Nevada
Environmental
Restoration
Project

DOE/NV--611

Corrective Action Plan for
Corrective Action Unit 240:
Area 25 Vehicle Washdown
Nevada Test Site, Nevada

Controlled Copy No.: _____

UNCONTROLLED

Revision: 0

May 2000

Environmental Restoration
Division

U.S. Department of Energy
Nevada Operations Office

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RECORD OF TECHNICAL CHANGE

Technical Change No. 1

Page 1 of 2

Project/Job No. WBS 10401030601

Date 8/7/2000

Project/Job Name CAU 240, Area 25 Vehicle Washdown

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

Shannon Parsons-DePry

Task Manager

(Name)

(Title)

The project time will be Unchanged.

Applicable Project-Specific Document(s): Corrective Action Plan for Corrective Action Unit 240, Area 25
Vehicle Washdown, Nevada Test Site, Nevada

Approved By:

Janet Appenzeller-Wing Date 8/9/00
Janet Appenzeller-Wing, Project Manager
Industrial Sites Project

Rumore C. Wycoff Date 8/9/00
Rumore C. Wycoff, Division Director
Environmental Restoration Division

Client Notified Yes ☒ No ☐ Date 8/9/00

NDEP Concurrence Michael MK Yes ☒ No ☐ Date 8/9/00

Contract Change Order Required Yes ☐ No ☐

Contract Change Order No. _____

UNCONTROLLED

A recent revision to the Nevada Test Site landfill permits allows the disposal of materials with slightly elevated radiological levels. Using these revised levels, site characterization results indicate soil from CAU 240 can be disposed as hydrocarbon waste and the pad can be disposed as solid waste. Bechtel Nevada recently conducted a radiological survey with hand-held instrumentation (i.e., Electras), and detected elevated hotspots around the perimeter of the vehicle washdown pad that are above the revised permit levels. Based on this new information, the following changes in scope to the Corrective Action Plan are proposed:

Excavate the soil around the perimeter of the pad to approximately 0.3 m (1 ft) in depth to remove the identified hotspots. This soil will be managed as low level waste. A second radiological survey will be conducted on the perimeter soil to determine that the hotspots have been

Technical Change No. 1

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Project/Job No. WBS 10401030601

Date 8/7/2000

Project/Job Name CAU 240 Area 25 Vehicle Washdown

removed. If additional hotspots are identified, additional soil will be removed and managed as low level waste. Low level waste will be containerized in B-25 boxes and managed in accordance with section 2.3 of the CAP.

Once the identified hotspots have been removed, the remaining soil impacted with hydrocarbons will be removed and managed as hydrocarbon waste. The soil is not expected to exceed the levels of Sr-90 at 12.5 pCi/g and Cs-137 at 14.65 pCi/g that were detected during site characterization. This soil will be placed directly into a dump truck and transported to the Area 6 hydrocarbon landfill for disposal.

The concrete washdown pad was also surveyed by Bechtel Nevada using hand-held instruments and swipe samples. No elevated levels of radioactivity were detected on the pad. Therefore, the pad will be cut up and disposed as solid waste at the U-10c landfill.

No change is proposed for the number or type of verification samples to be collected.

**CORRECTIVE ACTION PLAN FOR
CORRECTIVE ACTION UNIT 240:
AREA 25 VEHICLE WASHDOWN,
NEVADA TEST SITE, NEVADA**

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Revision 0

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May 2000

**Prepared for the U.S. Department of Energy
Nevada Operations Office
under Contract No. DE-AC08-96NV11718**

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**CORRECTIVE ACTION PLAN FOR
CORRECTIVE ACTION UNIT 240:
AREA 25 VEHICLE WASHDOWN,
NEVADA TEST SITE, NEVADA**

Approved By:
Janet L. Appenzeller-Wing, Project Manager
Industrial Sites Project

Date: 5/17/00

Approved By:
Runore C. Wycoff, Director
Environmental Restoration Division

Date: 5/17/00

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ACRONYMS AND ABBREVIATIONS

BN	Bechtel Nevada
CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
Cs-137	Cesium-137
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
ER	Environmental Restoration
FFACO	Federal Facility Agreement and Consent Order
ft	foot
gal	gallon
HA	Hazard Assessment
L	liter
m	meter
m ³	cubic meter
mg/kg	milligram per kilogram
mL	milliliter
NAC	Nevada Administrative Code

