	0.0 - 0.5	--	2.9 (J)	--
		561I040	1.0 - 1.5	0.014 (J)	--	--
Waste Dump	I32	561I030	0.0 - 0.5	--	0.013 (J)	--
Waste Dump	I33	561I035	0.0 - 0.5	--	0.018 (J)	--
Waste Dump	I46	561I053	1.0 - 1.3 ft bgs	0.0064 (J)	--	--

J = Estimated value

-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

A.11.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.11-7](#). At the southern RMA ([Figure A.11-1](#)), three samples had elevated Cs-137 results that exceeded the PAL (72.9 pCi/g) with concentrations ranging from 152 to 392 pCi/g. The FALs were established at the PAL concentrations; therefore, Cs-137 is considered a COC at this CAS.

Table A.11-7
Sample Results for Gamma-Emitting Radionuclides Detected
above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 1 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)					
				Ac-228	Co-60	Cs-137	Nb-94	Th-234	U-235
FALs				506.7 ^a	18.33	72.9	96.53	1,423 ^b	255.5
Second Parcel	I01	561I012	0.0 - 1.0	0.63	--	--	--	--	--
Second Parcel	I02	561I011	0.0 - 1.0 ft into pile	2.64	--	--	--	5.6 (J)	--
Second Parcel	I03	561I009	0.0 - 0.5 ft into pile	0.75	--	--	--	--	--
		561I010	0.0 - 0.5 ft into pile	0.69	--	--	--	--	--
Second Parcel	I05	561I008	1.0 - 1.5	1.4	--	--	--	--	--
Second Parcel	I06	561I005	0.0 - 0.5	1.62	--	--	--	2.4	--
Second Parcel	I07	561I006	0.0 - 0.5	0.92	--	--	--	--	--
Second Parcel	I08	561I004	2.5 - 3.0	1.64	--	--	--	--	--
Second Parcel	I09	561I002	0.0 - 0.5	1.85	--	0.305	--	2.59 (J)	--
Second Parcel	I10	561I001	5.0 - 6.0	1.93	--	--	--	2.71	--
Second Parcel	I11	561I017	0.0 - 0.5	1.24	--	0.132	--	--	--
Second Parcel	I12	561I016	1.0 - 2.0 ft into pile	1.28	--	0.129	--	--	--
Second Parcel	I13	561I015	2.0 - 2.5 ft into pile	0.86	--	--	--	--	--
Second Parcel	I14	561I014	2.0 - 3.0 ft into pile	1.66	--	--	--	1.85	--
Second Parcel	I15	561I013	2.0 - 3.0 ft into pile	1.55	--	--	--	2.43	--
Second Parcel	I16	561I003	1.0 - 1.5	1.88	--	0.307	--	3.4 (J)	--
Second Parcel	I17	561I018	0.0 - 0.5	1.36	--	0.142	--	--	--
Waste Dump	I18	561I019	2.5 - 3.0 ft into pile	1.36	--	--	--	--	--
Waste Dump	I19	561I027	2.5 - 3.0 ft into pile	1.24	--	--	--	--	--
Waste Dump	I20	561I029	2.5 - 3.0 ft into pile	1.42	--	--	--	--	--
Waste Dump	I21	561I031	2.5 - 3.0 ft into pile	1.37	--	--	--	--	--
Waste Dump	I22	561I032	3.0 - 3.5 ft into pile	1.59	--	--	--	--	--
Waste Dump	I23	561I028	2.5 - 3.0 ft into pile	1.5	--	--	--	--	--
Waste Dump	I24	561I022	1.5 - 2.0 ft into pile	1.19	--	--	--	--	--
Waste Dump	I25	561I026	1.5 - 2.0 ft into pile	1.22	--	--	--	--	--
Waste Dump	I26	561I021	2.5 - 3.0 ft into pile	1.29	--	--	--	--	--

Table A.11-7
Sample Results for Gamma-Emitting Radionuclides Detected
above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 2 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)					
				Ac-228	Co-60	Cs-137	Nb-94	Th-234	U-235
FALs				506.7 ^a	18.33	72.9	96.53	1,423 ^b	255.5
Waste Dump	I27	561I025	2.0 - 2.5 ft into pile	1.57	--	--	--	2.45 (J)	--
Waste Dump	I28	561I020	2.5 - 3.0 ft into pile	1.29	--	--	--	--	--
Waste Dump	I29	561I023	3.0 - 3.5 ft into pile	1.56	--	--	--	--	--
Waste Dump	I30	561I033	0.0 - 0.5 ft into pile	1.5	1.64	392	2.86	--	3.9 (J)
		561I034	0.0 - 0.5 ft into pile	1.14	1.77	224	3.26	--	--
		561I040	1.0 - 1.5 ft into pile	1.51	--	0.92	--	--	--
Waste Dump	I31	561I024	0.0 - 0.5	1.47	--	--	--	--	--
Waste Dump	I32	561I030	0.0 - 0.5 ft into pile	1.37	--	15.6	--	--	--
		561I045	1.0 - 1.5 ft into pile	1.33	--	--	--	--	--
Waste Dump	I33	561I035	0.0 - 0.5 ft into pile	1.26	--	152	0.233	--	1.73
		561I041	1.0 - 1.5 ft into pile	1.37	--	--	--	--	--
Waste Dump	I34	561I036	0.0 - 0.5	1.22	--	0.189	--	--	--
		561I037	0.0 - 0.5	1.34	--	0.177	--	--	--
Waste Dump	I35	561I038	0.0 - 0.5	1.43	--	--	--	--	--
Waste Dump	I36	561I039	0.0 - 0.5	1.42	--	2.85	--	--	--
Waste Dump	I37	561I042	0.0 - 0.5	1.34	--	--	--	--	--
Waste Dump	I38	561I043	0.0 - 0.5	1.65	--	--	--	--	--
Waste Dump	I39	561I044	0.0 - 0.5	1.32	--	--	--	--	--
Waste Dump	I40	561I046	0.0 - 0.5	1.6	--	--	--	--	--
Waste Dump	I41	561I047	0.0 - 0.5	2.02	--	--	--	--	--
Waste Dump	I42	561I048	0.0 - 0.5	1.67	--	--	--	--	--
		561I049	0.0 - 0.5	1.84	--	--	--	--	--
Waste Dump	I43	561I050	0.0 - 0.5	1.87	--	--	--	--	--
Waste Dump	I44	561I051	0.5 - 1.0	1.74	--	--	--	--	--
Waste Dump	I45	561I052	0.5 - 1.0	1.65	--	--	--	--	--
Waste Dump	I46	561I053	1.0 - 1.3	1.8	--	--	--	--	--

Table A.11-7
Sample Results for Gamma-Emitting Radionuclides Detected
above MDCs at CAS 25-23-21, Radioactive Waste Dump
(Page 3 of 3)

Area	Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)					
				Ac-228	Co-60	Cs-137	Nb-94	Th-234	U-235
FALs				506.7 ^a	18.33	72.9	96.53	1,423 ^b	255.5
Waste Dump	I47	561I054	0.5 - 1.0	1.41	--	--	--	--	--
Waste Dump	I48	561I055	0.5 - 1.0	1.2	--	--	--	--	--
Waste Dump	I49	561I056	1.0 - 1.3	1.47	--	--	--	--	--

^aFAL for Ac-228 based on Th-232 FAL.

^bFAL for Th-234 based on U-238 FAL.

Co = Cobalt

Nb = Niobium

J = Estimated value

-- = Not detected above MDCs.

Bold indicates the values exceeding the FALs.

A.11.2.7 Potential Source Material

Analytical results for PSM samples collected at this CAS that were detected in soil samples above MDCs are presented in [Table A.11-8](#). The PSM was a pile of finely ground magnetite.

Table A.11-8
PSM Results Detected above MDCs for CAS 25-23-21, Radioactive Waste Dump

Area	Sample Location	Sample Number	Sample Matrix	Parameter	Result	PSM Criteria	Unit
Second Parcel	I04	561I007	Solid	Hexavalent chromium	0.51 (J-)	5.6	mg/kg
				Chromium	140	N/A ^a	
				Acetone	0.011 (J)	630,000	
				Methylene chloride	0.011	53	

^aPer FI-ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

A.11.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 25-23-21, the only COCs that were identified are Cs-137 and PCBs located within the southern RMA at the main waste dump portion of the CAS. The Cs-137 was associated with the contaminated pipes that were laying on top of the soil in the RMA. The contaminated pipes from the northern and southern RMAs were wrapped in plastic and disposed of as low-level waste (LLW), thereby removing all of the Cs-137 and PCB contaminated soil from this CAS. The soil from the RMA piles were also disposed of as LLW. Soil samples collected from the piles after removal of the pipes showed that the Cs-137 and PCB contamination was limited to the top 0 to 1.5 ft into the piles; the PCBs and Cs-137 did not migrate any further than 1.5 ft into the piles.

A.11.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

A.12.0 CAS 25-25-19, Hydrocarbon Stains and Trench

Corrective Action Site 25-25-19 consists of several components, including surface soil stains, tar and asphalt spills, trenches, concrete pads, debris, and rock and soil piles. The CAS encompasses approximately 8 acres and is located southeast of the intersection of C Road and G Road, and southwest of the RCP in Area 25 of the NNSS.

A.12.1 Corrective Action Investigation

A total of 22 characterization samples (including 1 FD) were collected during investigation activities at CAS 25-25-19 ([Figure A.12-1](#)). The sample IDs, locations, types, and analyses are listed in [Table A.12-1](#). The specific CAI activities conducted to satisfy the CAIP requirements at this CAS (NNSA/NSO, 2008) are described in the following sections.

A.12.1.1 Radiological Surveys

A gamma radiological walkover survey of the area was performed at CAS 25-25-19 in 2008. No areas of elevated radioactivity were identified because measured levels from this CAS area were not distinguishable from background levels.

A.12.1.2 Geophysical Surveys

Geophysical surveys were performed in 2007 and did not identify subsurface metallic debris in any areas of this CAS.

A.12.1.3 Visual Inspections

The surface soil within the motor pool area was inspected for any stained soil or biasing factors. Stained surface soil was observed at sample locations J01, J02 and J03 at the motor pool area, and samples 561J001 through 561J004 were collected at these locations. In the north trench, asphalt was observed at sample location J05 at a depth of 1 to 2 ft bgs. Stained soil and a diesel/solvent odor were observed at the same location (J05) from 5 to 5.5 ft bgs ([Figures A.12-2 and A.12-3](#)). Stained soil and asphalt were also observed at sample location J07 from 0 to 3.5 ft bgs, but no samples were collected at this interval because samples within the asphalt horizon had been collected in potholes at locations

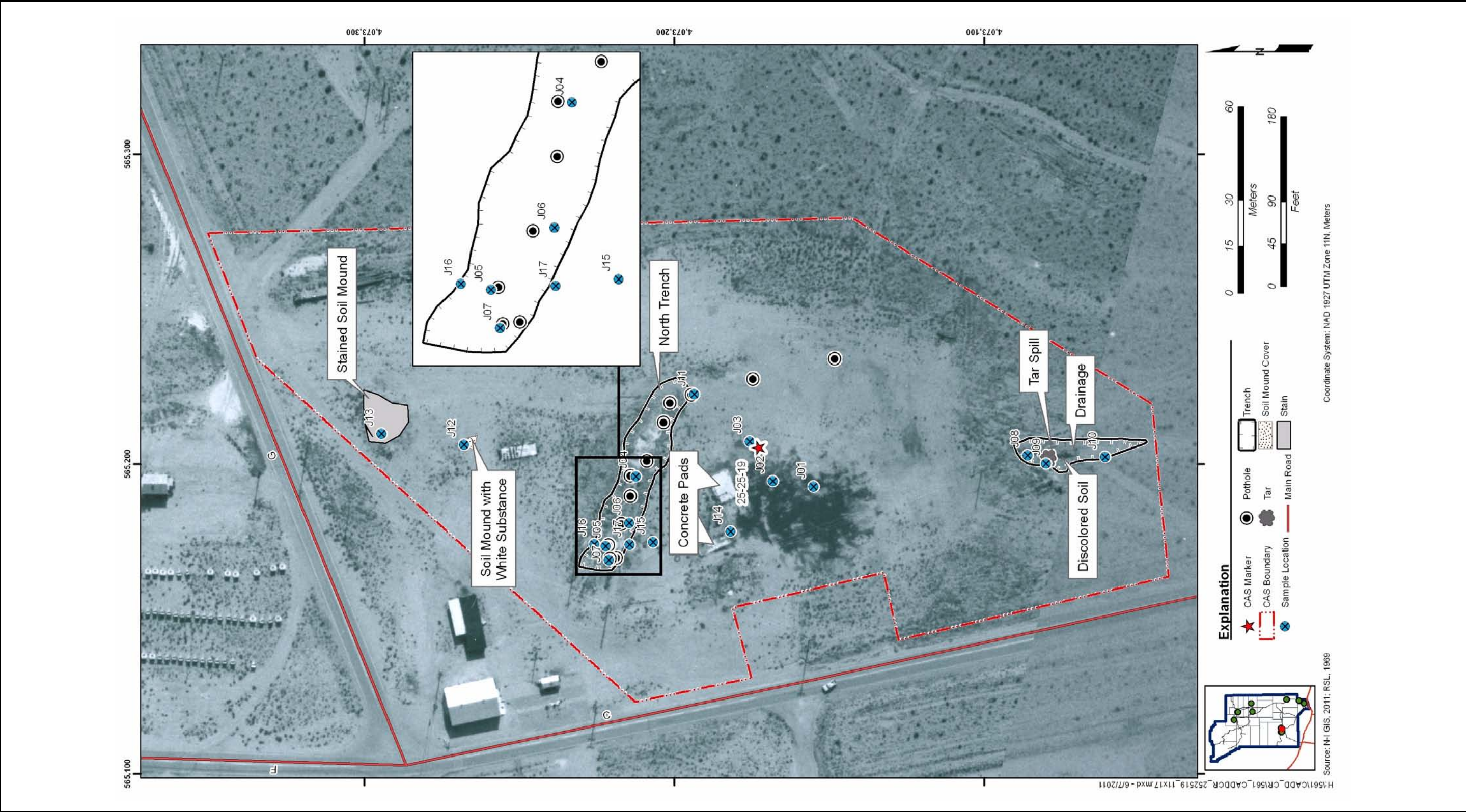


Figure A.12-1
Sample Locations at CAS 25-25-19, Hydrocarbon Stains and Trench

Table A.12-1
Samples Collected at CAS 25-25-19, Hydrocarbon Stains and Trench
(Page 1 of 2)

Sample Location	Sample Number	Depth ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
J01	561J001	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J02	561J002	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J03	561J003	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561J004	0.0 - 0.5	Soil	FD of #561J003	X	X	X	X	X	X	X	--	X
J04	561J005	0.5 - 1.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561J006	4.0 - 4.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J05	561J007	1.0 - 2.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561J008	5.0 - 5.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561J009	7.0 - 7.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J06	561J010	5.0 - 5.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J07	561J011	5.0 - 5.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J08	561J012	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J09	561J013	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J10	561J014	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J11	561J015	5.5 - 6.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
	561J016	1.0 - 2.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
J12	561J017	0.0 - 0.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J13	561J018	0.0 - 1.0	Soil	Environmental	X	X	X	X	X	X	X	--	X
J14	561J019	0.0 - 0.5	Soil	Waste Management	X	--	--	--	X	--	--	X	--
	561J020	0.5 - 1.0	Soil	Environmental	X	--	--	--	X	--	--	--	--
J15	561J021	0.0 - 0.5	Soil	Waste Management	X	--	--	--	X	--	--	X	--
	561J022	0.5 - 1.0	Soil	Environmental	X	--	--	--	X	--	--	--	--
J16	561J023	6.0 - 6.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
J17	561J024	6.0 - 6.5	Soil	Environmental	X	X	X	X	X	X	X	--	X
N/A	561J301	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561J302	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561J303	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X

Table A.12-1
Samples Collected at CAS 25-25-19, Hydrocarbon Stains and Trench
(Page 2 of 2)

Sample Location	Sample Number	Depth ft bgs)	Matrix	Purpose	Beryllium	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	SVOCs	TCLP Metals	VOCs
N/A	561J304	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561J305	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561J306	N/A	Water	Trip Blank	--	--	--	--	--	--	--	--	X
N/A	561J307	N/A	Water	Field Blank	X	X	X	X	X	X	X	--	X
N/A	561J308	N/A	Water	Equipment Rinsate	X	X	X	X	X	X	X	--	X

-- = Not required

J04, J05, and J06. In the southern portion of the CAS, two sample locations were observed to have an asphalt spill (sample 561J012) and a tar spill (sample 561J013). Two lead bricks were discovered at locations J14 and J15, one lead brick was also found near the north trench. The bricks were removed, and the soil directly in contact with the bricks was removed and sampled for waste characterization. Verification samples were then collected at 0.5 to 1 ft bgs to confirm that any lead-contaminated soil had been removed.

A.12.1.4 Sample Collection

Twenty-two environmental samples (including one FD) were collected from 17 locations (locations J01 through J17). Decision I environmental sampling activities included the collection of biased surface soil samples at the asphalt spill (561J012) and tar spill (561J013), the motor pool area (561J001 through 561J004), and under the two soil mounds (samples 561J017 and 561J018). Decision I biased subsurface samples were collected from the north trench (561J005 through 561J011, and 561J023, 561J0024) and the suspected backfilled east trench (561J015 and 561J016). At the north trench and soil mounds, samples were collected at various depths based on biasing factors (e.g., stained soil, asphalt). Surface samples were collected at the tar and asphalt spills and the motor pool area. Because the analytical results showed no concentrations of any constituents above PALs, Decision II sampling was not necessary.

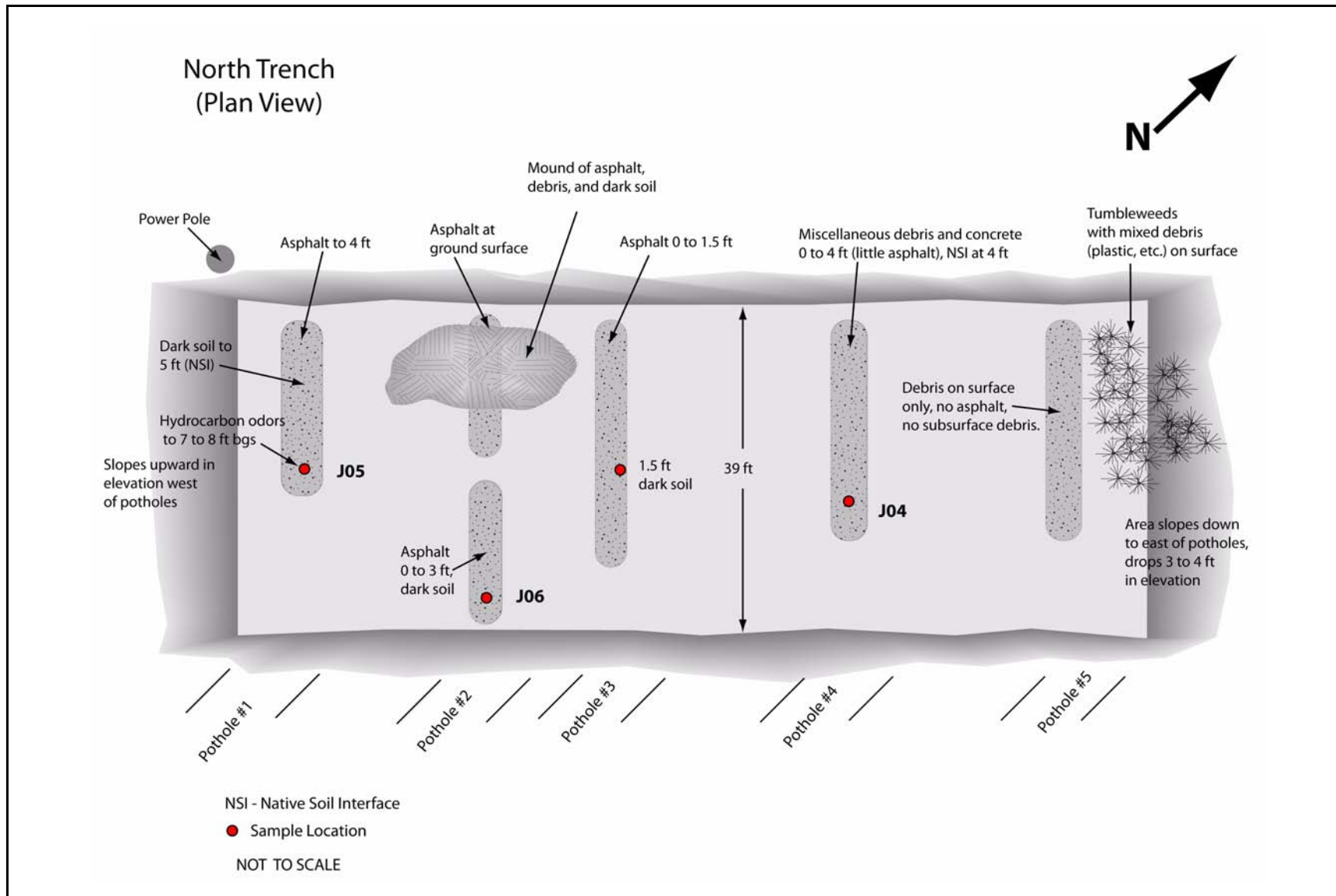


Figure A.12-2
North Trench Sample Locations CAS 25-25-19, Hydrocarbon Stains and Trench



Figure A.12-3
Asphalt and Stained Soil in North Trench
CAS 25-25-19, Hydrocarbon Stains and Trench

Samples collected from this CAS were screened for VOCs using a Mini-RAE 2000 PID due to the possible presence of volatile hydrocarbons in the soil. No VOCs were detected at this CAS. A Q-RAE Plus Four-Gas Monitor was used to screen soil samples as well; all readings were 0 ppm or 0 percent, except for the O₂, which was within the acceptable range.