ACRONYMS AND ABBREVIATIONS (Continued)

NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
NTSWAC	Nevada Test Site Waste Acceptance Criteria
pCi/g	picoCuries per gram
PHA	Preliminary Hazard Assessment
PPE	Personal Protection Equipment
REOP	Real Estate/Operations Permit
RWAP	Radioactive Waste Acceptance Program
RWP	Radiological Work Permit
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
Sr-90	Strontium-90
SSHASP	Site-Specific Health and Safety Plan
TPH	Total Petroleum Hydrocarbon
yd ³	cubic yards

EXECUTIVE SUMMARY

The Area 25 Vehicle Washdown is identified in the Federal Facility Agreement and Consent Order as Corrective Action Unit (CAU) 240. The CAU is located in Area 25 of the Nevada Test Site (NTS) and includes three Corrective Action Sites (CAS).

The Vehicle Washdown Area (Propellant Pad) (CAS 25-07-01) was part of the Central Propellant Storage Area. It was used to sample liquid hydrogen from dewars prior to being sent to the test cells. The Propellant Pad was in operation from 1967 to 1973.

The Vehicle Washdown Area (F and J Roads Pad) (CAS 25-07-02) may have been used for the decontamination of vehicles and possibly disassembled engine and reactor parts from Test Cell C. Activities occurred there during the 1960s through early 1970s.

The Vehicle Washdown Station (RADSAFE Pad) (CAS 25-07-03) was originally designed to be a radiation checkpoint and decontamination area. It was operational from 1959 to 1973 and was used to decontaminate vehicles and, possibly, parts associated with reactor testing.

Based on the results of the Characterization Report, only the radionuclides cesium-137 (Cs-137) and strontium-90 (Sr-90) and petroleum hydrocarbons were found in the areas around the F and J Roads Pad. Cs-137 and Sr-90 were detected at concentrations above established background levels. Petroleum hydrocarbons as diesel were detected at levels of up to 1,500 milligrams per kilogram (mg/kg), which exceeds the Nevada Division of Environmental Protection regulatory action level of 100 mg/kg. Soil containing the fission products Cs-137 and Sr-90 and petroleum hydrocarbons is located around the perimeter of the pad and will need to be removed and disposed as part of the corrective action. No constituents of concern were found at either the Propellant Pad or the RADSAFE Pad; therefore, no further action is warranted at these CASs.

Clean closure involves the excavation and disposal of impacted soil and the concrete pad. Low-level radioactive and petroleum hydrocarbon waste are intermixed and will not be separated prior to disposal in an approved NTS low-level radioactive waste landfill. Non-impacted debris will be disposed in a NTS sanitary landfill. Upon completion of excavation, soil samples will be collected from the excavated area to verify that the radionuclides and petroleum hydrocarbons have been removed. The excavated area will then be backfilled and regraded. Post-closure care is not required because this is a clean closure.

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1.0 INTRODUCTION

The Area 25 Vehicle Washdown is located in Area 25 of the Nevada Test Site (NTS) (Figure 1). The site is listed in the Federal Facility Agreement and Consent Order (FFACO, 1996) as Corrective Action Unit (CAU) 240 and includes the following Corrective Action Sites (CASs):

- 25-07-01 - Vehicle Washdown Area (Propellant Pad).
- 25-07-02 - Vehicle Washdown Area (F and J Roads Pad).
- 25-07-03 - Vehicle Washdown Station (RADSAFE Pad).

The site history for each CAS was provided in the Corrective Action Investigation Plan (CAIP) (U.S. Department of Energy [DOE], 1999a). The Propellant Pad was part of the Central Propellant Support Area. It was constructed between December 1965 and February 1967. The Propellant Pad was used to sample liquid hydrogen from the dewars prior to being sent to the test cells. Liquid hydrogen sampling activities continued through 1973.

The F and J Roads Pad may have been used for the decontamination of vehicles and possibly disassembled engine and reactor parts from Test Cell C. Activities occurred there during the 1960s through early 1970s. The F and J Roads Pad consists of a 9-by 5-meter (m) (30-by 15-foot [ft]) concrete pad and a 14- by 13-m (46- by 43-ft) gravel sump (Figure 2).

The RADSAFE Pad was originally designed to be a radiation checkpoint and decontamination area. It was operational from 1959 to 1973 and was used to decontaminate vehicles and possibly parts associated with reactor testing.

1.1 PURPOSE

The purpose of this Corrective Action Plan is to provide the strategy and methodology to close the Area 25 Vehicle Washdown. The CAU will be closed following state and federal regulations and the FFACO (1996). Site characterization was performed during March 1999 at each CAS. Soil samples were collected at each CAS using a direct-push method. Soil samples were collected from the surface to depths of up to 2.7 m (9 ft) below ground surface. In addition, the gravel sump at CAS 25-07-02 (F and J Roads Pad) was sampled using a backhoe. Soil samples were collected from depths of 0 to 0.6 m (0 to 2 ft) below the gravel layer in the sump.

The results of the characterization were reported in the Corrective Action Decision Document (CADD) (DOE, 1999b).

Soil sample results indicated the following:

- CAS 25-07-02 (F and J Roads Pad) contained soil with petroleum hydrocarbons (TPH) as diesel at levels of up to 1,500 milligrams per kilogram (mg/kg), which exceeds the Nevada Division of Environmental Protection (NDEP) regulatory action level of 100 mg/kg for TPH (Nevada Administrative Code [NAC], 1996). The F and J Roads Pad was also impacted by cesium-137 (Cs-137) and strontium-90 (Sr-90) at concentrations up to 14.65 and 12.5 picoCuries per gram (pCi/g), respectively. The radiological background level is 7.0 pCi/g, assuming a one to one ratio for Cs-137 and Sr-90. The TPH and radiologically impacted soil is located around the perimeter of the pad and will need to be removed and disposed as part of the corrective action.
- No Constituents of Concern above the Preliminary Action Levels outlined in the CAIP (DOE, 1999a) were detected at CAS 25-07-01 (Propellant Pad), or CAS 25-07-03 (RADSAFE Pad). Therefore, no corrective action is required at these locations.

1.2 SCOPE

The approved corrective action alternative was chosen in the CADD (DOE, 1999b). The approved alternative includes clean closure by excavation and disposal. The scope of the approved corrective action alternative consists of the following activities:

- Preplanning and site preparation, including the preparation of all plans and permits, delineation of excavation boundaries, and mobilization of equipment to the site.
- Excavation of the soil containing radionuclides above background levels and petroleum hydrocarbons above 100 mg/kg around the perimeter of the F and J Roads Pad to a minimum depth of 0.6 m (2 ft) and a planned maximum depth of 1.8 m (6 ft) below ground surface.
- Removal and disposal of the concrete pad.
- Closure verification sampling for petroleum hydrocarbons and radionuclides will be completed using field screening and laboratory analysis. Radionuclides will be removed until background levels are achieved. Petroleum hydrocarbons will be removed to below the NDEP Action Level of 100 mg/kg (NAC, 1996). Proposed remediation standards are provided in Table 1.
- Disposal of excavated materials following applicable federal, state, and DOE regulations in accordance with Section 2.3 of this Corrective Action Plan.

- Decontamination of equipment as necessary.
- Backfilling and grading of the site.

The characterization, handling, shipping, and certification of the low-level radioactive soil will be conducted according to the waste profile developed under the guidelines of the Nevada Test Site Waste Acceptance Criteria (NTSWAC) (DOE, 1999c) and the Waste Certification Program Plan for Radioactive Waste Storage or Disposal at the Nevada Test Site (Bechtel Nevada [BN], 2000a). Radioactive impacted soil control and certification activities will be subject to a U.S. Department of Energy, Nevada Operations (DOE/NV) Radioactive Waste Acceptance Program (RWAP) approval process. Although not anticipated, any hazardous waste will be managed in accordance with BN Organization Procedures "Management of Hazardous Waste Satellite Accumulation Areas-Nevada Test Site and North Las Vegas Facility" (BN, 2000b) and "Management of Hazardous Waste 90-Day Accumulation Areas-Nevada Test Site and North Las Vegas Facility" (BN, 2000c).