Lead bricks were identified as PSM and removed from locations J14 and J15. Waste characterization samples (561J019 and 561J021) were collected from two locations (J14 and J15) which represented two lead bricks; the soil directly beneath the lead bricks was sampled and analyzed for TCLP metals. After removal of the soil, two confirmation samples (561J020 and 561J022) were collected from these locations. The analytical results from the lead brick verification samples were less than the corresponding Tier 1 action levels (i.e., PALs).

A.12.1.5 Deviations

The only deviation to the CAIP (NNSA/NSO, 2008) associated with CAS 25-25-19 was that the suspected backfilled east trench was not a trench, but instead a natural depression with native soil. Only one sample was collected from this area, instead of the stated minimum of four samples. Investigation samples were collected as outlined in the CAIP and submitted for laboratory analysis.

A.12.2 Investigation Results

The following sections provide analytical results from the samples collected to complete investigation activities as outlined in the CAIP (NNSA/NSO, 2008). Investigation samples were analyzed for the CAIP-specified COPCs, which included VOCs, SVOCs, TPH-DRO (waste management purposes only) RCRA metals, hexavalent chromium, beryllium, PCBs, and gamma-emitting radionuclides. The analytical parameters and laboratory methods used to analyze the investigation samples are listed in [Table A.2-2](#). [Table A.12-1](#) lists the sample-specific analytical suite for CAS 25-25-19.

Analytical results from the soil samples with concentrations exceeding MDCs are summarized in the following sections. An evaluation was conducted on all contaminants detected above MDCs by comparing individual concentration or activity results against the FALs. Establishment of the FALs is presented in [Appendix C](#).

A.12.2.1 Volatile Organic Compounds

Analytical results for VOCs detected in soil samples above MDCs are presented in [Table A.12-2](#). No VOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.12.2.2 Semivolatile Organic Compounds

Analytical results for SVOCs detected in soil samples above MDCs are presented in [Table A.12-3](#). No SVOCs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.12-2
Sample Results for VOCs Detected above MDCs
at CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)	
			2-Butanone	Acetone
FALs			200,000	630,000
J01	561J001	0.0 - 0.5	0.011 (J)	0.029 (J)
J02	561J002	0.0 - 0.5	0.011 (J)	0.036 (J)
J08	561J012	0.0 - 0.5	0.0091 (J)	0.023 (J)

J = Estimated value

Table A.12-3
Sample Results for SVOCs Detected above
MDC at CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Depth (ft bgs)	COPC (mg/kg)
			Bis(2-ethylhexyl)phthalate
FAL			120
J04	561J005	0.5 - 1.5	0.068 (J)

J = Estimated value

A.12.2.3 Total Petroleum Hydrocarbons

Analytical results for TPH-DRO detected in soil samples above MDCs are presented in [Table A.12-4](#). Samples were analyzed for TPH-DRO for waste management purposes only as stated in the FI ROTC-1 (NNES, 2010), and are presented here for completeness of data. Preliminary action levels and FALs have not been established for TPH-DRO. The FALs are established for the individual hazardous constituents of TPH-DRO and are reported with the VOC and SVOC results. Because VOCs or SVOCs were not detected at concentrations exceeding the MDCs in any of the soil samples collected at this CAS, TPH-DRO is not considered to be a site-related contaminant.

Table A.12-4
Sample Results for TPH-DRO Detected at
CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Depth (ft bgs)	TPH-DRO (mg/kg)
J01	561J001	0.0 - 0.5	54
J02	561J002	0.0 - 0.5	140
J03	561J003	0.0 - 0.5	160
	561J004	0.0 - 0.5	78
J04	561J005	0.5 - 1.5	22
J05	561J007	1.0 - 2.0	730
	561J008	5.0 - 5.5	1,900
	561J009	7.0 - 7.5	850
J07	561J011	5.0 - 5.5	67
J08	561J012	0.0 - 0.5	23
J09	561J013	0.0 - 0.5	21
J17	561J024	6.0 - 6.5	14

A.12.2.4 RCRA Metals, Beryllium, and Hexavalent Chromium

Analytical results for RCRA metals, beryllium, and hexavalent chromium detected in soil samples above MDCs are presented in [Table A.12-5](#). No metals were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.12.2.5 Polychlorinated Biphenyls

Analytical results for PCBs detected in soil samples above MDCs are presented in [Table A.12-6](#). No PCBs were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

A.12.2.6 Gamma-Emitting Radionuclides

Analytical results for gamma-emitting radionuclides detected in soil samples above MDCs are presented in [Table A.12-7](#). No gamma-emitting radionuclides were detected at concentrations exceeding their PALs. The FALs were established at the corresponding PAL concentrations.

Table A.12-5
Sample Results for Metals Detected above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench
(Page 1 of 2)

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
FALs			23	190,000	2,000	800	N/A ^a	800	34	5,100	5,100
J01	561J001	0.0 - 0.5	3.2	160	0.37 (J-)	0.15	4.7	330 (J)	--	--	--
J02	561J002	0.0 - 0.5	2.9	200	0.37 (J-)	0.31	5.5	420 (J)	--	--	--
J03	561J003	0.0 - 0.5	2.8	110	0.32 (J-)	0.27	5	43 (J)	0.0023 (J-)	0.36	--
	561J004	0.0 - 0.5	2.8	120	0.33 (J-)	0.22	5	37 (J)	0.0022 (J-)	--	--
J04	561J005	0.5 - 1.5	2.8	91	0.28 (J-)	0.2	4.4	15 (J)	0.013 (J-)	--	--
	561J006	4.0 - 4.5	1.5	70	0.25 (J-)	0.045	1.8	4.4 (J)	0.022 (J-)	--	--
J05	561J007	1.0 - 2.0	2	110	0.34 (J-)	0.043	4.6	20 (J)	0.029 (J-)	--	--
	561J008	5.0 - 5.5	1.7	96	0.33 (J-)	--	2.2	4.8 (J)	0.058	--	--
	561J009	7.0 - 7.5	2.3	130	0.4 (J-)	0.086	3	6.2 (J)	0.028 (J-)	--	--
J06	561J010	5.0 - 5.5	1.9	110	0.37 (J-)	--	2.6	5 (J)	0.066	--	--
J07	561J011	5.0 - 5.5	1.9	110	0.35 (J-)	0.047	2.5	8.3 (J)	0.015 (J-)	--	--
J08	561J012	0.0 - 0.5	2.2	79	0.3 (J-)	0.12	3.2	24 (J)	0.0034 (J-)	--	--
J09	561J013	0.0 - 0.5	2	76	0.3 (J-)	0.072	3.4	17 (J)	0.0023 (J-)	--	--
J10	561J014	0.0 - 0.5	2.1	89	0.31 (J-)	0.1	3.5	13 (J)	0.0055 (J-)	--	--
J11	561J015	5.5 - 6.0	1.8	68	0.31 (J-)	0.044	2.3	4.6 (J)	0.024 (J-)	--	--
	561J016	1.0 - 2.0	2.1	96	0.35 (J-)	0.073	3	8.4 (J)	0.012 (J-)	--	--

Table A.12-5
Sample Results for Metals Detected above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench
(Page 2 of 2)

Sample Location	Sample Number	Depth (ft bgs)	COPCs (mg/kg)								
			Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
FALs			23	190,000	2,000	800	N/A ^a	800	34	5,100	5,100
J12	561J017	0.0 - 0.5	2.8	110	0.44 (J-)	0.12	4.5	6.8 (J)	0.01 (J-)	--	--
J13	561J018	0.0 - 1.0	2.6	130	0.46 (J-)	0.053	4.1	6.9 (J)	0.005 (J-)	--	--
J14	561J020	0.5 - 1.0	2.4	130	0.33 (J-)	0.71	4.5	100 (J)	0.03 (J-)	--	0.16
J15	561J022	0.5 - 1.0	2.9	100	0.41 (J-)	0.19	4.4	84 (J)	0.013 (J-)	--	--
J16	561J023	6.0 - 6.5	1.4	120 (J)	--	0.04	2.1	3.4	0.021 (J-)	--	--
J17	561J024	6.0 - 6.5	2.9	140 (J)	--	0.23	6.3	20	0.044	--	--

^aPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

J = Estimated value

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above MDCs.

Table A.12-6
Sample Results for PCBs Detected above
MDC at CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Depth (ft bgs)	COPC (mg/kg)
			Aroclor 1260
FAL			0.74
J01	561J001	0.0 - 0.5	0.014 (J)
J02	561J002	0.0 - 0.5	0.095
J03	561J003	0.0 - 0.5	0.032 (J)
	561J004	0.0 - 0.5	0.018 (J)
J04	561J005	0.5 - 1.5	0.25 (J)
J05	561J007	1.0 - 2.0	0.5 (J)
	561J008	5.0 - 5.5	0.023 (J)
	561J009	7.0 - 7.5	0.061 (J)
J07	561J011	5.0 - 5.5	0.016 (J)
J08	561J012	0.0 - 0.5	0.015 (J)
J17	561J024	6.0 - 6.5	0.1

J = Estimated value

A.12.3 Nature and Extent of Contamination

Based on the analytical results for soil samples collected within CAS 25-25-19, there has not been a release of contaminants to the environmental media.

A.12.4 Revised Conceptual Site Model

The CAIP requirements (NNSA/NSO, 2008) were met at this CAS, and no revisions were necessary to the CSM.

Table A.12-7
Sample Results for Gamma-Emitting Radionuclides Detected
above MDCs at CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Depth (ft bgs)	COPCs (pCi/g)	
			Ac-228	Th-234
FALs			506.7 ^a	1,423 ^b
J01	561J001	0.0 - 0.5	1.77	--
J02	561J002	0.0 - 0.5	1.69	--
J03	561J003	0.0 - 0.5	1.49	--
	561J004	0.0 - 0.5	1.45	--
J04	561J005	0.5 - 1.5	1.9	--
	561J006	4.0 - 4.5	2.07	--
J05	561J007	1.0 - 2.0	1.56	--
	561J008	5.0 - 5.5	1.75	3 (J)
	561J009	7.0 - 7.5	1.9	2.73 (J)
J06	561J010	5.0 - 5.5	1.95	--
J07	561J011	5.0 - 5.5	1.92	--
J08	561J012	0.0 - 0.5	1.47	--
J09	561J013	0.0 - 0.5	1.63	--
J10	561J014	0.0 - 0.5	1.64	--
J11	561J015	5.5 - 6.0	1.85	--
	561J016	1.0 - 2.0	1.94	--
J12	561J017	0.0 - 0.5	1.7	--
J13	561J018	0.0 - 1.0	1.74	--
J16	561J023	6.0 - 6.5	1.53	--
J17	561J024	6.0 - 6.5	1.7	--

^aFAL for Ac-228 based on the Th-232 FAL.

^bFAL for Th-234 based on the U-238 FAL.

J = Estimated value

-- = Not detected above MDCs.

A.13.0 Waste Management

The following sections describe the waste management activities and types of waste generated and disposed of during the corrective action investigation and remediation activities at CAU 561. Waste management areas were established and managed as specified in the CAIP (NNSA/NSO, 2008). Waste characterization was completed in accordance with Navarro-Intera, LLC, procedures, which are consistent with the federal and state regulations. Waste disposal was completed in accordance with federal and state regulations, DOE directives, and waste acceptance criteria for the applicable disposal facility.

A.13.1 Waste Minimization

In an effort to reduce the amount of waste generated, waste minimization techniques were integrated into the field activities and waste was segregated to the greatest extent possible. Controls were in place to minimize the use of hazardous materials and the unnecessary generation of hazardous and/or mixed waste during field activities. Decontamination activities were planned and executed to minimize the volume of rinsate generated. Approximately 3,900 pounds (lb) of lead was recovered during the CAU 561 CAI. This material meets the recyclable material acceptance criteria of the TOXCO Materials Management Center, located in Oak Ridge, Tennessee, and will be reused as high-energy shielding blocks within the DOE or U.S. commercial nuclear industry.

A.13.2 Waste Generation

The waste types listed below were generated during CAU 561 CAI and remediation activities:

- Solid and liquid industrial waste
- Hydrocarbon-impacted waste
- Low-level radioactive waste
- Recyclable materials

For regulated waste, the amount, type, and source of the waste placed into each waste container were recorded in the waste container logbooks that are maintained in the project files. Waste characterization and disposal was based on process knowledge, radiological survey data, and analytical data, as applicable. The disposal documentation for each waste shipment made at

CAU 561 is included in [Appendix F](#). A summary of the waste streams generated—including the waste type, waste volumes, and disposal path—is provided in [Table A.13-1](#).

A.13.2.1 Industrial Waste

Industrial waste is described as solid waste generated during remediation activities that meet the permit requirements and waste acceptance criteria of the Area 9 U10c industrial landfill. Industrial waste generated at CAU 561 included remediated soil and housekeeping debris. Solid industrial waste generated during remediation activities at CAU 561 was characterized using field observations, process knowledge, analytical results and/or radiological FSRs and disposed of at the Area 9 U10c industrial landfill.

Industrial waste generated during the CAU 561 field investigations was segregated into the following waste streams:

- Solid IDW includes debris such as plastic sheeting, glass/plastic sample jars, disposable personal protective equipment (PPE), unused soil samples, sampling scoops, aluminum foil, and bowls.
- Liquid IDW includes decontamination rinsate.

Solid IDW generated during investigation activities was characterized using field observations, process knowledge, analytical results and/or radiological FSRs. The IDW that was determined to be non-hazardous and met the total allowable residual surface contamination values listed in Table 4-2 of the *Nevada Test Site Radiological Control Manual* (NNSA/NSO, 2010b) was characterized as industrial waste. The IDW industrial waste was bagged, marked, and placed in the roll-off located at Building 23-153 for disposal at the Area 9 U10c industrial landfill. The IDW that did not meet the release limits of Table 4-2 was managed as low-level radioactive waste as described in [Section A.13.2.3](#).

Liquid IDW was generated during decontamination activities at several CAS locations. The decontamination activities included high-pressure washing of heavy equipment on a lined secondary containment pad and were completed in accordance with Standards-Based Management System procedures. Although decontamination rinsate was generated, the small volumes of rinsate generated evaporated before the rinsate could be collected for disposal.

Table A.13-1
CAU 561 Waste Disposal Summary
(Page 1 of 2)

CAS Number	Container Number	Waste Description	Waste Characterization				Waste Disposition			
			Hazardous	Hydrocarbon	TSCA	Radioactive	Waste Volume	Disposal Pathway	Disposal Date	Disposal Document ^a
02-08-02	561B01	IDW - PPE	Nonhazardous	No	No	Nonradioactive	10 gal	Area 9 U10c Industrial Landfill	06/02/2011	LVF
	561B02	Lead	Not waste	No	No	Nonradioactive	3,320 lb	Recycle - TOXCO	TBD	BOL
23-21-04	561G01	Lead	Not waste	No	No	Nonradioactive	526 lb	Recycle - TOXCO	TBD	BOL
	561G02	Bulk Soil and Debris	Nonhazardous	Yes	No	Nonradioactive	92,480 lb	Area 9 U10c Industrial Landfill	03/24/2011 – 04/26/2011	LVF
	561G03	Bulk Soil and Debris	Nonhazardous	Yes	No	Nonradioactive	154,320 lb	Area 9 U10c Industrial Landfill	05/16/2011 – 06/06/2011	LVF
25-08-02	561H01	Lead Batteries	Nonhazardous	No	No	Nonradioactive	8 each	Recycle - TOXCO	TBD	BOL
	561H02	Bulk Soil and Debris	Nonhazardous	No	No	Nonradioactive	1,622,630 lb	Area 9 U10c Industrial Landfill	05/19/2011 – 05/26/2011	LVF
25-23-21	561I01	Bulk Debris	Nonhazardous	Yes	No ^b	Nonradioactive	33,920 lb	Area 9 U10c Industrial Landfill	05/31/2011	LVF
	561I02	LLW - Bulk Soil	Nonhazardous	20 yd ³ intermodal container	No	Radioactive LLW	31,650 lb	Area 5 RWMC	06/07/2011	CD
	561I03	LLW - Bulk Soil	Nonhazardous	20 yd ³ intermodal container	No	Radioactive LLW	35,520 lb	Area 5 RWMC	06/07/2011	CD

Table A.13-1
CAU 561 Waste Disposal Summary
(Page 2 of 2)

CAS Number	Container Number	Waste Description	Waste Characterization				Waste Disposition			
			Hazardous	Hydrocarbon	TSCA	Radioactive	Waste Volume	Disposal Pathway	Disposal Date	Disposal Document ^a
25-25-19	561J01	Soil	Nonhazardous	No	No	Nonradioactive	20 lb	Returned to sample location	05/17/2011	N/A
	561J02	Lead	Not waste	No	No	Nonradioactive	52 lb	Recycle - TOXCO	TBD	BOL
	561J03	Bulk Soil and Debris	Nonhazardous	Yes	No ^b	Nonradioactive	31,380 lb	Area 9 U10c Industrial Landfill	05/31/2011	LVF

Notes:

^aCopies of waste disposal documents are located in [Appendix F](#) of this document.

^bWaste characterized as non-PCB contaminated but waste may include PCB bulk product waste.

BOL = Bill of lading

CD = Certificate of Disposal

HWSU = Hazardous Waste Storage Unit

IDW = Industrial-derived waste

LVF = Landfill Load Verification Form

PSDR = Package, Storage, and Disposal Request

RWMC = Radioactive Waste Management Complex

TBD = To be determined

TSCA = *Toxic Substances Control Act*

yd³ = Cubic yard

A.13.2.2 Hydrocarbon-Impacted Waste

Hydrocarbon-impacted waste is defined as media or debris that is contaminated with petroleum products such as gasoline, hydrocarbon lubricants, hydraulic fluids, kerosene, diesel fuel, and/or jet fuel that exceeds NAC regulatory limits of 100 mg/kg (NAC 445A.2272, “Contamination of Soil: Establishment of Action Levels” [NAC, 2008]). Hydrocarbon-impacted waste generated at CAU 561 was characterized using analytical results and radiological FSRs and was disposed of in accordance with the permit requirements and waste acceptance criteria of the Area 9 U10c industrial landfill.

A.13.2.3 Low-Level Radioactive Waste

Low-level radioactive waste is defined as a solid, liquid, or gaseous material that contains radioactive nuclides regulated under the “Atomic Energy Act of 1954,” as amended (USC, 2006), and is of negligible economic value considering the cost of recovery. Radioactive waste not classified as high-level waste, spent nuclear fuel, transuranic waste, or by-product material (as defined in Section 11e.[2] of the Atomic Energy Act, or mixed waste as specified in DOE Order 435.1 [DOE, 1999]) is considered to be LLW. Low-level waste generated at CAU 561 was characterized using analytical results and process knowledge. The LLW was disposed of at the Area 5 RWMC in accordance with NNSS Waste Acceptance Criteria (NNSA/NSO, 2010a) and the conditions of NNSS Waste Profile Number LITN0000000006, Revision 14 (Di Sanza, 2011).

A.13.2.4 Recyclable Materials

Recyclable materials generated at CAU 561 included elemental lead (e.g., lead bricks, counterweights, and slag) and lead-acid batteries. The lead was characterized using process knowledge and radiological survey results. The lead materials meet the recyclable material acceptance criteria of the TOXCO Materials Management Center in Oak Ridge, Tennessee, for reuse as nuclear shielding within the DOE or U.S. commercial nuclear industry.

A.13.3 Waste Characterization and Disposal

Sections A.13.3.1 through A.13.3.5 describe the waste disposal activities completed at each CAS. No waste was generated or managed at CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, or 22-19-06. The following sections include a description of waste management samples collected during the investigation activities and used for waste characterization. The analytical suite was tailored to characterize the waste for disposal and to support recommended actions. Results were reviewed against federal and state regulations, DOE directives/policies/guidance and waste acceptance criteria for NNSS disposal facilities. Complete results (including nondetect results) for all samples are maintained in project files.

A.13.3.1 CAS 02-08-02, Waste Dump and Burn Area

Investigation activities at CAS 02-08-02 generated the following waste types:

- Recyclable lead material
- IDW solid
- Industrial waste – PPE, miscellaneous debris and one empty metal drum

One pallet of recyclable lead material, weighing approximately 3,300 lb was recovered during remediation activities at CAS 02-08-02. The lead was characterized using process knowledge and radiological survey results. The pallet of lead was issued container number 561B02 for tracking purposes. The lead material will be recycled at the TOXCO Materials Management Center in Oak Ridge, Tennessee.

The PPE generated during the lead handling activities was containerized in drum number 561B01. The solid IDW was characterized using process knowledge and the results of industrial hygiene samples. The IDW was characterized as non-hazardous and non-radioactive and placed in the roll-off located at Building 23-153 for final disposal at the Area 9 U10c industrial landfill. No waste characterization samples were collected at CAS 02-08-02.

Waste disposal at CAS 02-08-02 also included miscellaneous housekeeping debris and one empty drum collected and disposed of as a BMP. The debris and empty drum were inspected and surveyed for radiological contamination. The debris and empty drum were characterized as nonhazardous and nonradioactive and transferred to the roll-off located at Building 23-153 for final disposal at the Area 9 U10c industrial landfill.

A.13.3.2 CAS 23-21-04, Waste Disposal Trenches

Investigation activities at CAS 23-21-04 generated the following waste types:

- Recyclable lead material including one 10-gal drum containing one lead brick and five lead counterweights. The lead was characterized using process knowledge and radiological survey results. The lead was issued container tracking number 561G01 for tracking purposes. The lead material will be recycled at the TOXCO Materials Management Center in Oak Ridge, Tennessee.
- Industrial waste included soil and debris excavated from Trenches 3 and 5 at CAS 23-21-04. A total of 92,480 lb of housekeeping debris and soil was excavated from Trench 5 and disposed of using container tracking number 561G02. A total of 154,320 lb of debris and soil was excavated from Trench 3 and disposed of using container tracking number 561G03. The waste was characterized using field observations, process knowledge, analytical results and radiological FSRs.

A total of 17 investigation samples and two waste management samples collected during the investigation activities were used to characterize the industrial waste generated at CAS 23-21-04. The two waste management samples were collected at sample locations G01 and G12 and analyzed for TCLP metals to verify that the metal constituents did not exceed the RCRA regulatory limits. The analytical results for both the investigation and waste management samples were reviewed to determine a recommended waste disposal path for the industrial waste generated. The sample locations and analytical results used for waste characterization are shown in [Table A.13-2](#). Several sample locations at CAS 23-21-04 exceeded the NAC established action levels of 100 mg/kg for hydrocarbons (NAC, 2008). The industrial waste generated at CAS 23-21-04 was characterized as nonhazardous, nonradioactive, and hydrocarbon-impacted waste. The waste was disposed of at the Area 9 U10c industrial landfill.

A.13.3.3 CAS 25-08-02, Waste Dump

Investigation activities at CAS 25-08-02 generated the following waste types:

- Recyclable lead material consisted of eight lead-acid batteries. The batteries were characterized using process knowledge and radiological survey results. The batteries were packaged into container tracking number 561H01. The lead material will be recycled at the TOXCO Materials Management Center in Oak Ridge, Tennessee.

Table A.13-2
Waste Characterization Results at CAS 23-21-04, Waste Disposal Trenches

Sample Location	Sample Number	Waste Container Number	Sample Matrix	Parameter	Regulatory Criteria	Result	Units
G01 (Trench 3)	561G501	561G03	Soil	Arsenic	5	0.15 (J+)	mg/L
				Chromium		0.04 (J-)	
G05 (Trench 3)	561G005			TPH-DRO	100	160	mg/kg
G06 (Trench 3)	561G006					270	
	561G013	561G02				170	
G12 (Trench 5)	561G502	561G03		Cadmium	1	0.005 (J-)	mg/L
				Lead	5	0.039 (J-)	

mg/L = Milligrams per liter

J+ = Result is an estimated quantity, but may be biased high.

J- = Result is an estimated quantity, but may be biased low.

- Remediation activities at CAS 25-08-02 generated a total of 1,622,630 lb of industrial waste, including soil and housekeeping debris excavated and disposed of using container tracking number 561H02. The waste was characterized using field observations, process knowledge, analytical results, and radiological FSRs.

A total of 16 investigation samples and two waste management samples collected during the investigation activities were used to characterize the industrial waste generated at CAS 25-08-02. Waste management sample 561H501 was collected at sample location H03 and analyzed for TCLP metals to verify that the metals constituents did not exceed the RCRA regulatory limits. Waste management sample 561H502 was collected at sample location H14 and analyzed for TCLP mercury to verify that mercury did not exceed the RCRA regulatory limits ([Table A.13-3](#)). The analytical results for both investigation and waste management samples were reviewed to determine a recommended waste disposal path for the industrial waste generated. There were no analytical results that exceeded RCRA regulatory requirements or the waste acceptance criteria for the Area 9 U10c industrial landfill. Sample number 561H007 exceeded the NAC established action levels for hydrocarbon-impacted waste (NAC, 2008); however, the elevated hydrocarbon results were attributed to the asphalt content at this sample location. There were also some miscellaneous debris items (e.g., wire sheathing, painted concrete) that were characterized as potentially containing PCB bulk product waste. The industrial waste generated at CAS 25-08-02 was characterized as

Table A.13-3
Waste Characterization Results at CAS 25-08-02, Waste Dump

Sample Location	Sample Number	Waste Container Number	Sample Matrix	Parameter	Regulatory Criteria	Result	Units
H03	561H501	561H02	Soil	Arsenic	5	0.26	mg/L
H14	561H502			Mercury	0.2	0.028 (J)	

J = Estimated value

nonhazardous, nonradioactive, and non-hydrocarbon-impacted that contains PCB bulk product waste. The waste met the waste acceptance criteria of the Area 9 U10c industrial landfill and was disposed of at the Area 9 industrial landfill.

A.13.3.4 CAS 25-23-21, Radioactive Waste Dump

Investigation activities at CAS 25-23-21 generated the following waste types:

- Industrial waste
- Low-level radioactive waste

Remediation activities at CAS 25-23-21 generated a total of 33,920 lb of industrial waste consisting of soil and debris excavated and disposed of using container tracking number 561J03. The waste was characterized using field observations, process knowledge, analytical results and radiological FSRs.

A total of six investigation samples collected during the investigation activities were used to characterize the industrial waste generated at CAS 25-23-21. The analytical results were reviewed to determine a recommended waste disposal path for the industrial waste generated. There were no analytical results that exceeded RCRA regulatory requirements or the waste acceptance criteria for the Area 9 U10c industrial landfill. Several of the debris items including the plastic wire sheathing, tar paper, and roofing shingles were characterized as containing PCB bulk product waste and hydrocarbons. Therefore, the industrial waste generated at CAS 25-23-21 was characterized as nonhazardous, nonradioactive waste that is hydrocarbon-impacted and contains PCB bulk product waste. The waste was disposed of at the Area 9 U10c industrial landfill.

Remediation activities at CAS 25-23-21 generated a total of 62,170 lb of LLW consisting of remediated soil excavated from two radiologically posted areas. The waste was packaged into

two intermodal bulk containers and issued container tracking numbers 561I02 and 561I03. The waste was characterized using analytical results and radiological FSRs.

A total of four samples collected during the investigation activities were used to characterize the LLW generated at CAS 25-23-21. The analytical results were reviewed to determine a recommended waste disposal path for the waste generated. There were no analytical results that exceeded RCRA regulatory limits, TSCA PCB regulatory limits, or the NAC established action levels for hydrocarbon-impacted waste requirements. Therefore, the waste was characterized as nonhazardous, non-hydrocarbon-impacted, and non-PCB contaminated waste. The results of the radiochemical analysis exceeded the waste acceptance criteria for the Area 9 U10c industrial landfill. Therefore, the waste was characterized as LLW. The sample locations and analytical results exceeding waste characterization are shown in [Table A.13-4](#). The waste was disposed of at the Area 5 RWMC.

Waste disposal at CAS 25-23-21 also included two pieces of cast-iron pipes that were identified during investigation activities. The pipes were characterized as low-level radioactive surface contaminated objects based on radiological FSRs. The LLW piping was wrapped in plastic, transferred, and consolidated into container number 566007. Container 566007 will be shipped to the Area 5 RWMC for direct disposal when filled to capacity.

Table A.13-4
Waste Characterization Results at CAS 25-23-21, Radioactive Waste Dump

Sample Location	Sample Number	Waste Container Number	Sample Matrix	Parameter	Regulatory Criteria	Result	Units
I30 (RMA)	561I033 561I034 ^a	561I02 561I03	Soil	Co-60	100	1.77 (G)	pCi/g
				Cs-137		392	
				Nb-94		3.26 (G)	
				U-235		3.9 (G)	

^aSample number 561I004 is an FD of sample number 561I033

G = Sample density differs by more than 15% of laboratory control sample (LCS) density.

A.13.3.5 CAS 25-25-19, Hydrocarbon Stains and Trench

Investigation activities at CAS 25-25-19 generated the following waste types:

- Recyclable lead material including one, 10-gal drum containing two lead bricks. The lead was characterized using process knowledge and radiological survey results. The drum of lead was issued container tracking number 561J02. The lead material will be recycled at the TOXCO Materials Management Center in Oak Ridge, Tennessee.
- Industrial waste, including soil and debris excavated from CAS 25-25-19. A total of 31,380 lb of housekeeping debris and soil was removed for disposal using container tracking number 561J03. The waste was characterized using field observations, process knowledge, analytical results, and radiological FSRs.

A total of 11 samples collected during the investigation activities were used to characterize the industrial waste generated at CAS 25-25-19. The analytical results were reviewed to determine a recommended waste disposal path for the industrial waste generated. There were no analytical results that exceeded RCRA regulatory limits or TSCA PCB regulatory limits. The results of the radiochemical analysis indicated no radionuclides exceeded the waste acceptance criteria of the Area 9 U10c industrial landfill. Three sample locations at CAS 25-25-19 exceeded the NAC established action levels for hydrocarbons (NAC, 2008). Sample results used for waste characterization are shown in [Table A.13-5](#). The industrial waste generated at CAS 25-25-19 was characterized as nonhazardous, nonradioactive, non-PCB contaminated, and hydrocarbon-impacted waste. The waste was disposed of at the Area 9 U10c industrial landfill.

Waste disposal at CAS 25-25-19 also included one drum of soil remediated from beneath the lead bricks. The soil was placed into drum number 561J01 for tracking purposes. The solid IDW was characterized using analytical results of sample numbers 561J019 and 561J021. The analytical results indicated that there were no results that exceeded RCRA regulatory limits, TSCA PCB regulatory limits, or the NAC established action levels for hydrocarbon-impacted soil. The results of the radiochemical analysis indicate that there were no radionuclides in this soil. Therefore, the waste was characterized as nonradioactive, nonhazardous, non-hydrocarbon-impacted, and non-PCB contaminated industrial solid waste; and the soil was returned to the original sample location.

Table A.13-5
Waste Characterization Results at CAS 25-25-19, Hydrocarbon Stains and Trench

Sample Location	Sample Number	Waste Container Number	Sample Matrix	Parameter	Regulatory Criteria	Result	Units
J05	561J007	561J03	Soil	TPH-DRO	100	730	mg/kg
	561J008					1,900	
	561J009					850	
J14	561J019			Barium	100	3.7 (J)	mg/L
				Cadmium	1	0.013	
J15	561J021			Lead	5	0.96 (J)	
				Barium	100	8.1 (J)	
				Lead	5	1.9 (J)	

J = Estimated value

A.14.0 Quality Assurance

This section contains a summary of QA/QC measures implemented during the sampling and analysis activities conducted in support of the CAU 561 CAI. The following sections discuss the data validation process, QC samples, and nonconformances. A detailed evaluation of the DQIs is presented in [Appendix B](#).

Laboratory analyses were conducted for samples used in the decision-making process to provide a quantitative measurement of any COPCs present. Rigorous QA/QC was implemented for all laboratory samples, including documentation, verification and validation of analytical results, and affirmation of DQI requirements related to laboratory analysis. Detailed information regarding the QA program is contained in the Industrial Sites QAPP (NNSA/NV, 2002a).

A.14.1 Data Validation

Data validation was performed in accordance with the Industrial Sites QAPP and approved protocols and procedures. All laboratory data from samples collected and analyzed for CAU 561 were evaluated for data quality in a tiered process and are presented in [Sections A.14.1.1 through A.14.1.3](#). Data were reviewed to ensure that samples were appropriately processed and analyzed, and the results were evaluated using validation criteria. Documentation of the data qualifications resulting from these reviews is retained in project files as a hard copy and electronic media.

All of the data analyzed as part of this investigation were subjected to Tier II evaluations. A Tier III evaluation was performed on approximately 5 percent of the data analyzed.

A.14.1.1 Tier I Evaluation

Tier I evaluation for chemical and radiochemical analysis examines, but is not limited to, the following:

- Sample count/type consistent with chain of custody.
- Analysis count/type consistent with chain of custody.
- Correct sample matrix.
- Significant problems and/or nonconformances stated in cover letter or case narrative.
- Completeness of certificates of analysis.

- Completeness of Contract Laboratory Program (CLP) or CLP-like packages.
- Completeness of signatures, dates, and times on chain of custody.
- Condition-upon-receipt variance form included.
- Requested analyses performed on all samples.
- Date received/analyzed given for each sample.
- Correct concentration units indicated.
- Electronic data transfer supplied.
- Results reported for field and laboratory QC samples.
- Whether or not the deliverable met the overall objectives of the project.

A.14.1.2 Tier II Evaluation

Tier II evaluation for chemical analysis examines, but is not limited to, the following:

- Correct detection limits achieved.
- Sample date, preparation date, and analysis date for each sample.
- Holding time criteria met.
- Quality control batch association for each sample.
- Cooler temperature upon receipt.
- Sample pH for aqueous samples, as required.
- Detection limits properly adjusted for dilution, as required.
- Blank contamination evaluated and applied to sample results/qualifiers.
- Matrix spike (MS)/matrix spike duplicate (MSD) percent recoveries (%R) and relative percent differences (RPDs) evaluated and qualifiers applied to laboratory results, as necessary.
- Field duplicate RPDs evaluated using professional judgment and qualifiers applied to laboratory results, as necessary.
- Laboratory duplicate RPDs evaluated and qualifiers applied to laboratory results, as necessary.
- Surrogate %R evaluated and qualifiers applied to laboratory results, as necessary.
- Laboratory control sample %R evaluated and qualifiers applied to laboratory results, as necessary.

- Initial and continuing calibration evaluated and qualifiers applied to laboratory results, as necessary.
- Internal standard evaluation.
- Mass spectrometer tuning criteria.
- Organic compound quantitation.
- Inductively coupled plasma interference check sample evaluation.
- Graphite furnace atomic absorption QC.
- Inductively coupled plasma serial dilution effects.
- Recalculation of 10 percent of laboratory results from raw data.

Tier II evaluation for radiochemical analysis examines, but is not limited to, the following:

- Correct detection limits achieved.
- Blank contamination evaluated and, if significant, qualifiers are applied to sample results.
- Certificate of Analysis consistent with data package documentation.
- Quality control sample results (duplicates, LCSs, laboratory blanks) evaluated and used to determine laboratory result qualifiers.
- Sample results, uncertainty, and MDC evaluated.
- Detector system calibrated with National Institute of Standards and Technology (NIST)-traceable sources.
- Calibration sources preparation was documented, demonstrating proper preparation and appropriateness for sample matrix, emission energies, and concentrations.
- Detector system response to daily or weekly background and calibration checks for peak energy, peak centroid, peak full-width half-maximum, and peak efficiency, depending on the detection system.
- Tracers NIST-traceable, appropriate for the analysis performed, and recoveries that met QC requirements.

- Documentation of all QC sample preparation complete and properly performed.
- Spectra lines, photon emissions, particle energies, peak areas, and background peak areas support the identified radionuclide and its concentration.

A.14.1.3 Tier III Evaluation

The Tier III review is an independent examination of the Tier II evaluation. A Tier III review of 5 percent of the sample analytical data was performed by Analytical Quality Associates, of Albuquerque, New Mexico. Tier II and Tier III results were compared and where differences are noted, data were reviewed and changes were made accordingly. This review included the following additional evaluations:

- Review:
 - case narrative, chain of custody, and sample receipt forms,
 - lab qualifiers (applied appropriately),
 - method of analyses performed as dictated by the chain of custody,
 - raw data, including chromatograms, instrument printouts, preparation logs, and analytical logs,
 - manual integrations to determine whether the response is appropriate, and
 - data package for completeness.
- Determine sample results qualifiers through the evaluation of (but not limited to):
 - tracers and QC sample results (e.g., duplicates, LCSs, blanks, MSs) evaluated and used to determine sample results qualifiers,
 - sample preservation, sample preparation/extraction and run logs, sample storage, and holding time,
 - instrument and detector tuning,
 - initial and continuing calibrations,
 - calibration verification (initial, continuing, second source),

- retention times,
 - second column and/or second detector confirmation,
 - mass spectra interpretation,
 - interference check samples and serial dilutions,
 - post-digestion spikes and method of standard additions, and
 - breakdown evaluations.
- Perform calculation checks of:
 - at least one analyte per QC sample and its recovery,
 - at least one analyte per initial calibration curve, continuing calibration verification, and second source recovery, and
 - at least one analyte per sample that contains positive results (hits); radiochemical results only require calculation checks on activity concentrations (not error).
 - Verify that target compound detects identified in the raw data are reported on the results form.
 - Document any anomalies for the laboratory to clarify or rectify. The contractor should be notified of any anomalies.

A.14.2 Field QC Samples

Field QC samples consisted of 38 trip blanks, 8 equipment rinsate blanks, 10 field blanks, 1 source blank, 18 FLQCs, and 18 FDs collected and submitted for analysis by the laboratory analytical methods shown in [Table A.2-2](#). The QC samples were assigned individual sample numbers and sent to the laboratory “blind.” Additional samples were selected by the laboratory to be analyzed as laboratory duplicates.

Field blanks, source blanks, and equipment rinsates were analyzed for the applicable parameters listed in [Table A.2-2](#) and trip blanks were analyzed for VOCs only.

During the CAI, 18 FDs were sent as blind samples to the laboratory to be analyzed for the investigation parameters listed in [Table A.2-2](#). For these samples, the duplicate results precision

(i.e., RPDs between the environmental sample results and their corresponding FD sample results) were evaluated.

A.14.2.1 Laboratory QC Samples

Analysis of QC preparation blanks (PBs) was performed on each sample delivery group (SDG) for inorganics. Analysis for surrogate spikes and method blanks was performed on each SDG for organics. Initial and continuing calibration and LCSs were performed for each SDG. The results of these analyses were used to qualify associated environmental sample results. Documentation of data qualifications resulting from the application of these guidelines is retained in project files as both hard copy and electronic media.

The laboratory included a PB, LCS, and a laboratory duplicate sample with each batch of field samples analyzed for radionuclides.

A.14.3 Field Discrepancies

There were eight field discrepancies identified for the CAI. Four discrepancies involved paperwork issues (e.g., omitting the purchase order number and sample team members, omitting to note that samples were relinquished to secure storage). One discrepancy involved not indicating on the COC which sample was designated for a full-lab QC, although it was noted on the sample collection log and the laboratory was notified by e-mail. One discrepancy was noted between the COC and bottle labels; the lab was notified that the bottle labels were correct and the COC was corrected. The last two discrepancies involved sample shipments. One of two 16-ounce sample jars was received by the laboratory broken, but the soil was contained within shipping baggie and the unbroken jar was used for the analysis. None of these discrepancies affected the validity or completeness of sample results.

A.14.4 Laboratory Nonconformances

Laboratory nonconformances are generally due to inconsistencies in the analytical instrumentation operation, sample preparations, extractions, missed holding times, and fluctuations in internal standard and calibration results. These laboratory nonconformances have been accounted for and resolved during the data qualification process.

A.15.0 Summary

Organic, inorganic and radionuclide contaminants detected in environmental samples during the CAI were evaluated against FALs to determine the nature and extent of COCs for CAU 561. Assessment of the data generated from investigation activities are presented in the following subsections for each CAS.

CAS 01-19-01, Waste Dump

Based on the observations made, the geophysical and radiological surveys previously conducted, and the analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. Therefore, no further action is required at this CAS.

CAS 02-08-02, Waste Dump and Burn Area

Based on analytical results for soil samples collected at this CAS, PAHs benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(ah)anthracene are present at concentrations exceeding FALs in four of the waste piles. Polyaromatic hydrocarbon concentrations exceeding FALs are also present in surface and shallow surface soil in the burn area, but the PAHs are attributed to industrial asphalt paving that was present throughout the entire Area 2 camp and are not considered to originate from a release associated with activities at this CAS. Based on the presence of PAH contamination at the waste piles, and the melted lead observed at the burn area, a corrective action is required. The CAA of closure in place with an FFACO UR was implemented at this CAS.

CAS 03-19-02, Debris Pile

Based on the observations made, the radiological surveys previously conducted, and the analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. Therefore, the corrective action of no further action was selected for this CAS.

CAS 05-62-01, Radioactive Gravel Pile

Based on the observations made, the radiological surveys previously conducted, and the analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. Therefore, no further action is required at this CAS.

CAS 12-23-09, Radioactive Waste Dump

Based on the observations made, the geophysical and radiological surveys previously conducted, and the analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. Therefore, no further action is required at this CAS.

CAS 22-19-06, Buried Waste Disposal Site

Based on the observations made, the geophysical surveys previously conducted, and the analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. Therefore, no further action is required at this CAS.

CAS 23-21-04, Waste Disposal Trenches

Based on analytical results for soil samples collected at this CAS, arsenic, hexavalent chromium, and PCB contamination at concentrations exceeding FALs have been released to the surface and subsurface soil within Trench 3, while arsenic contamination at concentrations exceeding FALs was released to the soil within Trench 5. Based on the presence of COCs, a corrective action is required. The corrective action of clean closure was implemented at this site. All PCB, arsenic and hexavalent chromium contaminated soil was removed from Trenches 3 and 5 as evidenced from the verification samples. The soil and debris within the trenches was disposed of at the industrial waste landfill. Lead brick and lead counterweights present at this site were removed for recycling. Verification samples showed that no lead concentrations in remaining soil exceed FALs. As a BMP, all trenches were backfilled with clean soil, and debris from in and around the trenches was removed and disposed of. No further corrective actions are required for this site.

CAS 25-08-02, Waste Dump

Based on analytical results for soil samples collected at this CAS, arsenic contamination at concentrations exceeding FALs was not released to the surface soil beneath the concrete-like material, although the contamination did exist within the material. Based on the presence of a COC, a corrective action is required. The corrective action of clean closure was implemented at this CAS. The arsenic-contaminated concrete-like material was removed and disposed of at the industrial waste landfill. Lead-acid batteries present at this site were removed for recycling. Verification samples showed that no lead concentrations in remaining soil exceed FALs. As a BMP, the remaining piles of soil, asphalt, and construction debris were removed and disposed of, and the area was back dragged level with the ground surface. No further corrective actions are required for this site.

CAS 25-23-21, Radioactive Waste Dump

Based on analytical results for soil samples collected at this CAS, Cs-137 and PCB contamination at concentrations exceeding FALs has been released to the surface and shallow subsurface soil within the pile at the southern RMA at the main waste dump site. At the second parcel, no contamination was released from any of the piles. Based on the presence of COCs at the main waste dump, a corrective action is required. The corrective action of clean closure was implemented at this site. Contaminated pipes observed within the northern and southern RMAs were removed and disposed of as LLW. The RMAs were removed and also disposed of as LLW. As BMPs, the remaining piles at the main waste dump near the road were leveled to ground surface, and debris at the second parcel was picked up and disposed of as industrial waste. No further corrective actions are required for this site.

CAS 25-25-19, Hydrocarbon Stains and Trench

Based on analytical results of the environmental samples collected at this CAS, no contamination at concentrations exceeding FALs has been released to the soil at this CAS. However, lead bricks were present at this site and were removed under the corrective action of clean closure. Verification samples showed that no lead concentrations in remaining soil exceed FALs. Therefore, no further corrective action is required at this CAS. As a BMP, the hydrocarbon-burdened soil and some debris was removed and disposed of at the U10c industrial landfill.