TABLE 1 - PROPOSED REMEDIATION STANDARDS FOR CAU 240

CONSTITUENT	BACKGROUND CONCENTRATION ^A	NDEP ACTION LEVEL ^B
Cs-137	7 pCi/g ^C	N/A
Sr-90	7 pCi/g	N/A
Petroleum Hydrocarbons	N/A	100 mg/kg

A - Background as defined in Corrective Action Decision Document for Corrective Action Unit 240: Area 25 Vehicle Washdown, Nevada Test Site, Nevada (DOE, 1999b)

B - NDEP Action Level for petroleum hydrocarbons (NAC, 1996)

C - picoCuries per gram

N/A - Referenced standard is not applicable for the constituent.

1.3 CORRECTIVE ACTION PLAN CONTENTS

This document is divided into the following sections following the approved FFACO Corrective Action Plan outline:

- Section 1.0 - Introduction
- Section 2.0 - Detailed Statement of Work
- Section 3.0 - Schedule
- Section 4.0 - Post-Closure Plan
- Section 5.0 - References

The appendices of this document have been modified from the approved FFACO outline. The following FFACO outline appendices have not been included or revised as indicated below:

- Appendix A1: Engineering Specifications and Drawings

This appendix is not warranted for the site as there are no construction or engineered cover requirements for closure.

- Appendix A2: Sampling and Analysis Plan

The sampling and analysis requirements for the site are detailed in Section 2.4 "Clean-up Verification," therefore, a separate sampling and analysis plan is not included as an appendix.

- Appendix A3: Project Organization

This appendix is identified as Appendix A.

2.0 DETAILED STATEMENT OF WORK

2.1 APPROVED ALTERNATIVE IMPLEMENTATION

This section describes how the approved alternative will be implemented at the Area 25 Vehicle Washdown. The approved alternative includes clean closure with excavation and disposal of impacted soils, verification sampling, and regrading of the site. In addition to field activities, planning and site preparation are also required.

2.1.1 PREPLANNING AND SITE PREPARATION

Prior to beginning excavation activities, the following planning and preparation activities will be accomplished:

- Preparation of planning documents such as the Site-Specific Health and Safety Plan (SSHASP) and the Field Management Plan.
- Site preparation including utility clearance, work permits, and delineation of excavation boundaries.
- Identification and approval of a source for water for dust suppression and other construction activities; and
- Scheduling and coordination of work with construction and waste management.

2.1.1.1 SSHASP/Hazard Analysis

A SSHASP, Preliminary Hazard Assessment (PHA), and Hazard Assessment (HA) will be prepared. A copy of the document will be kept on file in the BN Environmental Restoration (ER) and the BN Environmental, Safety, and Health Division offices in Mercury, Nevada. The original document will be kept by the Site Health and Safety Officer or designee at the work site. The SSHASP, PHA, and HA will be available on-site for review and signature by all workers prior to beginning work at the site. The SSHASP will provide a detailed, job-specific plan covering protection against accidents and exposure of workers to contamination. It will also discuss weather/air monitoring, accident reporting, emergency procedures, and physical and environmental hazards. The work will also be performed following the BN Environment, Safety, and Health Manual (BN, 1999a). In addition, the Material Safety Data Sheets file will be maintained by the Health and Safety Officer and will also be available on-site.

2.1.1.2 Field Management Plan

A Field Management Plan will be prepared for the closure activities. The plan outlines how the work will be accomplished, an integrated safety management plan, and provides a detailed schedule for the project. In addition, it will identify the responsible parties for each aspect of the project and determine how decisions will be made. A copy of the Field Management Plan will be placed on file at the BN ER office in Mercury, Nevada, and a copy will also be available at the project field site.

2.1.1.3 Sampling and Analysis Plan

Sampling and analysis of the waste will be performed in accordance with the NTSWAC (DOE, 1999c). If necessary, a Sampling and Analysis Plan (SAP) for waste characterization to meet NTSWAC requirements will be prepared. The impacted soil will go through the RWAP process based on the results of site characterization sampling. Additional waste characterization sampling will only be done if required by RWAP. Sampling will be conducted in accordance with the approved SAP for waste characterization. The sampling and analysis plan for verification sampling is provided in Section 2.4.