A.16.0 References

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Appendix B

Data Assessment

B.1.0 Data Assessment

The DQA process is the scientific evaluation of the actual investigation results to determine whether the DQO criteria established in the CAU 561 CAIP (NNSA/NSO, 2008) were met and whether DQO decisions can be resolved at the desired level of confidence. The DQO process ensures that the right type, quality, and quantity of data will be available to support the resolution of those decisions at an appropriate level of confidence. Using both the DQO and DQA processes help to ensure that DQO decisions are sound and defensible.

The DQA involves five steps that begin with a review of the DQOs and end with an answer to the DQO decisions. The five steps are briefly summarized as follows:

Step 1: Review DQOs and Sampling Design – Review the DQO Process to provide context for analyzing the data. State the primary statistical hypotheses; confirm the limits on decision errors for committing false negative (Type I) or false positive (Type II) decision errors; and review any special features, potential problems, or deviations to the sampling design.

Step 2: Conduct a Preliminary Data Review – Perform a preliminary data review by reviewing QA reports and inspecting the data both numerically and graphically, validating and verifying the data to ensure that the measurement systems performed in accordance with the criteria specified, and using the validated dataset to determine whether the quality of the data is satisfactory.

Step 3: Select the Test – Select the test based on the population of interest, population parameter, and hypotheses. Identify the key underlying assumptions that could cause a change in one of the DQO decisions.

Step 4: Verify the Assumptions – Perform tests of assumptions. If data are missing or are censored, determine the impact on DQO decision error.

Step 5: Draw Conclusions from the Data – Perform the calculations required for the test.

B.1.1 Review DQOs and Sampling Design

This section contains a review of the DQO process presented in Appendix A of the CAIP (NNSA/NSO, 2008). The DQO decisions are presented with the DQO provisions to limit false negative or false positive decision errors. Special features, potential problems, or any deviations to the sampling design are also presented.

B.1.1.1 Decision I

The Decision I statement as presented in the CAIP (NNSA/NSO, 2008) is as follows: “Is any contaminant of potential concern (COPC) present in environmental media at a concentration exceeding its corresponding final action level (FAL)?”

Decision I Rules

- If the population parameter of any COPC in a target population exceeds the FAL for that COPC, then that COPC is identified as a COC.
- If a COC is detected, then the Decision II statement must be resolved.
- If COCs are not identified, then the investigation is complete.

B.1.1.1.1 DQO Provisions To Limit False Negative Decision Error

A false negative decision error (where consequences are more severe) was controlled by meeting the following criteria:

1. Having a high degree of confidence that locations selected will identify COCs if present anywhere within the CAS.
2. Having a high degree of confidence that analyses conducted will be sufficient to detect any COCs present in the samples.
3. Having a high degree of confidence that the dataset is of sufficient quality and completeness.

Criterion 1

The following methods (stipulated in the CAU 561 DQOs [NNSA/NSO, 2008]) were used in selecting sample locations.

1. Sample locations associated with radiation survey and FSRs were selected by analyzing samples for alpha and beta/gamma emitting radionuclides using a hand-held NE Technology Electra.
2. Selection of sample locations identified during geophysical surveys that indicated subsurface metallic debris was accomplished by trenching through the anomalies to visually identify the buried debris and potentially impacted soil.
3. Sample locations at CASs 02-08-02, 12-23-09, 25-08-02, and 25-23-21 were predetermined using the VSP software (PNNL, 2005).
4. Selection of sampling locations associated with surface and subsurface staining, odors, presence of debris, and other items was accomplished by visual field observations.
5. Selection of sampling locations associated with professional judgment based on acceptable knowledge was accomplished by the following:
 - Source and location of release
 - Chemical nature and fate properties
 - Physical transport pathways and properties
 - Transport/hydrologic drivers

Criterion 2

Samples were analyzed using the analytical methods listed in Tables 3-4 and 3-5 of the CAIP (NNSA/NSO, 2008) and for the chemical and radiological parameters listed in Section A.3.2.2 of the CAIP. [Table B.1-1](#) provides a reconciliation of analyses and planned analytical program.

Samples were submitted for all of the analytical methods specified in the analytical program specified in Section 3.4 of the CAIP.

Sample results were assessed against the acceptance criterion for the DQI of sensitivity as defined in the Industrial Sites QAPP (NNSA/NV, 2002). The sensitivity acceptance criterion defined in the CAIP is that analytical detection limits will be less than the corresponding action level (NNSA/NSO, 2008). This criterion was not achieved for the analytical results listed in [Table B.1-2](#).

**Table B.1-1
CAU 561 Analyses Performed**

CAS	Beryllium	Dioxins	TPH-DRO	Gamma	Hexavalent Chromium	Metals	PCBs	Isotopic Pu	Sr-90	SVOCs	Isotopic U	VOCs
01-19-01	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
02-08-02	RS	RS ^a	S	RS	RS	RS	RS	--	--	RS	--	RS
03-19-02	--	--	--	RS	--	--	--	--	--	--	--	--
05-62-01	--	--	--	RS	--	--	--	RS	RS	--	RS	--
12-23-09	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
22-19-06	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
23-21-04	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
25-08-02	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
25-23-21	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS
25-25-19	RS	--	S	RS	RS	RS	RS	--	--	RS	--	RS

^aBurn Area only

RS = Required and submitted
S = Submitted but not required
-- = Not required and not submitted

**Table B.1-2
Analytes Failing Sensitivity Criteria**

Constituent	CAS	MDC (mg/kg)	FAL (mg/kg)
Benzo(a)pyrene	25-08-02	0.27	0.21
Dibenzo(ah)anthracene		0.27	0.21
n-Nitroso di-n-propylamine		0.27	0.25
Benzo(a)pyrene		0.25	0.21
Dibenzo(ah)anthracene		0.25	0.21
n-Nitroso di-n-propylamine		0.25	0.25

Results not meeting the sensitivity acceptance criterion will not be used in making DQO decisions and will therefore be considered as rejected data. The impact on DQO decisions is addressed in the assessment of completeness.

Criterion 3

To satisfy the third criterion, the entire dataset, as well as individual sample results, were assessed against the acceptance criteria for the DQIs of precision, accuracy, comparability, completeness, and representativeness, as defined in the Industrial Sites QAPP (NNSA/NV, 2002). The DQI acceptance criteria are presented in Table 6-1 of the CAIP (NNSA/NSO, 2008). As presented in [Tables B.1-3](#) through [B.1-5](#), these criteria were met for each the DQIs.

Precision

Precision was evaluated as described in Section 6.2 of the CAIP (NNSA/NSO, 2008). [Table B.1-3](#) provides the chemical and radiological precision analysis results for all constituents that were qualified for precision. The chemical analytes qualified for precision were cadmium and lead. The only radionuclide qualified for precision was Cs-137.

**Table B.1-3
Precision Measurements**

Contaminant	Analysis	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
Cadmium	Metals	14	182	92.3076
Cs-137	Gamma	15	164	90.8536
Lead	Metals	49	182	73.0769

As shown in [Table B.1-3](#), the precision rate for cadmium and Cs-137 were above the CAIP acceptance criterion of 80 percent. The precision rate for lead of 73 percent can be attributed to the nature of the melted lead distributed throughout the soil as solid particles resulting in a non-homogenous distribution throughout the soil samples. For the samples qualified for precision, more than half were located at CAS 02-08-02 where melted lead was observed. As the precision rates for all other constituents meet the acceptance criteria for precision, the dataset is determined to be acceptable for the DQI of precision.

Accuracy

Accuracy was evaluated as described in Section 6.2 of the CAIP (NNSA/NSO, 2008). [Table B.1-4](#) provides the chemical accuracy analysis results for all constituents qualified for accuracy. Accuracy rates are above the CAIP criterion of 80 percent, except for hexavalent chromium, which has a rate of 58.7 percent. Because the stability of hexavalent chromium is governed by the redox potential of the matrix, spiked failures do not necessarily imply failed laboratory performance. The LCS recoveries were in control, demonstrating acceptable method performance. There were no radiological data qualified for accuracy. As the accuracy rate for all other constituents exceed the acceptance criteria for accuracy, the dataset is determined to be acceptable for the DQI of accuracy.

Table B.1-4
Accuracy Measurements
(Page 1 of 2)

Contaminant	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
2,3,4,6-Tetrachlorophenol	1	164	99.4
2,4,5-Trichlorophenol	1	164	99.4
2,4,6-Trichlorophenol	1	164	99.4
2,4-Dimethylphenol	1	164	99.4
2-Chlorophenol	1	164	99.4
2-Methylphenol	1	164	99.4
2-Nitrophenol	1	164	99.4
3-Methylphenol	1	164	99.4
4-Nitrophenol	1	164	99.4
Benzoic acid	1	164	99.4
Benzyl alcohol	1	164	99.4
Pentachlorophenol	1	164	99.4
Phenol	1	164	99.4
TPH-DRO	1	133	99.2
1,1-Dichloroethene	2	133	98.5
2-Butanone	2	133	98.5
Acetone	2	133	98.5
Benzene	2	133	98.5

Table B.1-4
Accuracy Measurements
(Page 2 of 2)

Contaminant	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
Toluene	3	133	97.7
Chlorobenzene	4	133	97
Trichloroethene	4	133	97
Cadmium	14	182	92.3
Lead	33	182	81.9
Hexavalent chromium	57	138	58.7

Representativeness

The DQO process as identified in [Appendix A](#) of the CAIP (NNSA/NSO, 2008) was used to address sampling and analytical requirements for CAU 561. During this process, appropriate locations were selected that enabled the samples collected to be representative of the population parameters identified in the DQO (the most likely locations to contain contamination and locations that bound COCs). The sampling locations identified in the Criterion 1 discussion meet this criterion. Therefore, the analytical data acquired during the CAU 561 CAI are considered representative of the population parameters.

Comparability

Field sampling, as described in the CAIP (NNSA/NSO, 2008), was performed and documented in accordance with approved procedures that are comparable to standard industry practices. Approved analytical methods and procedures per DOE were used to analyze, report, and validate the data. These are comparable to other methods used not only in industry and government practices, but most importantly are comparable to other investigations conducted for the NNSS. Therefore, project datasets are considered comparable to other datasets generated using these same standardized DOE procedures, thereby meeting DQO requirements.

Also, standard, approved field and analytical methods ensured that data were appropriate for comparison to the investigation action levels specified in the CAIP.

Completeness

The CAIP (NNSA/NSO, 2008) defines acceptable criteria for completeness to be that the dataset is sufficiently complete to be able to make the DQO decisions. This is initially evaluated as 80 percent of CAS-specific non-critical analytes identified in the CAIP having valid results and 100 percent of critical analytes (including Decision II samples) having valid results. Critical chemical analytes for CAU 561 are identified as lead at CASs 02-08-02, 23-21-04, and 25-08-02. Critical radiological analytes are identified as gamma-emitters and isotopic U at CASs 03-19-02, 05-62-01, and 25-23-21.

Rejected data (either qualified as rejected or data that failed the criterion of sensitivity) were not used in the resolution of DQO decisions and are not counted toward meeting the completeness acceptance criterion. [Table B.1-5](#) provides the rejected data for the site. The VOC 1,4-dioxane fell below the completeness criteria of 80 percent as indicated in Table 6-1 of the CAIP. This constituent has not been detected at the NNSS; as a result, there is no reason to suspect the presence of 1,4-dioxane at any of the CAU 561 CASs. Therefore, the absence of usable results for 1,4-dioxane does not preclude the resolution of the DQO decisions. The dataset for CAU 561 has met the general completeness criteria as sufficient information is available to make the DQO decisions. The DQI criteria of 100 percent for targeted contaminants were met.

Table B.1-5
Rejected Measurements
(Page 1 of 3)

Constituent	Analysis	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
2,3,4,6-Tetrachlorophenol	SVOCs	1	164	99.4
2,4,5-Trichlorophenol	SVOCs	1	164	99.4
2,4,6-Trichlorophenol	SVOCs	1	164	99.4
2,4-Dimethylphenol	SVOCs	1	164	99.4
2-Chlorophenol	SVOCs	1	164	99.4
2-Methylphenol	SVOCs	1	164	99.4
2-Nitrophenol	SVOCs	1	164	99.4
3-Methylphenol	SVOCs	1	164	99.4
4-Nitrophenol	SVOCs	1	164	99.4
Benzoic acid	SVOCs	1	164	99.4

Table B.1-5
Rejected Measurements
(Page 2 of 3)

Constituent	Analysis	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
Benzyl alcohol	SVOCs	1	164	99.4
Pentachlorophenol	SVOCs	1	164	99.4
Phenol	SVOCs	1	164	99.4
1,1,2,2-Tetrachloroethane	VOCs	1	133	99.2
1,2,4-Trichlorobenzene	VOCs	1	133	99.2
1,2,4-Trimethylbenzene	VOCs	1	133	99.2
1,2-Dibromo-3-chloropropane	VOCs	1	133	99.2
1,2-Dichlorobenzene	VOCs	1	133	99.2
1,3,5-Trimethylbenzene	VOCs	1	133	99.2
1,3-Dichlorobenzene	VOCs	1	133	99.2
1,4-Dichlorobenzene	VOCs	1	133	99.2
2-Chlorotoluene	VOCs	1	133	99.2
n-Butylbenzene	VOCs	1	133	99.2
n-Propylbenzene	VOCs	1	133	99.2
p-Isopropyltoluene	VOCs	1	133	99.2
sec-Butylbenzene	VOCs	1	133	99.2
tert-Butylbenzene	VOCs	1	133	99.2
Benzo(a)pyrene	SVOCs	3	164	98.2
Benzo(b)fluoranthene	SVOCs	3	164	98.2
Benzo(ghi)perylene	SVOCs	3	164	98.2
Benzo(k)fluoranthene	SVOCs	3	164	98.2
Bis(2-ethylhexyl)phthalate	SVOCs	3	164	98.2
Dibenzo(ah)anthracene	SVOCs	3	164	98.2
Indeno(1,2,3-cd)pyrene	SVOCs	3	164	98.2
Benzo(a)anthracene	SVOCs	4	164	97.6
Butyl benzyl phthalate	SVOCs	4	164	97.6
Chrysene	SVOCs	4	164	97.6

Table B.1-5
Rejected Measurements
(Page 3 of 3)

Constituent	Analysis	Number of Measurements Qualified	Number of Measurements Performed	Percent within Criteria
Di-n-octyl phthalate	SVOCs	4	164	97.6
Pyrene	SVOCs	4	164	97.6
1,4-Dioxane	VOCs	74	133	44.4

B.1.1.1.2 DQO Provisions To Limit False Positive Decision Error

The false positive decision error was controlled by assessing the potential for false positive analytical results. Quality assurance/QC samples such as field blanks, trip blanks, LCSs, and method blanks were used to determine whether a false positive analytical result may have occurred. This provision is evaluated during the validation process, and appropriate qualifications are applied to the data results when applicable. Proper decontamination of sampling equipment and the use of certified clean sampling equipment and containers also minimized the potential for cross contamination that could lead to a false positive analytical result.

B.1.1.2 Decision II

Decision II as presented in the CAIP (NNSA/NSO, 2008) is as follows: “If a COC is present, is sufficient information available to evaluate appropriate CAAs?” Sufficient information is defined to include the following:

- Identifying the volume of media containing any COC bounded by analytical sample results in lateral and vertical directions.
- The information needed to determine potential remedial waste types.

Decision Rules

- If the observed concentration of any COC in a Decision II sample exceeds the FAL, then additional samples will be collected to complete the determination of the extent.
- If observed COC concentrations in a sample from all bounding directions are less than the FAL/PALs, then the decision will be that the extent of contamination has been defined in the lateral and/or vertical direction.
- If wastes are to be generated as part of a corrective action, samples will be collected to sufficiently characterize the potential wastes.

Population Parameters – The population parameters for Decision II data will be the observed concentration of each unbounded COC in any sample or the observed concentration of each sample used to characterize the potential waste streams.

B.1.1.2.1 DQO Provisions To Limit False Negative Decision Error

A false negative decision error (where consequences are more severe) is controlled by meeting the following criteria:

1. Having a high degree of confidence that the sample locations selected will identify the extent of the COCs.
2. Having a high degree of confidence that analyses conducted will be sufficient to detect any COCs present in the samples.
3. Having a high degree of confidence that the dataset is of sufficient quality and completeness.
4. Having a high degree of confidence that the potential waste streams are characterized.

Criterion 1

In general, soil sample results demonstrated that the vertical and lateral extent of COCs were defined. Areas within four CASs (02-08-02, 23-21-04, 25-08-02, and 25-23-21) were identified as requiring further delineation of COCs based on Decision I sample results. The sample locations with results above FALs are shown in [Figures A.4-1, A.9-1, A.10-1, and A.11-2](#) for those CASs requiring Decision II sample collection.

At CAS 02-08-02, Decision II samples were collected from the outside perimeter of the waste piles to define the lateral extent of the PAH contamination. Sample results indicated that the lateral extent of COC contamination was defined by these step-out sample locations. Within the burn area at CAS 02-08-02, Decision II step-out samples were collected from numerous locations within the burn area. Sample results showed that PAH contamination was widespread throughout the Area 2 due to the presence of asphalt. Aerial photos of the Area 2 camp from September 1971 (H&N, 1971) show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities.

Within the burn area at CAS 02-08-02, Decision II samples were collected from locations B02 and B03 to define the lateral extent of lead and arsenic contamination. Samples results indicated that the arsenic had not migrated vertically or laterally from that location. Sample results indicated that lead had not migrated laterally, but the vertical extent sample showed a lead concentration the exceeded the FAL. The extent samples indicated that arsenic and lead had not migrated from the burn area and the lateral extent of metals contamination was defined by these samples.

Verification samples were collected from CAS 23-21-04 following the removal corrective actions. The verification samples demonstrated that the COCs have been removed from this site, and that the vertical and lateral extent of contamination was defined for the COCs at both trenches based on these step-out sample locations.

For the COC (arsenic) identified within the concrete-like material pile at CAS 25-08-02, Decision II sampling consisted of collecting three samples laterally from the pile. One sample was collected within the pile to define the vertical extent of contamination in the pile. The sample results from the lateral samples defined the lateral extent of COC contamination. The concrete-like pile was removed and disposed of, and five verification samples were collected from under the concrete-like material. Soil sample results demonstrated the vertical extent of contamination was defined.

For the COCs identified within the southern RMA soil pile at the main waste dump at CAS 25-23-21 (Cs-137 and PCBs), Decision II sampling consisted of collecting five lateral samples and two vertical samples. Six verification samples were collected from the southern RMA, while four verification

samples were collected from the northern RMA following the removal corrective actions. Soil sample results demonstrated the vertical and lateral extent of COC contamination was defined.

Criterion 2

Samples were analyzed for the COCs present at the corresponding CASs:

- CAS 02-08-02 – PAHs [benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(ah)anthracene] within the waste dump; lead, arsenic, and PAHs [benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, and ideno(1,2,3-cd)pyrene]
- CAS 23-21-04 – Arsenic and PCBs
- CAS 25-08-02 – Arsenic
- CAS 25-23-21 – Cs-137 and PCBs

The second criterion for extent (sensitivity) was accomplished for all analyses, except for the PAHs benzo(a)pyrene, dibenzo(ah)anthracene, and n-nitro di-n-propylamine from CAS 25-08-02, as demonstrated in [Tables B.1-2](#) and [B.1-3](#).

Criterion 3

To satisfy the third criterion for extent, the entire dataset, as well as individual sample results, were assessed against the DQIs of precision, accuracy, comparability, completeness, and representativeness, as defined in the Industrial Sites QAPP (NNSA/NV, 2002). The DQI discussion is presented under Criterion 3 for Decision I.

B.1.1.2.2 DQO Provisions To Limit False Positive Decision Error

The false positive decision error was controlled by assessing the potential for false positive analytical results. Quality assurance/QC samples such as field blanks, trip blanks, LCSs, and method blanks were used to determine whether a false positive analytical result may have occurred. Of 94 QA/QC samples submitted, no false positive analytical results were detected.

Proper decontamination of sampling equipment and the use of certified clean sampling equipment and containers also minimized the potential for cross contamination that could lead to a false positive analytical result.

B.1.1.3 Sampling Design

The CAIP (NNSA/NSO, 2008) made the following commitments for sampling:

1. Random sampling will be conducted at the waste dump area at CAS 02-08-02; within the north and south fenced areas at CAS 12-23-09, at CAS 25-08-02; and at the main waste dump and the second parcel at CAS 25-23-21.

Result: At the random sample locations designated by the VSP software (PNNL, 2005), soil samples were collected and analyzed for the appropriate COPCs. Where designated sample locations did not fall on a waste pile, the nearest pile was selected.

2. Judgmental sample locations will have soil samples collected beneath and/or adjacent to stained soil, melted metal, in trenches that display a waste profile, and at other biasing factors.

Result: All sample locations were selected as the most likely to contain contaminants. Radiological and visual surveys were conducted of the trenches, excavations, and waste piles and soil samples were collected adjacent to and from beneath any debris, metal, or stained

B.1.2 Conduct a Preliminary Data Review

A preliminary data review was conducted by reviewing QA reports and inspecting the data. The contract analytical laboratories generate a QA nonconformance report when data quality does not meet contractual requirements. All data received from the analytical laboratories met contractual requirements, and a QA nonconformance report was not generated. Data were validated and verified to ensure that the measurement systems performed in accordance with the criteria specified. The validated dataset quality was found to be satisfactory.

B.1.3 Select the Test and Identify Key Assumptions

The test for resolving DQO Decisions for probabilistic sampling was the comparison of the 95 percent UCL of the average analyte result from each CAS to the corresponding FAL. The test for making DQO Decisions for judgmental sampling was the comparison of all COC analyte results from each bounding sample to the corresponding FALs.

The key assumptions that could impact a DQO decision are listed in [Table B.1-6](#).

**Table B.1-6
Key Assumptions**

Exposure Scenario	Site workers are only exposed to COCs through oral ingestion, inhalation, external exposure to radiation, or dermal contact (by absorption) of COCs absorbed onto the soils. Exposure to contamination is limited to industrial site workers, construction/remediation workers, and military personnel conducting training.
Affected Media	Surface soil, shallow subsurface soil, and potentially perched (shallow) groundwater. Debris, such as concrete, steel, and wood
Location of Contamination/Release Points	Surface and subsurface soil at or near location(s) of stored waste/materials.
Transport Mechanisms	Percolation of precipitation through subsurface media serves as the major driving force for migration of contaminants. Surface water runoff may provide for the transportation of some contaminants within or outside the CAS footprints.
Preferential Pathways	Vertical transport expected to dominate over lateral transport due to small surface gradients, except in washes.
Lateral and Vertical Extent of Contamination	Contamination, if present, is expected to be contiguous to the release points. Concentrations are expected to decrease with distance and depth from the source. Groundwater contamination is not expected. Lateral and vertical extent of COC contamination is assumed to be within the spatial boundaries.
Groundwater Impacts	None. Deep groundwater contamination is not a concern. Contaminants migrating to regional aquifers are not considered.
Future Land Use	Nonresidential.
Other DQO Assumptions	Contamination may be present in the soils adjacent to a feature due to run-off or intended use (e.g., decontamination pad).

B.1.4 Verify the Assumptions

The results of the investigation support the key assumptions identified in the CAU 561 DQOs (NNSA/NSO, 2008) and [Table B.1-6](#) except as listed below:

- **Exception:** The lateral and vertical extent of the PAH contamination within the burn area did not decrease with distance from the source for CAS 02-08-02. The PAHs (SVOCs) that were detected at various locations throughout the burn area are considered to be associated with the asphalt that was identified at depths between 0 and 8 in bgs. The evaluation of the SVOC result has shown that the concentration of the SVOCs do not decrease with increasing distance from the potential sources (burn areas) as would be expected if the burn areas were the source of the PAHs. Aerial photos of the Area 2 camp from September 1971 (H&N, 1971) show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities.
- **Impact:** No impact to the CSM.

- Exception: An assumption was made during the DQO process that a buried waste dump may exist at CAS 01-19-01. During the CAI excavation activities, a building foundation, including a stairwell and chimney with burned wood, was discovered instead of a waste dump. Adequate samples were collected from the areas near the basement walls and the chimney to verify that there was no subsurface contamination from the building materials.
- Impact: The CSM was revised to account for any potential contamination associated with the building materials used in the basement.

All data collected during the CAI supported CSMs with the exceptions noted in this section. These exceptions did not invalidate the CSMs presented in the CAIP (NNSA/NSO, 2008), although the CSM for CAS 01-19-01 necessitated a revision.

B.1.4.1 Other DQO Commitments

The CAIP (NNSA/NSO, 2008) made the following commitments for sampling:

1. Resolution of the Decision I associated with the probability sampling design requires determining, with a specific degree of confidence, whether the true average contaminant concentrations at the site in question exceed their corresponding FALs. The conservative estimate of the true contaminant concentration averages will be calculated as the 95 percent UCLs of the respective sample contaminant concentration averages. By definition, there will be a 95 percent probability that the true average concentration is less than the 95 percent UCL of the sample average. The calculation and comparison of UCLs to FALs will be conducted for all significant COPCs. A significant COPC is defined as any contaminant detected in any sample from the CAS at a concentration exceeding its corresponding PAL.

Result: Probabilistic sampling occurred at CASs 02-08-02 (at the waste dump only), 12-23-09, 25-08-02, and 25-23-21. Calculation of the 95 percent UCL was not necessary at these CASs for the following reasons:

- CAS 02-08-02: The only significant COPCs were the PAHs at the waste dump. The 95 percent UCL was not calculated for CAS 02-08-02 for PAHs because an FFACO UR will be implemented at this site.
- CAS 12-23-09: There were no COPCs exceeding PALs; therefore, the calculation of the 95 percent UCL was not necessary.
- CAS 25-08-02: Although the sample results indicated that arsenic exceeded the PAL, the arsenic-contaminated material was removed through corrective actions. Therefore, the calculation of the 95 UCL was not necessary.

- CAS 25-23-21: The sample results indicated that there were no COPCs exceeding PALs from the probabilistic sample locations which were determined by the VSP software (PNNL, 2005). Therefore, the calculation of the 95 percent UCL was not necessary.
- 2. Decision II sampling will consist of defining the extent of contamination where COCs have been confirmed at the Decision I locations. If COCs extend beyond Decision I locations, then additional Decision II samples will be collected from step-out locations. A clean sample (i.e., COCs are less than PALs) collected from the Decision I and II sample locations will define the vertical and lateral extent of contamination at the respective locations. A minimum of one analytical result less than the PAL from the vertical direction will be required to define the depth of COC contamination, and the lateral extent of contamination will be defined by sample analysis.

Result: The vertical and lateral extent of contamination was defined at all CASs, except at CAS 02-08-02 where a vertical sample analyzed for lead indicated that the concentration exceeded the FAL. An FFACO UR will be implemented at this site.

B.1.5 Draw Conclusions from the Data

This section resolves the two DQO decisions for each of the CAU 561 CASs.

B.1.5.1 Decision Rules for Decision I

Decision Rule: If the concentration of any COPC in a target population exceeds the FAL for that COPC during the initial investigation, then that COPC is identified as a COC and Decision II sampling will be conducted.

Result: The following COCs were identified in the following CASs and require corrective action and Decision II sampling to define the extent:

- CAS 02-08-02 – PAHs [benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(ah)anthracene] within the waste dump; lead, arsenic, and PAHs [benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, and ideno(1,2,3-cd)pyrene] within the burn area; lead as PSM within the burn area
- CAS 23-21-04 – Arsenic, hexavalent chromium, and PCBs, lead bricks and counterweights as PSM
- CAS 25-08-02 – Arsenic, lead-acid batteries at PSM

- CAS 25-23-21 – Cs-137 and PCBs
- CAS 25-25-19 – Lead as PSM

Decision Rule: If all COPC concentrations are less than the corresponding FALs, then the decision will be no further action.

Result: No COCs were identified in samples collected from CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06. No further action was identified as the corrective action for these CASs.

B.1.5.2 Decision Rules for Decision II

Decision Rule: If the observed concentration of any COC in a Decision II sample exceeds the FALs, then additional samples will be collected to complete the determination of the extent.

Result: Samples to define extent were collected from CASs 02-08-02, 23-21-04, 25-08-02, 25-23-21, and 25-25-19.

Decision Rule: If all observed COC population parameters are less than the FALs, then the decision will be that the extent of contamination has been defined in the lateral and/or vertical direction.

Result: The vertical and lateral extent of contamination at CASs 02-08-02 (waste dump), 23-21-04, 25-08-02, 25-23-21, and 25-25-19 were defined.

B.2.0 References

Author Unknown. 1986. Aerial photograph 017 showing Area 2 Annex, 6 October. Mercury, NV.

H&N, see Holmes & Narver, Inc.

Holmes & Narver, Inc. 1971. Aerial photograph Roll #73, Frame #012 showing Area 2 Camp, 3 September. Mercury, NV.

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

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

PNNL, see Pacific Northwest National Laboratory.

Pacific Northwest National Laboratory. 2005. *Visual Sampling Plan Version 4.0 User's Guide*, PNNL-14002. Richland, WA.

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

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2008. *Corrective Action Investigation Plan for Corrective Action Unit 561: Waste Disposal Areas, Nevada National Security Site, Nevada*, Rev. 0, DOE/NV--1278. Las Vegas, NV.

Appendix C

Risk Assessment

C.1.0 Risk Assessment

The RBCA process used to establish FALs is described in the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006). This process conforms with NAC Section 445A.227, which lists the requirements for sites with soil contamination (NAC, 2008a). For the evaluation of corrective actions, NAC Section 445A.22705 (NAC, 2008b) requires the use of ASTM Method E1739 (ASTM, 1995) to “conduct an evaluation of the site, based on the risk it poses to public health and the environment, to determine the necessary remediation standards (i.e., FALs) or to establish that corrective action is not necessary.”

The evaluation of the need for corrective action will include the potential for wastes that are present at a site to cause the future contamination of site environmental media if the wastes were to be released.

This section contains documentation of the RBCA process used to establish FALs described in the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006). This process defines three tiers (or levels) to establish FALs used to evaluate DQO decisions:

- Tier 1 – sample results from source areas (highest concentrations) compared to risk-based screening levels (RBSLs) (i.e., PALs) based on generic (non-site-specific) conditions.
- Tier 2 – sample results from exposure points compared to SSTLs calculated using site-specific inputs and Tier 1 formulas.
- Tier 3 – sample results from exposure points compared to SSTLs and points of compliance calculated using chemical fate/transport and probabilistic modeling.

The RBCA decision process stipulated in the *Industrial Sites Project Establishment of Final Action Levels* (NNSA/NSO, 2006) is summarized in [Figure C.1-1](#).

C.1.1 A. Scenario

Corrective Action Unit 561, Waste Disposal Areas, comprises the following 10 CASs within Areas 1, 2, 3, 5, 12, 22, 23, and 25 of the NNSS:

- 01-19-01, Waste Dump
- 02-08-02, Waste Dump and Burn Area

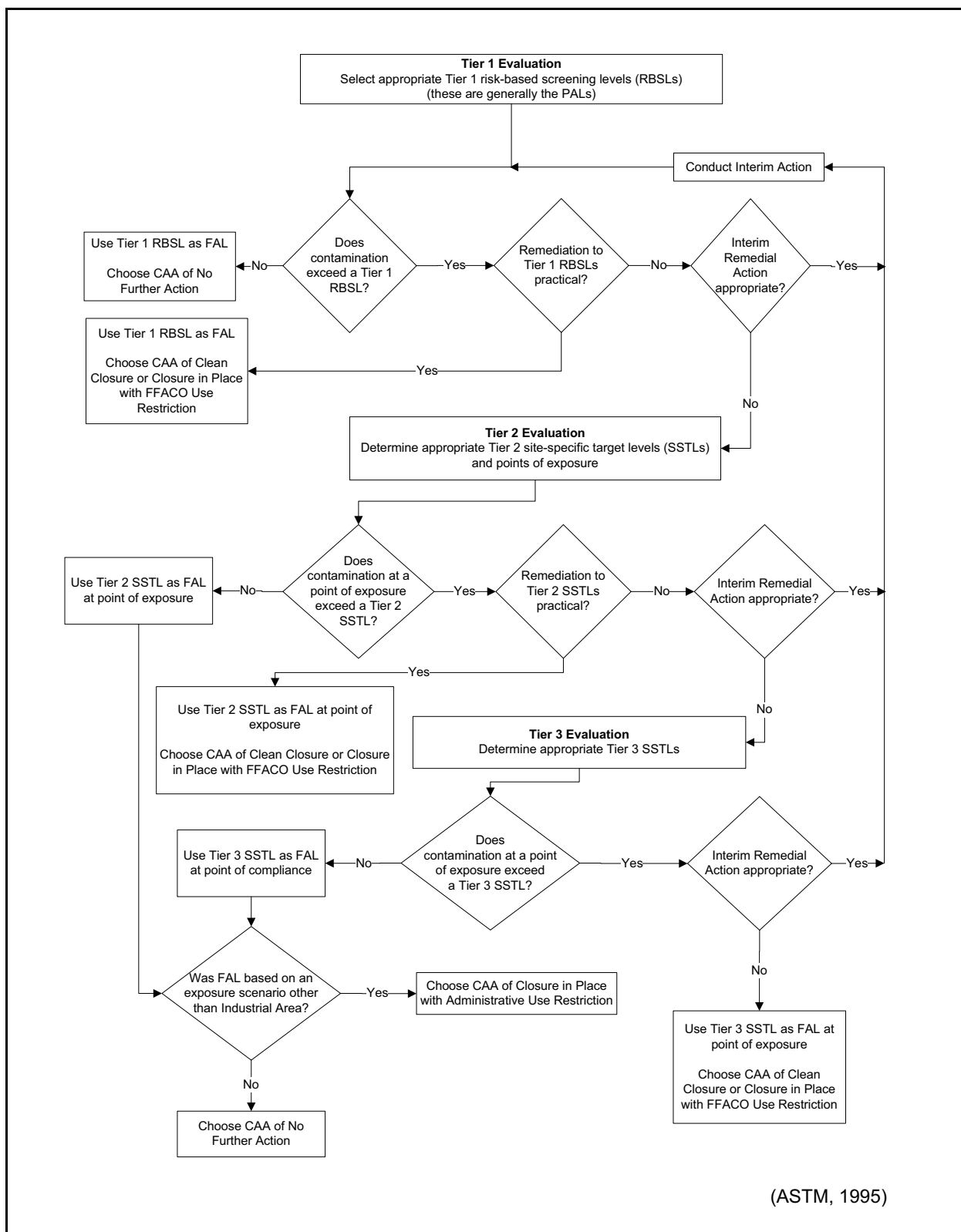


Figure C.1-1
Risk-Based Corrective Action Decision Process

- 03-19-02, Debris Pile
- 05-62-01, Radioactive Gravel Pile
- 12-23-09, Radioactive Waste Dump
- 22-19-06, Buried Waste Disposal Site
- 23-21-04, Waste Disposal Trenches
- 25-08-02, Waste Dump
- 25-23-21, Radioactive Waste Dump
- 25-25-19, Hydrocarbon Stains and Trench

Corrective Action Site 01-19-01 is located in Area 1 of the NNSS and consists of a fenced area approximately 20 ft east of Building 1-31-2.e1. The CAS was originally identified as a subsurface waste dump, but no waste dump was found during the CAI. During excavation activities, a building basement from Building 31.1-b1, constructed for the Apple-2 test, was uncovered. There was visible debris on the ground surface consisting of concrete chunks, rebar, wood, and red bricks.

Corrective Action Site 02-08-02 is located in the dry wash southeast of the Area 2 Camp of the NNSS, and consists of a waste dump and burn area. The waste dump contains piles of dirt and boulders with scattered debris, including metal cables, wires, wooden planks, tires, sheet metal, and a crushed 30-gal drum that contained a very small amount of grease. A review of historical air photographs show that the material was placed at this location between 1983 and 1985 (NNSA/NSO, 2008). The burn area, located northwest of the waste dump, contains scattered nails, metal, wood, bits of charcoal, and melted lead.

Corrective Action Site 03-19-02 is located in Area 3 of the NNSS. It consists of a pile of concrete debris believed to be associated with the Pommard test, which was conducted on March 14, 1968. A large piece of concrete has Trinity glass adhered to its surface. The CAS is surrounded by “Caution Radioactive Material” postings but is not fenced.

Corrective Action Site 05-62-01 consists of a radioactive gravel pile located approximately 1,000 ft west of the Gravel Gertie in Area 5 of the NNSS. The pile contains concrete and metal debris, which is believed to be from the Gravel Gertie testing activities. The CAS is surrounded by a fence with “Caution Radioactive Material” postings.

Corrective Action Site 12-23-09 is located approximately 150 ft northwest of Stockade Wash Road, just north of the E-Tunnel Road in Area 12 of the NNSS. The CAS consists of two separate fenced

areas (north and south) and was labeled as a radioactive waste dump on a topographic map; however, interviews with past employees suggest that the site was used as an electricians' laydown yard.

Corrective Action Site 22-19-06 is located at the southeast end of Camp Desert Rock in Area 22 of the NNSS and consists of buried debris identified by a geophysical survey. Excavation activities uncovered a manhole cover and a concrete-filled piece of corrugated pipe. Camp Desert Rock has been identified as eligible for inclusion in the National Register of Historic Places (Jones, 2010).

Corrective Action Site 23-21-04 consists of six potential waste disposal trenches and one potential covered trench located approximately 1,500 ft northeast of Building 23-160 in Area 23 of the NNSS. Three of the trenches contained debris (wood, metal, cables/wire, lead bricks, nails, and bolts). There was also stained soil near two of the trenches.

Corrective Action Site 25-08-02 is located north of G Road between the RCP and R-MAD complex in Area 25 of the NNSS, and consists of a large waste dump. The waste dump consists of piles of construction debris, such as concrete, metal, rebar, wood, lead-acid batteries, 5-gal buckets, an empty cable spool, rusted cans, and pipes.

Corrective Action Site 25-23-21 consists of a radioactive waste dump located within Topopah Wash, northeast of the E-MAD Facility in Area 25 of the NNSS. A second parcel is upstream from the waste dump parcel within Topopah Wash and extends further upstream north of H Road. The waste dump contains numerous dirt mounds and piles within a posted "Controlled Area," along with miscellaneous piles extending up through Topopah Wash to H Road. Within the waste dump, there are two specific piles that are posted with "Caution Radioactive Material" signs. The second parcel contains waste piles typical of construction debris, along with concrete, asphalt, and magnetite piles.

Corrective Action Site 25-25-19 encompasses approximately 8 acres and is located southeast of the intersection of C Road and G Road in Area 25. The CAS consists of surface soil stains, a tar spill, an asphalt spill, a trench, concrete pads, debris, rock, and soil piles.

C.1.2 B. Site Assessment

The CAI at CAS 01-19-01, Waste Dump, involved visual inspections for biasing factors through excavation and soil sampling within the excavations. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs.

The CAI at CAS 02-08-02, Waste Dump and Burn Area, involved visual inspections for biasing factors on waste piles and on surface soil. The CAI also involved judgmental surface soil sampling and probabilistic sampling within the waste piles. Lead and arsenic were identified as COCs at the burn area. Polyaromatic hydrocarbons were identified as COCs at the waste dump and are limited to the waste piles. Lead bricks were removed from the CAS and samples were collected below the bricks. Samples from under the bricks indicate that there is no migration of lead into the soil.

The CAI at CAS 03-19-02, Debris Pile, involved visual inspections for biasing factors, radiological surveys, biased surface soil sampling and sampling of a concrete slab. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs.

The CAI at CAS 05-62-01, Radioactive Gravel Pile, involved visual inspections for biasing factors on the gravel pile and on the surface soil around the pile, and a radiological survey of the gravel pile. The CAI also involved biased surface soil sampling around the perimeter of the gravel pile and within the gravel pile. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs.

The CAI at CAS 12-23-09, Radioactive Waste Dump, involved visual inspections for biasing factors on a soil mound and on the surface soil. The CAI also involved probabilistic surface soil sampling, and biased sampling within the soil mound. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs.

The CAI at CAS 22-19-06, Buried Waste Disposal Site, involved visual inspections for biasing factors through excavation and biased soil sampling within the excavations. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs.

The CAI at CAS 23-21-04, Waste Disposal Trenches, involved visual inspections for biasing factors on surface soil and within the trenches, and biased soil sampling. Arsenic, hexavalent chromium, and

PCBs were identified as COCs within Trench 3, and arsenic was identified as a COC within Trench 5. No COCs were identified in the remaining four trenches or within the potential covered trench. The COCs are limited to the individual trenches and sampling has confirmed there is no migration of the contaminants from the trenches.

The CAI at CAS 25-08-02, Waste Dump, involved visual inspections for biasing factors on waste piles and on surface soil, and biased surface soil sampling and probabilistic sampling within the waste piles. Arsenic was identified as a COC in one pile of concrete-like material. The COC is limited to the concrete-like pile. Lead-acid batteries were removed from the CAS, and samples were collected below the batteries. Samples from beneath the batteries indicate that there is no migration of lead into the soil.

The CAI at CAS 25-23-21, Radioactive Waste Dump, involved visual inspections for biasing factors on waste piles and on the surface soil, and biased surface soil sampling and probabilistic sampling within the waste piles. Cesium-137 and PCBs were identified as COCs within one RMA waste pile and are limited to the pile.

The CAI at CAS 25-25-19, Hydrocarbon Stains and Trench, involved visual inspections for biasing factors on gravel and soil piles, on the surface soil, and in excavations. The CAI also involved biased surface soil sampling, shallow subsurface soil sampling within the excavations, and sampling within the gravel/soil piles. The CAI results indicate that no COC concentrations in soil samples were detected above the PALs. Two lead bricks were removed from the CAS and samples were collected below the bricks. Samples from under the bricks indicate that there is no migration of lead into the soil.

The maximum concentration of contaminant identified at each CAS, and their corresponding PALs are presented in [Table C.1-1](#).