2.1.1.4 National Environmental Policy Act Documentation

A National Environmental Policy Act checklist, and any subsequent documentation, will be completed prior to beginning excavation activities at the site. If necessary, a follow-up survey will be performed and will report on the condition of existing trees, shrubs, grassed areas, cultural resources, sacred sites, and wildlife immediately adjacent to the area which may be affected by construction activities, equipment and material storage areas, and access routes. Based on the findings of this survey, the excavation activities at the Area 25 Vehicle Washdown site will follow all applicable federal, state, and local laws, regulations, and permits for protection of the environment.

2.1.2 FIELD ACTIVITIES

2.1.2.1 Excavation of the Soil Containing Radionuclides and Hydrocarbons

Approximately 19 cubic meters (m^3) (25 cubic yards [yd^3]) of soil at the F and J Roads Pad have been impacted with radionuclides and petroleum hydrocarbons. This soil will be removed from around the perimeter of the pad. The depth of the excavations is anticipated to range between 0.6 and 1.8 m (2 and 6 ft) (Figure 3). Excavated soil and debris will be placed in B-25 boxes and stored temporarily in a waste staging area to await disposal in an approved landfill in accordance with the NTSWAC (DOE, 1999c). The waste will be managed following Section 2.3 of this Corrective Action Plan.

During excavation, the soil and excavated area will be examined visually for stains or discoloration that may be the result of petroleum hydrocarbons discharged in this area. The soil and excavated area may also be screened using a Photoionization Detector. In addition, field screening for radionuclides will be conducted on the excavation floors, walls, and under the concrete pad to determine if the radiologically impacted soil has been removed. Any areas identified as impacted above remediation levels will be removed.

2.1.2.2 Removal of Concrete Pad

The concrete pad will also be removed and disposed. Prior to removal, in-situ gamma spectrometry tests will be run on the pad to determine the level of radiological contamination for waste determination. The pad will be broken up using appropriate equipment and screened for radiological contamination using handheld instruments and swipe samples. The pieces of the pad will be wrapped in plastic and stored on-site until a determination is made whether the pad is low-level radioactive waste or construction debris.

2.1.2.3 Decontamination of Equipment

Sampling equipment will be decontaminated off-site prior to the start of field activities. Equipment will be decontaminated using AlconoxTM and water followed by a deionized water rinse. Equipment will be air dried and placed into clean plastic bags.

All equipment and materials used on-site will be surveyed for radiological constituents using handheld instruments and swipe samples prior to release from the site. Any equipment that becomes contaminated during the excavation process will be decontaminated on-site.

Equipment will be cleaned over the impacted soil piles or containerized soil with a solution of AlconoxTM and water, and rinsed with clean water. For larger pieces of equipment, a decontamination pad will be prepared by lining with plastic a bermed area large enough to hold a piece of heavy equipment. The equipment will be driven onto the pad and steam cleaned. Rinsate will be held in the bermed area and allowed to evaporate unless it is in excess of what the bermed area can hold. Excess rinsate will be pumped into 208-liter (L) (55-gallon [gal]) drums. Any remaining rinsate at the time of final site housekeeping will be placed in containers and disposed of following Section 2.3 of this plan. The plastic liner will be placed in containers as compactable waste and disposed of following Section 2.3.

2.1.2.4 Backfilling and Grading of the Site

The excavated areas will be backfilled with clean fill soil and leveled to existing grade with a loader/backhoe to minimize surface obstructions and ponding.

2.2 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL

Construction activities primarily consist of excavation and earth moving. Permeability and compaction testing will not be necessary. As a result, no construction quality assurance/quality control is required.

2.3 WASTE MANAGEMENT

Waste streams generated at CAU 240 will include soil and debris containing radionuclides and petroleum hydrocarbons, and nonhazardous sanitary trash.

Table 2 summarizes waste management practices that will be used during closure activities at CAU 240. Waste will be managed in accordance with state and federal regulations, DOE orders, and BN procedures. Nonhazardous waste types will be handled in accordance with DOE Standard Operating Procedure (SOP) ERD-05-210, "Management and Minimization of Nonhazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project" (DOE, 1994). Low-level radioactive waste will be handled in accordance with BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999b). A Waste Profile and Material Evaluation Form will be prepared in accordance with the NTSWAC (DOE, 1999c) and BN Procedure OP-2151.301, "Radioactive Waste Evaluation," (BN, 1999c) based on previous site characterization results.