Table C.1-1
Maximum Reported Value for Tier 1 Comparison
(Page 1 of 4)

Parameter	PALs	Unit	Maximum Reported Value									
			01-19-01	02-08-02	03-19-02	05-62-01	12-23-09	22-19-06	23-21-04	25-08-02	25-23-21	25-25-19
2-Butanone	200,000	mg/kg	--	--	--	--	--	--	--	0.019 (J)	--	0.011 (J)
2-Methylnaphthalene	4,100	mg/kg	--	0.16 (J)	--	--	--	--	--	--	--	--
Ac-228	506.7 ^a	pCi/g	1.77	2.32	1.94	1.16	2.47	0.69	1.96	2.06	2.64	2.07
Acenaphthene	33,000	mg/kg	--	0.46 (J)	--	--	--	--	--	--	--	--
Acetone	630,000	mg/kg	--	--	--	--	0.046 (J)	--	0.062 (J)	0.072 (J)	--	0.036 (J)
Am-241	1,503	pCi/g	--	1.49 (J)	2.89 (J)	--	1.23 (J)	--	0.53 (J)	--	--	--
Anthracene	170,000	mg/kg	--	2.2	--	--	--	--	--	--	--	--
Aroclor 1248	0.74	mg/kg	--	--	--	--	--	--	4.3 (J)	--	--	--
Aroclor 1254	0.74	mg/kg	--	0.084	--	--	--	--	--	--	0.12	--
Aroclor 1260	0.74	mg/kg	--	0.076	--	--	--	--	0.027 (J)	0.12	2.9 (J)	0.5 (J)
Aroclor 1268	0.74	mg/kg	--	--	--	--	0.028 (J)	--	--	--	--	--
Arsenic	23	mg/kg	4.7	65	--	--	3.7	6.2	2,000	510	16	3.2
Barium	190,000	mg/kg	260	560	--	--	150	89	610	380 (J)	300	200
Benzo(a)anthracene	2.1	mg/kg	--	2.8	--	--	0.086 (J)	--	--	--	0.2 (J)	--
Benzo(a)pyrene	0.21	mg/kg	--	2.4	--	--	0.073 (J)	--	--	--	0.17 (J)	--
Benzo(b)fluoranthene	2.1	mg/kg	--	3.7	--	--	0.16 (J)	--	--	--	0.44	--
Benzo(ghi)perylene	17,000	mg/kg	--	3.4	--	--	--	--	--	--	0.19 (J)	--
Benzo(k)fluoranthene	21	mg/kg	--	1.4 (J)	--	--	0.073 (J)	--	--	--	0.15 (J)	--

Table C.1-1
Maximum Reported Value for Tier 1 Comparison
(Page 2 of 4)

Parameter	PALs	Unit	Maximum Reported Value									
			01-19-01	02-08-02	03-19-02	05-62-01	12-23-09	22-19-06	23-21-04	25-08-02	25-23-21	25-25-19
Benzoic acid	2,500,000	mg/kg	--	--	--	--	--	--	1.7	--	--	--
Beryllium	2,000	mg/kg	0.69	0.71	--	--	0.87	--	1 (J-)	0.55	1.1	0.46 (J-)
Bis(2-ethylhexyl)phthalate	120	mg/kg	--	0.26 (J)	--	--	--	--	3.1 (J)	0.4 (J)	0.33 (J)	0.068 (J)
Cadmium	800	mg/kg	0.22	0.91	--	--	0.28	0.27	5.3 (J)	3.3	1.5	0.71
Carbazole	95.8	mg/kg	--	0.52	--	--	--	--	--	--	--	--
Chromium	N/A ^b	mg/kg	6.1	58	--	--	6.3	5.1 (J)	35	10	44	6.3
Hexavalent chromium	5.6	mg/kg	--	1.6 (J)	--	--	0.37 (J-)	--	18 (J)	0.28 (J-)	0.52 (J-)	--
Chrysene	210	mg/kg	--	2.8	--	--	0.13 (J)	--	--	--	0.3 (J)	--
Co-60	18.33	pCi/g	--	--	--	--	--	--	--	--	1.77	--
Cs-137	72.9	pCi/g	--	2.57	2.49	0.196	8.5	--	0.62	0.259	392	--
Di-n-butyl phthalate	62,000	mg/kg	--	3.4	--	--	--	--	0.072 (J)	--	0.17 (J)	--
Dibenzo(ah)anthracene	0.21	mg/kg	--	1	--	--	--	--	--	--	--	--
Dibenzofuran	1,000	mg/kg	--	0.23 (J)	--	--	--	--	--	--	--	--
Diethyl phthalate	490,000	mg/kg	--	0.22 (J)	--	--	--	--	--	--	--	--
Eu-152	38.2	pCi/g	--	--	0.97 (J)	--	--	--	--	--	--	--
Fluoranthene	22,000	mg/kg	--	8.2	--	--	0.15 (J)	--	--	--	0.88	--
Fluorene	22,000	mg/kg	--	0.55	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	2.1	mg/kg	--	3.3 (J)	--	--	--	--	--	--	0.18 (J)	--

Table C.1-1
Maximum Reported Value for Tier 1 Comparison
(Page 3 of 4)

Parameter	PALs	Unit	Maximum Reported Value									
			01-19-01	02-08-02	03-19-02	05-62-01	12-23-09	22-19-06	23-21-04	25-08-02	25-23-21	25-25-19
Lead	800	mg/kg	19	14,000 (J+)	--	--	23	17 (J)	190 (J)	320	32	420 (J)
Mercury	34	mg/kg	--	0.028	--	--	0.052	--	1.9	20	0.1	0.066
Methylene chloride	53	mg/kg	--	0.015	--	--	--	--	0.0049 (J)	--	0.013	--
Nb-94	96.53	pCi/g	--	--	--	--	--	--	--	--	3.26	--
PCBs (low risk)	21	mg/kg	--	--	--	--	--	--	--	--	0.084	--
Phenanthrene	170,000	mg/kg	--	7.2	--	--	--	--	--	0.51 (J)	0.85	--
p-isopropyltoluene	11,000	mg/kg	--	--	--	--	0.01	--	--	--	--	--
Pu-239/240	2,207	pCi/g	--	--	--	0.087	--	--	--	--	--	--
Pyrene	17,000	mg/kg	--	6.8	--	--	0.13 (J)	--	--	0.088 (J)	0.93	--
Selenium	5,100	mg/kg	0.51	0.6	--	--	0.32	0.29	0.47	0.78	0.44	0.36
Silver	5,100	mg/kg	--	0.52	--	--	--	--	--	--	0.21	0.16
Th-234	1,423°	pCi/g	--	3.6 (J)	--	206	--	--	--	--	5.6 (J)	3 (J)
Toluene	45,000	mg/kg	--	--	--	--	0.0044 (J)	--	0.0053	--	--	--

Table C.1-1
Maximum Reported Value for Tier 1 Comparison
(Page 4 of 4)

Parameter	PALs	Unit	Maximum Reported Value									
			01-19-01	02-08-02	03-19-02	05-62-01	12-23-09	22-19-06	23-21-04	25-08-02	25-23-21	25-25-19
Total xylenes	2,700	mg/kg	--	--	--	--	0.0044 (J)	--	0.0044 (J)	--	--	--
TPH-DRO	N/A ^d	mg/kg	3.2 (J)	320	--	--	17	11	270	920 (J)	73	1,900
U-234	18,650	pCi/g	--	--	--	267	--	--	--	--	--	--
U-235	255.5	pCi/g	--	--	--	15.3	--	--	--	--	3.9 (J)	--
U-238	1,423	pCi/g	--	--	--	630	--	--	--	--	--	--

^aFAL for Ac-228 based on Th-232 FAL.

^bPer FI ROTC-1 (NNES, 2010), there are no longer screening levels for total chromium.

^cFAL for Th-234 based on U-238 FAL.

^dPer FI ROTC-1 (NNES, 2010), the Nevada Legislative Commission approved new regulations for the TPH-DRO; the FAL of 100 mg/kg no longer applies.

J = Estimated value

J+ = Result is an estimated quantity, but may be biased high.

J- = Result is an estimated quantity, but may be biased low.

-- = Not detected above PALs.

C.1.3 C. Site Classification and Initial Response Action

The four major site classifications listed in Table 3 of the ASTM Standard are (1) immediate threat to human health, safety, and the environment; (2) short-term (0 to 2 years) threat to human health, safety, and the environment; (3) long-term (greater than 2 years) threat to human health, safety, or the environment; and (4) no demonstrated long-term threats.

Based on the CAI, none of the CASs present an immediate threat to human health, safety, and the environment; therefore, no interim response actions are necessary at these sites. Based on this information, five CASs (01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06) are determined to be Classification 4 sites as defined by ASTM Method E1739 (ASTM, 1995) and pose no demonstrated near- or long-term threats. At CASs 02-08-02, 23-21-04, 25-08-02, 25-23-21, and 25-25-19, COCs were identified that may pose long-term threats to human health, safety, or the environment and have been determined to be Classification 3 sites as defined by ASTM Method E1739.

C.1.4 D. Development of Tier 1 Lookup Table of RBSLs

Tier 1 action levels have been defined as the PALs established during the DQO process. The PALs are a tabulation of chemical-specific (but not site-specific) screening levels based on the type of media (soil) and potential exposure scenarios (industrial). These are very conservative estimates of risk, are preliminary in nature, and are used as action levels for site screening purposes. Although the PALs are not intended to be used as FALs, a FAL may be defined as the Tier 1 action level (i.e., PAL) value if individual contaminant analytical results are below the corresponding Tier 1 action level value. The FAL may also be established as the Tier 1 action level value if individual contaminant analytical results exceed the corresponding Tier 1 action level value and implementing a corrective action based on the FAL is practical. The PALs are defined as follows:

- The EPA Region 9 Risk-Based Regional Screening Levels (RSLs) for Industrial Soils (EPA, 2011).
- Background concentrations for RCRA metals will be evaluated when natural background exceeds the PAL, as is often the case with arsenic. Background is considered the mean plus two times the standard deviation of the mean based on data published in Mineral and Energy Resource Assessment of the Nellis Air Force Range (NBMG, 1998; Moore, 1999).

- For COPCs without established RSLs, a protocol similar to EPA Region 9 will be used to establish an action level; otherwise, an established RSL from another EPA region may be chosen.
- The PALs for radioactive contaminants are based on the National Council on Radiation Protection and Measurements (NCRP) Report No. 129 recommended screening limits for construction, commercial, industrial land-use scenarios (NCRP, 1999) scaled to 25-millirem-per-year dose constraint (Appenzeller-Wing, 2004) and the generic guidelines for residual concentration of radionuclides in DOE Order 5400.5 (DOE, 1993).

The PALs were developed based on an industrial area scenario. Because the CAU 561 CASs are not assigned work stations and are considered to be in remote work or occasional use areas, the use of the industrial area scenario PALs is conservative. The Tier 1 lookup table is defined as the PAL concentrations or activities defined in the CAIP (NNSA/NSO, 2008).

C.1.5 E. Exposure Pathway Evaluation

For all contaminants at the CASs not listed in [Table C.1-1](#), contamination does not exceed the corresponding RBSLs and the FALs were established at the RBSL concentrations. For all contaminants at the CASs listed in [Table C.1-1](#), it was determined by NNSA/NSO that remediation to the RBSLs is feasible and appropriate. Therefore, the FALs for these contaminants were also established at the RBSL concentrations and corrective actions will be required.

C.1.6 F. Comparison of Site Conditions with Tier 1 RBSLs

All analytical results from CAU 561 samples were less than corresponding Tier 1 action levels (i.e., PALs) except for those listed in [Table C.1-2](#).

C.1.7 G. Evaluation of Tier 1 Results

For all contaminants at CASs not listed in [Table C.1-2](#), the FALs were established as the Tier 1 RBSLs. It was determined that no further action is required for these contaminants at these CASs.

The FALs for arsenic and PCBs at CAS 23-21-04, for arsenic at CAS 25-08-02, and for Cs-137 and PCBs at CAS 25-23-21 were also established as the Tier 1 RBSLs. It was determined that corrective action is practical for the contaminants at these CASs. Therefore, a correction action has been completed for these sites.

**Table C.1-2
COPCs Detected above PALs**

CAS	Arsenic	Hexavalent Chromium	Lead	PCB-1248	PCB-1260	Cs-137	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene
02-08-02	X	--	X	--	--	--	X	X	X	X	X
23-21-04	X	X	--	X	--	--	--	--	--	--	--
25-08-02	X	--	--	--	--	--	--	--	--	--	--
25-23-21	--	--	--	--	X	X	--	--	--	--	--

-- = Not applicable

It was determined by NNSA/NSO that remediation for lead and arsenic within the burn area and for PAHs within the waste piles at CAS 02-08-02 was not practical. Therefore, an FFACO UR will be implemented at this CAS.

C.1.8 H. Tier 1 Remedial Action Evaluation

CAS 02-08-02

At CAS 02-08-02, the lead, arsenic, and PAH contamination is not practical or technically feasible to remediate to FALs due to the widespread and discontinuous nature of contamination (e.g., melted lead on and below ground surface). Therefore, a corrective action of closure in place with a FFACO UR was implemented.

CASs 23-21-04, 25-08-02, and 25-23-21

A corrective action of clean closure was implemented for the arsenic, hexavalent chromium, PCBs, and Cs-137 contamination at these CASs that removed all contamination exceeding FALs.

CASs 23-21-04 and 25-25-19

At CASs 23-21-04 and 25-25-19, lead bricks were discovered. The lead bricks and soil immediately below the bricks were removed. Confirmation samples were collected to verify that lead had not migrated from the bricks into the soil. This corrective action was implemented to remediate the site to FALs.

CASs 25-08-02

At CAS 25-08-02, lead-acid batteries were discovered. The lead-acid batteries were removed and confirmation samples were collected to verify that lead had not migrated from the bricks into the soil. This corrective action was implemented to remediate the site to FALs.

C.1.9 I. Tier 2 and Tier 3 Evaluation

As all contaminant FALs were established at Tier 1 RBSLs, a Tier 2 or Tier 3 evaluation was not considered necessary.

C.2.0 Recommendations

As all of the site contaminant concentrations in soils from the analysis of CAU 561 samples at CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06 were less than the corresponding FALs, it was determined that contamination at these locations does not pose a significant risk to human health or the environment and, therefore, do not warrant corrective actions.

As lead and arsenic were identified at the burn area, and PAHs were identified at the waste dump above the corresponding FALs (Tier 1 RBSL) at CAS 02-08-02, it was determined that lead, arsenic, and PAHs are COCs and contamination at this CAS warrants corrective action. The PAHs at the burn area are not considered COCs as they are attributed to industrial asphalt paving discovered within area. A corrective action recommendation of closure in place with an FFACO UR will be protective of human health, safety, and the environment. The UR is included in [Appendix D](#). This does not preclude the consideration for other additional protective measures that may be implemented as BMPs (e.g., removing the melted lead for recycling).

As arsenic, hexavalent chromium, and PCBs were identified above the corresponding FALs (Tier 1 RBSL) at CAS 23-21-04, it was determined that arsenic, hexavalent chromium, and PCBs are COCs and contamination at this CAS warrants corrective action. A corrective action recommendation of clean closure will be protective of human health, safety, and the environment. This does not preclude the consideration for other additional measures that may be implemented as BMPs (e.g., disposing of debris, backfilling the trenches).

Arsenic was identified above the corresponding FALs (Tier 1 RBSL) at CAS 25-08-02; therefore, it was determined that arsenic is a COC and contamination at this CAS warrants corrective action. A corrective action recommendation of clean closure will be protective of human health, safety, and the environment. This does not preclude the consideration for other additional measures that may be implemented as BMPs (e.g., removing and disposing of the waste piles).

Cesium-137 and PCBs were identified above the corresponding FALs (Tier 1 RBSL) at CAS 25-23-21; therefore, it was determined that Cs-137 and PCBs are COCs and contamination at this CAS warrants corrective action. A corrective action recommendation of clean closure will be

protective of human health, safety, and the environment. This does not preclude the consideration for other additional measures that may be implemented as BMPs (e.g., removing and disposing of waste piles, disposing of debris).

At CAS 25-25-19, site contaminant concentrations in soils from the analysis of samples were less than the corresponding FALs; therefore, it was determined that contamination at these locations does not pose a significant risk to human health or the environment and therefore, do not warrant corrective actions. However, corrective actions (i.e., removal) were conducted at two locations where two lead bricks were discovered. This does not preclude the consideration for other additional measures that may be implemented as BMPs (e.g., disposing of debris).

C.3.0 References

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NBMG, see Nevada Bureau of Mines and Geology.

NCRP, see National Council on Radiation Protection and Measurements.

NNES, see Navarro Nevada Environmental Services, LLC.

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

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Appendix D

Closure Activity Summary

D.1.0 Closure Activity Summary

The following sections document closure activities and BMPs conducted from February 8 through June 28, 2011. Corrective actions and BMPs were completed at the following CASs:

- 02-08-02, Waste Dump and Burn Area
- 23-21-04, Waste Disposal Trenches
- 25-08-02, Waste Dump
- 25-23-21, Radioactive Waste Dump
- 25-25-19, Hydrocarbon Stains and Trench

The remaining CASs within CAU 561 have been shown not to have released contamination to the environment; they did not require further action and are not discussed in this appendix. The following sections provide the supporting documentation (e.g., photos and analytical results) to verify the completion of closure activities. Analytical results from Decision I, Decision II, and verification samples are presented in [Appendix A](#) under the specific CAS narration. Details regarding waste characterization, waste volumes, and final disposition are presented in [Section A.13.0](#). Load verification forms and manifests are included in [Appendix F](#) of this report; copies are also available for review in the CAU 561 project files.

D.1.1 CAS 02-08-02 Closure Activities

The recommended closure alternative for CAS 02-08-02 is closure in place with a UR. Because of the large volume of material within the waste piles and problems associated with the removal of the fine particles of lead from the burn area, clean closure was not considered feasible. A UR has been applied to surface and subsurface disturbances between 0 to 5 ft bgs at the burn area, and to disturbances within the waste piles to a depth of 5 ft bgs at the waste dump. [Attachment D-1](#) of this appendix provides the details of the UR and a figure of the UR boundary's GPS coordinates. The UR is an FFACO UR; therefore, onsite postings (signs) and physical barriers (fencing) are necessary, and periodic inspections are required. Two BMPs were implemented at this CAS: (1) the melted lead was removed as PSM and consolidated for recycling, and (2) non-hazardous debris from the waste piles was picked up and disposed of.

Closure activities conducted at this CAS to support the corrective action of closure in place and implementation of the UR included removing as much of the melted lead from the burn area as possible. A backhoe was used to rake across the ground to unearth any large pieces of melted lead up to 6 in. beneath the soil. To avoid destroying large areas of vegetation by this process, a geophysical survey was conducted of the area, and pin flags were placed on the anomalies. The anomalies were then investigated using shovels to a depth of 6 in. Any melted lead discovered from 0 to 6 in. bgs was staged for recycling off site. Approximately 3,320 lb of melted lead was picked up from the burn area.

Decision II soil samples were collected from the waste dump (PAHs) and from the burn area (arsenic, lead, and PAHs) to characterize the lateral and vertical extent of contamination. The Decision II samples collected along the perimeter of the waste dump indicate that the PAH contamination has not migrated from the waste piles into the surrounding soil.

Decision II samples from the burn area collected near location B02 indicated that the arsenic and lead had not migrated from this location. Because the extent of the PSM (melted lead) could not be ascertained, nor could it be guaranteed that all the melted lead could be removed, it was decided to place a UR around the CAS.

During Decision II sampling at the burn area, asphalt was discovered in various locations at depths up to 8 in. bgs. Aerial photos of the Area 2 camp from September 1971 (H&N, 1971) were reviewed and show a road passing through the burn area to the waste dump area, and photos from October 1986 (Author Unknown, 1986) show buildings located on the burn area. Based on this information, the PAHs detected in the burn area are considered to originate from the asphalt and are not considered to be related to the burn area activities.

[Figures D.1-1](#) through [D.1-3](#) document closure activities at this CAS.

[Attachment D-1](#) provides details of the UR and a figure of the UR boundary.



Figure D.1-1
CAS 02-08-02, Waste Dump and Burn Area,
Area Where Lead Was Removed with Backhoe



Figure D.1-2
CAS 02-08-02, Waste Dump and Burn Area,
Melted Lead Temporarily Staged on Wooden Pallet



Figure D.1-3
CAS 02-08-02, Waste Dump and Burn Area,
Melted Lead Staged and Wrapped on Metal Pallet

D.1.2 CAS 23-21-04 Closure Activities

The corrective action of clean closure for this CAS consisted of removing arsenic-, hexavalent chromium-, and PCB-contaminated soil from Trench 3; and removing arsenic-contaminated soil from Trench 5. Corrective actions also included removing a lead brick and counterweights for recycling. As BMPs, debris in and around all of the trenches was disposed of at the U10c industrial waste landfill ([Table A.13-1](#)), and all open trenches were backfilled with clean soil and the surrounding area leveled.

Trench 3

Closure activities for the PCB-contaminated soil on the east end of the trench (location G07) were initiated by overexcavating the soil and collecting four verification soil samples. The analysis of the Decision I soil sample showed PCBs to present at a concentration of 4.3 mg/kg. One sample was collected from the bottom of the excavation, and one sample was collected from each of the three excavation walls (north, east, and west). The verification samples (561G037 through 561G040)

collected after the PCB-contaminated soil was excavated did not detect PCBs in concentrations above the FALs.

The determination was made that the arsenic- and hexavalent chromium-contaminated soil would be removed to allow for a clean closure of this site. During the soil removal activities, samples were collected to define the vertical and lateral extent of the contamination. After the soil excavation was completed to a depth of 4.5 ft bgs, confirmation samples were collected from the sides and bottom of the excavation (561G033, 561G034, 561G035, and 561G041). Analytical result demonstrated that all the arsenic- and hexavalent chromium-contaminated soil had been removed from the area around Trench 3.

Trench 5

The Decision I analytical results demonstrated that arsenic was present in the soil within and adjacent to the trench at concentrations exceeding PAL (61 mg/kg). Based on the Decision I analytical results and the desire to clean close this CAS, Decision II sampling was initiated to define the vertical and horizontal extent of the arsenic contamination and to remove the contaminate soil associated with Trench 5. During the excavation, confirmation samples were periodically collected to determine whether all the contaminated soil had been removed. When the excavation was completed, soil from an area measuring approximately 30 by 16 by 5 ft was removed and disposed of. Confirmation samples (561G029, 561G030, 561G031, and 561G032) collected from the sides and bottom of the excavation confirmed that the arsenic contaminated soil had been removed.

The corrective actions at Trenches 3 and 5 were accomplished by removing the contaminated soil using a backhoe and excavator. Approximately 45 yd³ of soil was removed from both trenches, placed in 20-yard roll-off bins, and disposed of as industrial waste. The analytical results of the verification sample as presented in [Section A.9.0](#) support the closure of this CAS. [Figures D.1-4](#) through [D.1-6](#) document closure activities at this CAS.

D.1.3 CAS 25-08-02 Closure Activities

The corrective action of clean closure for this site consisted of removing the lead-acid batteries and arsenic contaminated concrete-like material. The lead-acid batteries were recycled and the arsenic-contaminated soil was disposed of as industrial waste at the U10C industrial waste landfill



Figure D.1-4
CAS 23-21-04, Waste Disposal Trenches, Debris Removal from Trench 3



Figure D.1-5
CAS 23-21-04, Waste Disposal Trenches, Front-end Loader Backfilling Trench

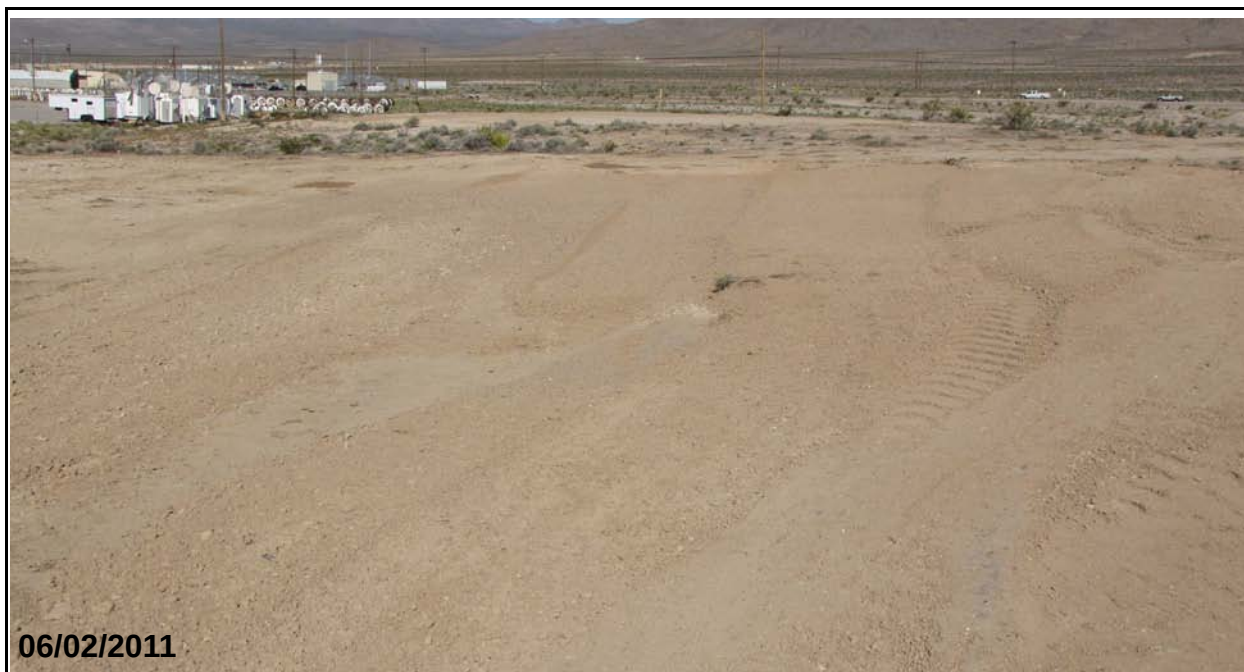


Figure D.1-6
CAS 23-21-04, Waste Disposal Trenches, Trenches 3, 5, and 6 Backfilled

(Table A.13-1). As a BMP, the remaining waste piles were removed and disposed of as industrial waste at the U10c landfill. Approximately 720 yd³ of material was removed from the CAS.

The analysis of the Decision I sample from the center of the concrete-like material and a second sample from deeper in the pile showed that arsenic was present at concentrations exceeding the FALs, 510 mg/kg and 60 mg/kg, respectively. Because Decision II samples collected laterally from the pile showed that arsenic has not migrated laterally or vertically and the arsenic contamination was limited to the concrete-like material, clean closure was selected as the appropriate CAA.

After the lead-acid batteries and arsenic-contaminated material had been removed, four verification samples were collected from the soil beneath the pile. The verification samples did not detect arsenic at concentrations that exceeded the FALs. The analytical results of the verification samples support the clean closure of this CAS as presented in Section A.10.0. Figures D.1-7 through D.1-9 document closure activities at this CAS.



Figure D.1-7
CAS 25-08-02, Waste Dump, Bulldozed Arsenic-Contaminated
Pile and Verification Sample Locations



Figure D.1-8
CAS 25-08-02, Waste Dump, Debris Piles Being Loaded Out



Figure D.1-9
CAS 25-08-02, Waste Dump, Debris Piles Removed

D.1.4 CAS 25-23-21 Closure Activities

The corrective action of clean closure for CAS 25-23-21 consisted of removing two pieces of cast-iron pipe and the underlying soil from two RMAs in the main waste dump. Both the pipes and soil were disposed of as low-level radioactive waste. As BMPs, the remaining piles at the main waste dump were leveled and contoured to original grade. As a BMP, at the second parcel, approximately 9 yd³ of debris and tar paper were removed and disposed of at the U10c industrial waste landfill. No Decision II samples were required at the second parcel because the analytical results showed no concentrations of any constituents above PALs.

Closure activities at the southern RMA were initiated by collecting four Decision II surface soil samples (including one FD) in a triangular pattern around the RMA soil pile. Two samples were also collected within the pile at depths of 1 to 1.5 ft at the same locations (I30 and I33) as Decision I samples. The analysis of the Decision I sample from within the pile at location I30 (0 to 0.5 ft) showed PCBs to be present at a concentration of 1.2 mg/kg, and Cs-137 at a concentration of 392 pCi/g. The Decision I sample (561I035) from location I33 (within the pile from 0 to 0.5 ft) showed a Cs-137 concentration of 152 pCi/L. The three Decision II samples showed that the PCBs

and Cs-137 had not migrated into the soil surrounding the RMA pile. After the southern RMA pile was removed using a backhoe, six verification samples were collected from the soil beneath the pile. The verification samples did not detect PCBs or Cs-137 in concentrations above the FALs.

Because of the presence of the contaminated pipe on the northern RMA soil pile, the same approach was used to sample the pile, even though the Cs-137 concentration was below the PAL. Four Decision II surface soil samples (0 to 0.5 ft bgs) were collected around the northern RMA soil pile. One sample was also collected within the pile at depths of 1 to 1.5 ft at the same location (I32) as the Decision I sample. The analysis of the Decision I sample from within the pile at location I32 (0 to 0.5 ft) showed Cs-137 at a concentration of 15.6 pCi/g. The four Decision II samples showed that Cs-137 had not migrated into the soil surrounding the RMA. After the northern RMA pile was removed, four verification samples were collected from the soil beneath the pile. The verification samples confirmed that the Cs-137-contaminated soil had been removed.

The analytical results of the verification sample, as presented in [Section A.11.0](#), support the closure of this CAS. [Figures D.1-10](#) through [D.1-13](#) document closure activities at this CAS.



Figure D.1-10
CAS 25-23-21, Radioactive Waste Dump, RMA Soil Piles



Figure D.1-11
CAS 25-23-21, Radioactive Waste Dump, Leveling of Soil Piles



Figure D.1-12
CAS 25-23-21, Radioactive Waste Dump,
Excavation of RMA, Soil Disposed of in Lined Intermodal



Figure D.1-13
CAS 25-23-21, Radioactive Waste Dump, Southern RMA Backfilled

D.1.5 CAS 25-25-19 Closure Activities

No Decision II soil samples were collected because the analytical results showed no concentrations of any constituents above PALs. Two lead bricks were discovered, and as a corrective action, were removed and the soil beneath them sampled. The soil sample results indicated that no lead had leached into the soil from the bricks. As a BMP, the lead bricks will be recycled. Another BMP implemented at the site included disposing of approximately 9 yd³ of debris from the north trench (e.g., asphalt and trash). This debris was disposed of at the U10c industrial waste landfill (Table A.13-1). The north trench was actually a natural depression and was not backfilled, but the east side was sloped to conform to the land surface. Figures D.1-14 and D.1-15 show the staged debris and the north trench after debris removal.



Figure D.1-14
CAS 25-25-19, Hydrocarbon Stains and Trench, Staged Debris near North Trench



Figure D.1-15
CAS 25-25-19, Hydrocarbon Stains and Trench, North Trench Cleared of Debris

D.2.0 References

Author Unknown. 1986. Aerial photograph 017 showing Area 2 Annex, 6 October. Mercury, NV.

H&N, see Holmes & Narver, Inc.

Holmes & Narver, Inc. 1971. Aerial photograph Roll #73, Frame #012 showing Area 2 Camp, 3 September. Mercury, NV.

Attachment D-1

Use Restriction

(4 Pages)

Use Restriction Information

CAU Number/Description: CAU 561, Waste Disposal Areas

Applicable CAS Number/Description: 02-08-02, Waste Dump and Burn Area

Contact (Federal Sub-Project Director/Sub-Project): Kevin Cabbie

FFACO Use Restriction Physical Description:

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting
Southeast	4,112,449.6	580,429.1
Southwest	4,112,424.9	580,401.6
Northwest	4,112,589.9	580,212.9
Northeast	4,112,623.8	580,242.2
East	4,112,552.1	580,356.4

Depth: 0 ft to 5 ft below ground surface at the burn area, up to 5 ft below ground surface within the waste dump

Survey Source (GPS, GIS, etc.): GPS

Basis for FFACO UR(s):

Summary Statement: This FFACO UR was implemented as part of a closure in place corrective action to restrict site activities that may expose workers to site contamination. This FFACO UR is for surface and shallow subsurface disturbances between 0 ft and 5 feet below ground surface at the burn area, and for disturbances within the waste piles to a depth of 5 feet below ground surface. Lead and arsenic is contained within the burn area at concentrations listed in the table below. Polyaromatic hydrocarbons (PAHs) concentrations contained within the waste piles are listed in the table below.

Contaminants Table:

Maximum Concentration of Contaminants for CAU <u>561</u> CAS <u>02-08-02</u> , Waste Dump and Burn Area			
Constituent	Maximum Concentration	Action Level	Units
Lead	14,000	800	mg/kg
Arsenic	65	23	mg/kg
Benzo(a)anthracene	2.8	2.1	mg/kg
Benzo(a)pyrene	2.4	0.21	mg/kg
Benzo(b)fluoranthene	3.7	2.1	mg/kg
Dibenzo(ah)anthracene	1	0.21	mg/kg
Indeno(1,2,3-cd)pyrene	3.3	2.1	mg/kg

Site Controls: Post UR warning signs at SE, SW, NW, NE, and E recorded points. Plus, on west side of UR, three signs will be placed every 200 ft between the SW and NW corner. On the east side of the UR, one sign will be placed 200 feet between the NE and E corner, and one sign will be placed 200 feet between the E and SE corner. A total of 10 signs will be posted at the site.

Use Restriction Information

Administrative Use Restriction Physical Description*:

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting

Depth: _____

Survey Source (GPS, GIS, etc.): _____

*Coordinates for the Administrative Use Restriction exclude the area defined by the FFACO Use Restriction coordinates.

Basis for Administrative UR(s):

Summary Statement: No administrative UR, FFACO UR only.

Contaminants Table:

Maximum Concentration of Contaminants for CAU XXX CAS XX-XX-XX, Title			
Constituent	Maximum Concentration	Action Level	Units

Site Controls: _____

UR Maintenance Requirements (applies to both FFACO and Administrative UR(s) if Administrative UR exists):

Description: This UR must be entered into the NNSA/NSO Facility Information Management System (FIMS), the FFACO database, and the NNSA/NSO CAU/CAS files.

Inspection/Maintenance Frequency: Annual post-closure visual inspections will be conducted to ensure postings are in place, intact, and legible, and that there is no evidence of subsurface intrusion or disturbances between 0 and 5 ft bgs at the burn area, and within the waste piles to a depth of 5 ft at the waste dump.

Use Restriction Information

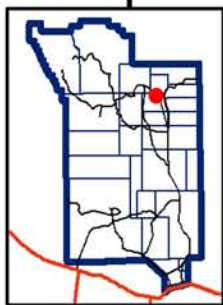
The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU CR or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: Personnel are restricted from performing work in this location that would disturb the surface and subsurface soil (e.g., digging or scrapping of soil). Permissible activities include short duration activities such as site visits, maintenance of signs, or surveys (radiological walkover or geophysical).

Submitted By: /s/ Kevin Cabbie Date: 8-9-11

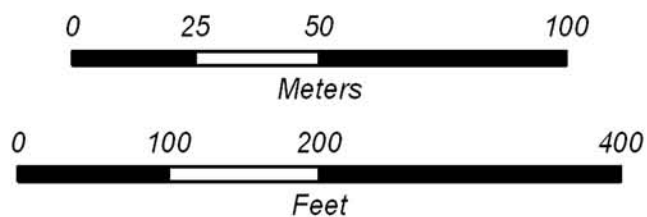


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Explanation

-  CAS Marker
-  UR Boundary



Source: N-I GIS, 2011; RSL, 1999

Coordinate System: NAD 1927 UTM Zone 11N, Meters

UNCONTROLLED When Printed

Appendix E

Sample Location Coordinates

E.1.0 Sample Location Coordinates

Sample location coordinates were collected during the CAI using a GPS instrument. These coordinates identify the CAU 561 Decision I and II sampling locations (easting and northing positions) and ground surface elevations at CAU 561.

Sample locations are shown on [Figures A.3-1, A.4-1, A.5-1, A.6-1, A.7-1, A.8-1, A.9-1, A.10-1, A.11-2, A.11-3, and A.12-1](#), while the corresponding coordinates for all CAS sample locations are listed in [Table E.1-1](#).

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 1 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
CAS 01-19-01, Waste Dump			
4,099,466.70	580,604.50	1248.9	A01
4,099,468.80	580,609.40	1247	A02
4,099,468.40	580,601.30	1248.7	A03
4,099,473.60	580,599.50	1249.4	A04
CAS 02-08-02, Waste Dump and Burn Area			
4,112,574.80	580,232.80	1338.9	B01
4,112,550.50	580,269.40	1338.6	B02
4,112,548.00	580,276.10	1338.8	B03
4,112,556.10	580,273.70	1338.8	B04
4,112,513.40	580,308.60	1338.2	B05
4,112,560.70	580,300.00	1337.9	B06
4,112,503.30	580,331.80	1337.4	B07
4,112,496.20	580,343.40	1337	B08
4,112,485.80	580,354.40	1337.2	B09
4,112,478.50	580,364.40	1337	B10
4,112,492.00	580,378.10	1337.3	B11
4,112,505.10	580,370.50	1336.7	B12
4,112,518.10	580,364.70	1337.3	B13

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 2 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,112,525.50	580,359.90	1337.3	B14
4,112,530.30	580,355.80	1337.9	B15
4,112,535.70	580,348.40	1338.3	B16
4,112,524.70	580,334.60	1338.3	B17
4,112,517.40	580,329.30	1338.3	B18
4,112,450.00	580,397.40	1333.3	B19
4,112,455.50	580,405.00	1333.7	B20
4,112,551.00	580,279.50	1338.7	B21
4,112,543.80	580,282.90	1338.6	B22
4,112,542.10	580,283.80	1338.5	B23
4,112,545.20	580,275.10	1338.6	B24
4,112,546.70	580,273.90	1338.6	B25
4,112,543.60	580,274.70	1338.6	B26
4,112,483.90	580,345.90	1334.8	B27
4,112,491.50	580,335.10	1334.9	B28
4,112,517.20	580,323.70	1335.2	B29
4,112,526.00	580,327.70	1335	B30
4,112,537.70	580,338.90	1335.9	B31
4,112,536.20	580,366.60	1334.9	B32
4,112,517.80	580,378.20	1333.6	B33
4,112,508.90	580,309.50	1335.8	B34
4,112,514.90	580,311.80	1336.2	B35
4,112,516.50	580,307.00	1335.9	B36
4,112,569.40	580,231.30	1338.9	B37
4,112,589.70	580,216.70	1338	B38
4,112,576.50	580,237.20	1339.1	B39
4,112,537.10	580,285.70	1336.8	B40
4,112,543.60	580,280.50	1338.2	B41

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 3 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,112,549.20	580,286.80	1336.1	B42
4,112,550.50	580,276.50	1336.3	B43
4,112,557.40	580,275.70	1337	B44
4,112,547.40	580,268.90	1336.4	B45
4,112,549.80	580,266.30	1336.9	B46
4,112,555.40	580,271.30	1336.5	B47
4,112,566.10	580,313.40	1337.7	B48
4,112,583.60	580,298.40	1338.6	B49
4,112,603.20	580,276.80	1338.3	B50
4,112,608.20	580,247.50	1339.1	B51
4,112,551.50	580,247.00	1338.1	B52
4,112,533.40	580,271.50	1336.9	B53
4,112,517.60	580,288.90	1337.1	B54
CAS 03-19-02, Debris Pile			
4,100,411.20	588,071.80	1211.7	C01
4,100,404.90	588,084.00	1211	C02
CAS 05-62-01, Radioactive Gravel Pile			
4,069,031.80	591,580.80	930.4	D01
4,069,034.90	591,567.60	931.8	D02
4,069,017.30	591,561.40	930.4	D03
4,069,013.60	591,570.60	931.6	D04
4,069,024.90	591,586.30	930.3	D05
CAS 12-23-09, Radioactive Waste Dump			
4,115,717.90	573,369.70	1669.1	E01
4,115,758.00	573,396.90	1669.4	E02
4,115,800.20	573,418.20	1662.9	E03
4,115,718.10	573,320.80	1675.4	E04
4,115,760.00	573,344.30	1666.9	E05

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 4 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,115,801.20	573,369.10	1664.7	E06
4,115,799.70	573,363.10	1665.6	E07
CAS 22-19-06, Buried Waste Disposal Site			
4,053,454.40	588,011.50	981.6	F01
4,053,452.90	588,009.60	980.9	F02
4,053,450.30	588,007.30	980.5	F03
4,053,451.70	588,008.40	980.8	F04
CAS 23-21-04, Waste Disposal Trenches			
4,058,176.50	590,312.40	1157.7	G01
4,058,176.60	590,308.60	1156.3	G02
4,058,153.30	590,265.80	1153.3	G03
4,058,177.50	590,310.10	1156.8	G04
4,058,175.90	590,315.70	1156.2	G05
4,058,174.70	590,319.30	1156.9	G06
4,058,172.20	590,325.50	1158	G07
4,058,151.50	590,242.90	1151.9	G08
4,058,153.40	590,250.60	1153.8	G09
4,058,153.00	590,255.70	1153.8	G10
4,058,160.90	590,241.20	1154.2	G11
4,058,161.00	590,251.80	1154.6	G12
4,058,161.00	590,259.10	1154.2	G13
4,058,177.60	590,311.90	1156.8	G14
4,058,175.10	590,309.80	1157	G15
4,058,177.30	590,313.40	1156.1	G16
4,058,162.20	590,252.50	1151.4	G17
4,058,158.60	590,251.20	1153.6	G18
4,058,159.70	590,248.80	1152.4	G19
4,058,159.80	590,249.30	1173.6	G20

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 5 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,058,161.30	590,246.70	1174.6	G21
4,058,158.50	590,247.20	1174.6	G22
4,058,162.20	590,252.50	1175.2	G23
4,058,158.30	590,252.40	1177	G24
4,058,162.00	590,253.60	1174.4	G25
4,058,160.50	590,253.50	1173.6	G26
4,058,162.50	590,253.10	1174.9	G27
4,058,163.30	590,254.20	1175.2	G28
4,058,177.20	590,308.20	1178.3	G29
4,058,178.20	590,309.80	1178.1	G30
4,058,177.80	590,313.60	1178.7	G31
4,058,176.20	590,311.30	1179.1	G32
4,058,173.80	590,326.90	1158	G33
4,058,174.10	590,325.60	1158	G34
4,058,173.50	590,328.30	1158	G35
4,058,174.90	590,327.10	1158	G36
4,058,176.60	590,311.80	1176.6	G37
CAS 25-08-02, Waste Dump			
4,073,973.10	566,096.20	1093.1	H01
4,073,977.90	566,102.40	1093.3	H02
4,073,987.70	566,102.80	1093.8	H03
4,073,988.80	566,099.90	1094.2	H04
4,073,993.40	566,105.80	1094	H05
4,074,002.40	566,100.30	1094.5	H06
4,074,004.50	566,106.00	1094.4	H07
4,074,010.20	566,106.50	1094.5	H08
4,074,017.20	566,101.70	1094.4	H09
4,074,017.00	566,108.10	1094.7	H10

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 6 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,074,025.30	566,109.80	1094.7	H11
4,074,023.20	566,105.40	1095.2	H12
4,074,032.90	566,108.00	1095.2	H13
4,074,040.90	566,111.10	1094.9	H14
4,074,047.70	566,107.70	1095.1	H15
4,074,065.00	566,123.80	1095.6	H16
4,073,978.70	566,107.80	1093.7	H17
4,073,975.10	566,096.80	1093	H18
4,073,988.10	566,109.80	1092.7	H19
4,073,985.60	566,104.50	1089.3	H20
4,073,985.00	566,101.50	1088.2	H21
4,073,982.40	566,100.20	1088	H22
4,073,980.20	566,099.70	1088.1	H23
CAS 25-23-21, Radioactive Waste Dump			
4,074,078.40	562,660.70	1066.2	I01
4,074,070.70	562,627.40	1066.5	I02
4,074,096.40	562,623.10	1065.5	I03
4,074,105.70	562,639.40	1065.2	I04
4,074,114.30	562,605.90	1064.2	I05
4,074,131.00	562,656.20	1065.2	I06
4,074,102.10	562,654.10	1065	I07
4,074,110.10	562,680.90	1067.2	I08
4,074,148.60	562,702.90	1066.9	I09
4,074,108.60	562,700.60	1068.4	I10
4,074,071.80	562,700.70	1062.7	I11
4,074,079.60	562,706.20	1062.1	I12
4,074,078.30	562,710.70	1062.7	I13
4,074,067.60	562,708.20	1062.7	I14

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 7 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,074,062.10	562,705.50	1063.2	I15
4,074,178.00	562,698.90	1067.2	I16
4,074,077.30	562,702.50	1061.7	I17
4,073,556.10	562,428.50	1051.9	I18
4,073,550.20	562,470.00	1051.1	I19
4,073,538.80	562,460.10	1051	I20
4,073,534.50	562,475.00	1051.4	I21
4,073,538.20	562,490.30	1052	I22
4,073,548.80	562,479.90	1051.7	I23
4,073,561.50	562,462.90	1051.4	I24
4,073,548.80	562,456.90	1051.4	I25
4,073,561.20	562,453.20	1051.8	I26
4,073,544.80	562,443.90	1051.2	I27
4,073,557.30	562,443.90	1051.9	I28
4,073,543.10	562,434.10	1051.6	I29
4,073,542.20	562,465.40	1050.8	I30
4,073,492.10	562,430.90	1047.6	I31
4,073,560.90	562,488.90	1051.2	I32
4,073,542.60	562,464.40	1050.5	I33
4,073,542.70	562,463.40	1048.9	I34
4,073,540.60	562,464.40	1049.6	I35
4,073,544.50	562,465.80	1049.2	I36
4,073,559.20	562,488.80	1046.8	I37
4,073,560.50	562,491.80	1049.1	I38
4,073,561.80	562,489.70	1048.9	I39
4,073,540.10	562,467.70	1048.4	I40
4,073,560.30	562,488.00	1048.2	I41
4,073,559.70	562,489.20	1048	I42

Table E.1-1
Sample Location Coordinates for CAU 561
(Page 8 of 8)

Northing^a	Easting^a	Elevation (m amsl)	Sample Location
4,073,561.80	562,488.60	1048	I43
4,073,542.10	562,466.60	1046.2	I44
4,073,540.50	562,464.70	1046.1	I45
4,073,541.70	562,464.80	1049.4	I46
4,073,545.50	562,464.60	1048.3	I47
4,073,543.60	562,462.80	1048.6	I48
4,073,543.30	562,464.80	1046.6	I49
CAS 25-25-19, Hydrocarbon Stains and Trench			
4,073,155.00	565,192.70	1070.9	J01
4,073,168.20	565,194.50	1072.4	J02
4,073,175.60	565,207.30	1072.3	J03
4,073,212.40	565,196.00	1073	J04
4,073,222.10	565,173.60	1072.1	J05
4,073,214.50	565,181.00	1072.9	J06
4,073,221.00	565,169.00	1072.5	J07
4,073,086.00	565,202.90	1070.3	J08
4,073,080.00	565,200.20	1070	J09
4,073,060.90	565,202.30	1068.9	J10
4,073,193.50	565,222.60	1073.1	J11
4,073,267.80	565,206.20	1073.8	J12
4,073,294.40	565,209.80	1074.6	J13
4,073,181.80	565,178.30	1072.2	J14
4,073,206.80	565,174.80	1072.5	J15
4,073,225.70	565,174.30	1072.7	J16
4,073,214.30	565,174.00	1072.4	J17

^aUniversal Transverse Mercator (UTM) Zone 11, North American Datum (NAD) 1927 (U.S. Western)

amsl = Above mean sea level
m = Meter

Appendix F

Waste Disposition Documents

(92 Pages)

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150
Location / Origin: CAU 561; CAS 23-21-04 Bulk Debris and soil for disposal using tracking number 561G03

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those material site. I have verified this through the waste characterization method identified above a prohibited and allowable waste items. I have contacted Property Management and has is approved for disposal in the landfill.

Print Name: Mark Hesser

Signature: /s/ Mark Hesser

Date: 4-25-11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 25,020 Signature of Certifier: /s/ Signature on File

Shipment 1 of 5

UNCONTROLLED When Printed

Radiological Survey Release for Waste Disposal
RST Initials: _____
This container/load meets the criteria for no added man-made radioactive material.
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: /s/ Signature on File DATE: 4-25-11
here. Onsite use only.

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150
Location / Origin: CAU 561; CAS 23-21-04 Bulk Debris and soil for disposal using tracking number 561G03

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 ☐ YMP
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 disposal 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: ☐ Asphalt ☒ Metal ☒ Wood ☒ Paper ☒ Rocks / unaltered geologic materials ☒ Empty containers
☒ Plastic ☒ Wire ☐ Cable ☒ Soil ☐ Rubber (excluding tires) ☒ Demolition debris
☒ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☒ Cloth ☒ Insulation (non-Asbestosform) ☒ Cement & concrete

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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials listed on this form. I have verified this through the waste characterization method identified above. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-27-11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 36,960

Signature of Certifier: 6/13/11

/s/ Signature on File

Radiological Survey Release for Waste Disposal
This container/load meets the criteria for no added man-made radioactive material.
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: /s/ Signature on File DATE: 4-27-11

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 23-21-04 Bulk Debris and soil for disposal using tracking number 561G03

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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: ☐ Asphalt ☒ Metal ☒ Wood ☒ Paper ☒ Rocks / unaltered geologic materials ☒ Empty containers
☒ Plastic ☒ Wire ☐ Cable ☒ Soil ☐ Rubber (excluding tires) ☒ Demolition debris
☒ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☒ Cloth ☒ Insulation (non-Asbestosform) ☒ Cement & concrete

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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-27-11

Note: "Food waste, office trash and animal carcasses do not require a radiological survey. All other waste must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40,120 5/16/11 Signature of Certifier: /s/ Signature on File

Radiological Survey Release for Waste Management
RGT Initials: NI
This container/load meets the criteria for no added man-made radioactive material.
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: /s/ Signature on File DATE: 5/16/11
BN-444 (10/05)

Shipment 3 of 5

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 23-21-04 Bulk Debris and soil for disposal using tracking number 561G03

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/IV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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: ☐ Asphalt ☒ Metal ☒ Wood ☒ Paper ☒ Rocks / unaltered geologic materials ☒ Empty containers
☒ Plastic ☒ Wire ☐ Cable ☒ Soil ☐ Rubber (excluding tires) ☒ Demolition debris
☒ 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 (CWMMA) 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 materials site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-27-11

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☒ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-17-11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 27,200

Signature of Certifier: /s/ Don Bickford

NTS LANDFILL LOAD VERIFICATION

Page

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150
Location / Origin: CAU 561; CAS 23-21-04 Bulk Debris and soil for disposal using tracking number 561G03

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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

NOTE: Waste disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those material prohibited and allowable waste items. I have verified this through the waste characterization method identified above and is approved for disposal in the landfill. I have contacted Property Management and have

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-25-11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 25,020 6/28/11 695 Signature of Certifier /s/ Signature on File

Radiological Survey Release for Waste Disposal
RGT Initials: _____
☒ This container/load meets the criteria for no added man-made radioactive material.
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge of material origin.
SIGNATURE: /s/ Signature on File DATE: 4-25-11

here. Onsite use only.

Equally Distributed Weight
6/27/11 & 6/28/11 loads.

Shipment 5 of 5

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 23-21-04 Bulk soil for disposal using tracking number 561G02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other _____ Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materia site. I have verified this through the waste characterization method identified above : prohibited and allowable waste items. I have contacted Property Management and ha is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-11-11

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Signature on File DATE: 4/11/2011

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 38540 Signature of Certifier: 4/27/11

/s/ Signature on File

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 23-21-04 Bulk soil for disposal using tracking number 561G02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other _____ Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 Managemer knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those material site. I have verified this through the waste characterization method identified above a prohibited and allowable waste items. I have contacted Property Management and ha is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 4-18-11

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 4-27

BN-0646 (10)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 23 200

Signature of Certifier: /s/ Signature on File

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 23-21-04 Bulk soil for disposal using tracking number 561G02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other _____ Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 Managem knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materia site. I have verified this through the waste characterization method identified above : prohibited and allowable waste items. I have contacted Property Management and ha is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 4-27-11

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Signature on File DATE: 4/27/11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 30740 4/28/11 Signature of Certifier: /s/ Signature on File

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-23-21 & 25-25-19 Bulk Debris and soil for disposal using tracking number 561J03

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☒ Other PCB Bulk Product Waste Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 Manager knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5-3-11

Radiological Survey Release for Waste Disposal

RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to professional knowledge and origin.

SIGNATURE: /s/ Signature on File DATE: 5/3/2011

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 31,380 Signature of Certifier: /s/ Don Bickford

UNCONTROLLED When Printed

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-23-21 & 25-25-19 Bulk Debris and soil for disposal using tracking number 561J03

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☒ Other PCB Bulk Product Waste Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/31/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 33920 5/31/11 Signature of Certifier:

Radiological Survey Release for Waste Disposal RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material
_____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
_____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5/31/11

BN-0646 (10/05)

UNCONTROLLED When Printed /s/ Don Bickford

Certificate of Disposal

This is to certify that the Waste Stream No. LITN-000000006, Revision 14, shipment number ITL11006, with container numbers 561103 was shipped and received at the Nevada National Security Site Radioactive Waste Management Complex in Area 5 for disposal as stated below.

Mark Heser	NI	Waste Coordinator
Shipped by	Organization	Title
/s/ Mark Heser		6-2-11
Signature		Date
E. TAKAHASHI	NSTec	SCIENTIST
Received by	Organization	Title
/s/ Signature on File		02-JUN-2011
Signature		Date

Certificate of Disposal

This is to certify that the Waste Stream No. LITN-000000006, Revision 14, shipment number ITL11003, with container numbers 561102 was shipped and received at the Nevada National Security Site Radioactive Waste Management Complex in Area 5 for disposal as stated below.

Mark Heser

Shipped by

/s/ Mark Heser

Signature

NI

Organization

Waste Coordinator

Title

6-2-11

Date

ED TAKAHASHI

Received by

NSItec

Organization

Scientist

Title

/s/ Signature on File

Signature

12-JUN-2011

Date

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other _____ Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and it is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser Date: 4/11/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 43500

Signature of Certifier: 5/19/11

/s/ Don Bickford

Radiological Survey Release for Waste Disposal

RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Signature on File DATE: 4/11/2011

BN-0646 (10/05)

Shipment 1 of 41

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NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and he is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/17/11

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-19-11

BN-0646 (10/0)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 45,460 Signature of Certifier: /s/ Don Bickford

Shipment 2 of 41
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NSTec

Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP

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 disposal 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

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 32,662 5/23/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

nv This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

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Shipment 3 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material
____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen

DATE: 5-23-11

BN-P646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 34640 5/23/11 Signature of Certifier: /s/ Don Bickford

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Shipment 4 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF 167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

NV This container/load meets the criteria for no added man-made radioactive material
____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
____ This container/load is exempt from survey due to process, knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 35,000

Signature of Certifier: /s/ Don Bickford

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Shipment 5 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 14,700 5/23/11 Signature of Certifier: /s/ Don Bickford

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Shipment 6 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/IV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 36647 Signature of Certifier: 5/23/11

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

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Shipment 7 of 41. /s/ Don Bickford

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 37,160 5/23/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

UNCONTROLLED When Printed

Shipment 8 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
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FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 19,000 5/23/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-23-11

BN-0646 (10/05)

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Shipment 9 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ TRANSITILE ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☒ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

11 This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen

DATE: 5-24-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 41600

Signature of Certifier: /s/ Don Bickford

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Shipment 10 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Radiological Survey Release for Waste Disposal
RCT Initials

RV This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 46,280 5/24/11 Signature of Certifier: /s/ Don Bickford

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Shipment 11 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 41,740 5/24/11 Signature of Certifier: /s/ Don Bickford

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Shipment 12 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 Manage knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 23,360 5/24/11 Signature of Certifier: /s/ Don Bickford

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Shipment 13 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this waste is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 37,800

Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal

RCT Initials

MV This container/load meets the criteria for no

added man-made radioactive material

This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-6646 (10/05)

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Shipment 14 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU.561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

mv This container/load meets the criteria for no added man-made radioactive material
____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

SWO USE ONLY

Load Weight (net from scale or estimate): 42,820 5/24/11 Signature of Certifier: /s/ Don Bickford

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Shipment 15 of 41

BN-0646 (10/05)

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception

(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/IV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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

Additional waste accepted at the Area 9 U10c Landfill:

☒ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above

☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40860

Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal

RCT Initials

This container/load meets the criteria for no added man-made radioactive material

This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

This container/load is exempt from survey due to process, knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen

DATE: 5-24-11

BN-0646 (10/05)

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Shipment 16 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions

Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).

Waste Types Definitions

NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.

Pollution Prevention Category Definitions

Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.

Radiological Limitations

Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

MIV This container/load meets the criteria for no added man-made radioactive material
 _____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
 _____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

SWO USE ONLY

Load Weight (Net from scale or estimate): 37600

Signature of Certifier: /s/ Signature on File

BN-0646 (10/05)

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Shipment 17 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06

Rev. 0

Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground TanksAdditional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 41560 5/24/11

Signature of Certifier: /s/

Radiological Survey Release for Waste Disposal
RCT Initials
/s/ This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

Signature on File

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Shipment 18 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

(13)

NSTec

Form

FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06

Rev. 0

Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 39340 5/24/11 Signature of Certifier: /s/ Signature on File

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Shipment 19 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

14

NSTec

Form

FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06

Rev. 0

Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40,060 5/24/11 Signature of Certifier: /s/ Signature on File

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-24-11

BN-0646 (10/05)

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Shipment 20 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
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WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
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Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception

(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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

Additional waste accepted at the Area 9 U10c Landfill:

☒ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material

☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 39,940 5/25/11 Signature of Certifier: /s/ Don Bickford

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Shipment 21 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 37,480 5/25/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

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Shipment 22 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological c must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 46,000 5/25/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

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Shipment 23 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 41,780 5/25/11 Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

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Shipment 24 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06

Rev. 0

Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception

(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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

Additional waste accepted at the Area 9 U10c Landfill:

☒ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above

☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ 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 Manager knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those mate site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Radiological Survey Release for Waste Disposal

RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material

☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 45960 5/25/11 Signature of Certifier: /s/ Signature on File

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Shipment 25 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 42370 5/25/11 Signature of Certifier: /s/ Signature on File

Radiological Survey Release for Waste Disposal

RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process, knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 46460 5/25/11 Signature of Certifier: /s/ R. Everett

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Shipment 27 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/IV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesser

Signature: /s/ Mark Hesser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological c must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 48,100

Signature of Certifier: /s/ R. Everett

Radiological Survey Release for Waste Disposal RCT Initials

NI This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

UNCONTROLLED When Printed

Shipment 28 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 38460

Signature of Certifier: /s/ Signature on File

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

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Shipment 29 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions

Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).

Waste Types Definitions

NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.

Pollution Prevention Category Definitions

Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.

Radiological Limitations

Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 42400 5/25/11 Signature of Certifier: /s/ Signature on File

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Shipment 30 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

9

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesper (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other: 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesper

Signature: /s/ Mark Hesper

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-25-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 34920

Signature of Certifier: /s/ Signature on File

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Shipment 31 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dill DATE: 5-25-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 43,320 5/25/11 Signature of Certifier: /s/ Signature on File

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Shipment 32 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06

Rev. 0

Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesel (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above, prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesel

Signature: /s/ Mark Hesel

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 44760

Signature of Certifier: /s/ Don Bickford

UNCONTROLLED When Printed

Radiological Survey Release for Waste Disposal RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material.
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11

BN-0646 (10/05)

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 mater site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological c must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 44,340 5/26/11 Signature of Certifier: /s/ Signature on File

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Shipment 34 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological cl must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 45 880

Signature of Certifier: /s/

Signature on File

Radiological Survey Release for Waste Disposal
RCT Initials

/NV This container/load meets the criteria for no added man-made radioactive material
_____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
_____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11

BN-0646 (10/05)

UNCONTROLLED When Printed

Shipment 35 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesper (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above: prohibited and allowable waste items. I have contacted Property Management and he is approved for disposal in the landfill.

Print Name: Mark Hesper

Signature: /s/ Mark Hesper

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40 680

Signature of Certifier: /s/ Don Bickford

UNCONTROLLED When Printed

Shipment 36 of 41

Radiological Survey Release for Waste Disposal
RCT Initials
MW This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11
BN-0646 (10/05)

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
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FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
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Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and I is approved for disposal in the landfill.

Print Name: Mark Hesser

Signature: /s/ Mark Hesser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal
RCV Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11

SWO USE ONLY

Load Weight (net from scale or estimate): 44,660

Signature of Certifier: /s/ Don Bickford

UNCONTROLLED when Printed

Shipment 37 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions

Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).

Waste Types Definitions

NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.

Pollution Prevention Category Definitions

Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.

Radiological Limitations

Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

NSTec

Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 47,260 5/26/11 Signature of Certifier: /s/ Don Bickford

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Shipment 38 of 41

Radiological Survey Release for Waste Disposal
RCT Initials: MV
This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11
BN-0646 (10/05)

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

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 ☐ YMP

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 disposal 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

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above

☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 38500

Date: 5/26/11

Signature of Certifier: /s/ Don Bickford

Radiological Survey Release for Waste Disposal RCT Initials

ML This container/load meets the criteria for no added man-made radioactive material

_____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

_____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5/26/11

BN-0846 (10/05)

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Shipment 39 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions

Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).

Waste Types Definitions

NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.

Pollution Prevention Category Definitions

Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.

Radiological Limitations

Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

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Form

FRM-0918

08/23/06

Rev. 0

Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Hesar (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials. I have verified this through the waste characterization method identified above prohibited and allowable waste items. I have contacted Property Management and h is approved for disposal in the landfill.

Print Name: Mark Hesar

Signature: /s/ Mark Hesar

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. They must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 39960 Signature of Certifier: /s/ Signature on File

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Shipment 40 of 41

Radiological Survey Release for Waste Disposal
RCT Initials

☒ This container/load meets the criteria for no added man-made radioactive material
☐ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
☐ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5-26-11

BN-0646 (10/05)

524-0741

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 2 of 2

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

9

NSTec
Form
FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06
Rev. 0
Page 1 of 2

SWO USE (Select One) 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 rollofs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Mark Heser (NI, WO)(M/S - NSF167) (Fax 5-2241) Phone Number: (o)5-2124; (c)496-0150

Location / Origin: CAU 561; CAS 25-08-02 Bulk Debris and soil for disposal using tracking number 561H02

Waste Category: (check one) ☐ Commercial ☒ Industrial
Waste Type: ☐ NTS ☐ Putrescible ☒ FFACO-onsite ☐ WAC Exception
(check one) ☐ Non-Putrescible ☐ Asbestos Containing Material ☐ FFACO-offsite ☐ Historic DOE/NV
Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP
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 disposal 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
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above
☒ Hydrocarbons (contact SWO) ☐ Other 1 shipment of HC soil & Debris Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ 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 materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Mark Heser

Signature: /s/ Mark Heser

Date: 5/17/11

Note: "Food waste, office trash and animal carcasses do not require a radiological c must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40,420 5/26/11 Signature of Certifier: _____

Radiological Survey Release for Waste Disposal RCT Initials

MV This container/load meets the criteria for no added man-made radioactive material
_____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
_____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: /s/ Mike Van Dillen DATE: 5/26/11

/s/ Signature on File

BN-0646 (10/05)

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Shipment 41 of 41

NTS LANDFILL LOAD VERIFICATION

Waste Category Definitions	
Commercial Waste:	Office waste, putrescible waste
Industrial Waste:	Waste generated from activities associated with the fabrication or demolition of on-site structures. Solid waste derived from industrial manufacturing processes (i.e., construction and demolition waste).
Waste Types Definitions	
NTS:	Waste generated from construction, demolition, and/or routine activities within the Nevada Test Site boundaries. Waste that does not meet another waste type definition listed below.
Non-Putrescible:	Waste that is not directly associated with construction or demolition activities, such as office waste
Putrescible:	Waste that will decompose, decay, and become putrid (i.e. food waste and animal carcasses).
Asbestos Containing Material:	Waste that contains asbestos. Regulated asbestos (friable) will not be accepted without a shipping paper.
FFACO-onsite:	Waste generated, within the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent Order.
FFACO-offsite:	Waste generated, outside of the NTS boundaries, from activities directed by the Federal Facilities Agreement and Consent order (e.g., CNTA, TTR, NLV, and some UGTA project locations).
WAC exception	Waste that does not meet the waste acceptance criteria, as defined within the current NTS landfill permits, and has been given approval from the NDEP for disposal into an NTS landfill.
Historic DOE/NV	Waste generated from historical releases associated with the DOE/NV Waste Management Project Office (precursor to the Yucca Mountain Project Office), which occurred prior to November 30, 1989.
Pollution Prevention Category Definitions	
Environmental Management:	Waste generated from an Environmental Management project (e.g., waste generated from Environmental Restoration or International Technologies projects).
Industrial Waste:	Defense Projects: Waste generated from Defense Projects (e.g., waste generated from DTRA, LANL, Sandia, and/or any other non-Environmental Management directed project.
Routine:	Routine operations waste generated from: any type of production, analytical, and/or research and development laboratory operation; "work-for-others," and/or any periodic and recurring work that is considered on-going processes, are also considered routine operations.
Clean-up:	Clean-up/stabilization waste generated from one-time operations. Waste generated from: environmental restoration projects-, decontamination and decommissioning/ transition operations-, and TSCA regulated wastes. Clean-up/stabilization activities may span several years. The waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes produced during clean-up operations (usually resulting from common activities such as handling, sampling, treatment, repackaging, shipping, etc.) are considered clean-up waste.
Radiological Limitations	
Area 23 Landfill:	See "Performance Objective for Certification of Non-Radioactive Hazardous Waste".
Area 6 and Area 9 Landfills:	See permit limits.

Appendix G

Nevada Division of Environmental Protection Comments

(1 Page)

NEVADA ENVIRONMENTAL RESTORATION PROJECT

DOCUMENT REVIEW SHEET

1. Document Title/Number:		Draft Corrective Action Decision Document/Closure Report for Corrective Action Unit 561: Waste Disposal Areas, Nevada National Security Site, Nevada		2. Document Date:		7/11/2011	
3. Revision Number:		0		4. Originator/Organization:		Navarro-INTERA	
5. Responsible NNSA/NSO Federal Sub-Project Director:		Kevin J. Cabble		6. Date Comments Due:			
7. Review Criteria:		Full					
8. Reviewer/Organization/Phone No:				Ted Zaferatos and Jeff MacDougall, NDEP, 486-2850 ext. 234 and 231		9. Reviewer's Signature:	
10. Comment Number/Location	11. Type*	12. Comment	13. Comment Response			14. Accept	
1.) Executive Summary, Page ES-2, 1st Bulleted Item at Top of Page	Mandatory	CAS 03-19-02 is listed twice in the first line. The second mention of the CAS should be to 05-62-01.	The second mention of CAS 03-19-02 has been changed to "05-62-01." The sentence now reads "No contamination exceeding FALs was identified at CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-16-06."				
2.) Executive Summary, Page ES-3, 1st Item in the 2nd Set of Bulleted Items, Mid-Page	Mandatory	CAS 03-19-02 is again listed twice. The second mention of CAS 03-19-02 should be to 05-62-01.	The second mention of CAS 03-19-02 has been changed to "05-62-01." The sentence now reads "No further action for CASs 01-19-01, 03-19-02, 05-62-01, 12-23-09, and 22-19-06."				

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