All hydrocarbon and radioactive waste will be disposed of in an approved NTS landfill. Radiologically impacted media and petroleum hydrocarbon-impacted media are intermixed and will not be separated prior to disposal in the approved landfill.

2.3.1 NONHAZARDOUS WASTE

Nonhazardous waste, such as sanitary trash, the berm liner, miscellaneous construction debris, and the concrete pad will be disposed of in the Area 23 Sanitary Waste Landfill or Area 9 U10c Construction Landfill if they do not exceed the surface or volumetric contamination limits.

TABLE 2 - MANAGEMENT OF WASTE TYPES TO BE PRODUCED AT THE AREA 25 VEHICLE WASHDOWN

MEDIA	WASTE TYPE	MANAGEMENT PRACTICE
Impacted soil/debris	Regulated radiologically and petroleum hydrocarbon-impacted soil and debris	Low-level waste will be managed in accordance with BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999b). Waste will be placed into containers, labeled, and stored in the designated waste management area. If necessary, absorbent will be added. Appropriate paperwork (Package Inventory, Waste Traveler, Packaging Certification, Radioactive Material Shipping Exception Record or Radioactive Material Shipping Record, Waste Shipment Checklist, and Certification Statement) will be completed prior to shipment for disposal.
	Levels less than regulated limits	The soil will be returned to the excavations and used as backfill material. Debris will be disposed of in an NTS sanitary landfill.
Personal Protective Equipment and miscellaneous trash and construction debris.	Regulated radiologically and petroleum hydrocarbon-impacted PPE, trash, and construction debris	Waste will be managed in accordance with the BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999b). Compactible waste generated in association with a hotline will also be managed in accordance with BN Instruction OI-0441.203, "General Radiological Control Technician Field Instructions" (BN, 1998). Compactible waste will be placed in the containers of soil to occupy any void space in the container. Impacted PPE (coveralls, boots, respirators, etc.) will be transported to the NTS Area 6 Decon Laundry for cleaning and reuse.
	Nonhazardous trash and construction debris	Trash and construction debris will be disposed of in the Area 23 Sanitary Waste Landfill.

TABLE 2 (Continued) - MANAGEMENT OF WASTE TYPES TO BE PRODUCED AT THE AREA 25 VEHICLE WASHDOWN

MEDIA	WASTE TYPE	MANAGEMENT PRACTICE
Decontamination Rinsate and Plastic Liner	Low-level radioactive decontamination rinsate (if applicable)	Waste will be managed in accordance with the BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999b). Waste will be solidified using Aqua-Set® or an equivalent approved solidification agent, placed into containers, labeled, and placed in the designated waste management area. Appropriate paperwork (Package Inventory, Waste Traveller, Packaging Certification, Radioactive Material Shipping Exception Record or Radioactive Material Shipping Record, Waste Shipment Checklist, and Certification Statement) will be completed prior to shipment for disposal.
	Nonhazardous decontamination rinsate and liner	Decontamination rinsate from heavy equipment decontamination that remains in the lined berm at the close of the project will be placed into a 208-L (55-gal) drum prior to disposal in the Area 23 Sewage Lagoon. The decontamination liner along with other nonhazardous PPE will be disposed of in the Area 23 Sanitary Waste Landfill if post-project survey results are below surface contamination limits. Nonhazardous waste will be managed in accordance with DOE SOP ERD-05-210, "Management and Minimization of Nonhazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project" (DOE, 1994).

2.3.2 LOW-LEVEL RADIOACTIVE WASTE

Approximately 19 m³ (25 yd³) of low-level radioactive waste soil and debris will be generated during closure activities. The waste contains Cs-137, Sr-90, and petroleum hydrocarbons. The waste will be placed into B-25 boxes in accordance with the NTSWAC (DOE, 1999c) prior to being transported to an approved NTS landfill. The concrete pad, if impacted with radionuclides, will be segmented and wrapped in plastic prior to being transported to the approved landfill.

2.3.3 CONTAINER MANAGEMENT

The B-25 boxes to be used during this project will be filled to meet their weight capacity, which is anticipated to be 3,600 kilograms (8,000 pounds). When the boxes have almost reached their weight capacity, compactable waste will be placed in the B-25 boxes to fill any existing void spaces. After a box has been filled, the waste package will be closed according to BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999b). If a box is not completely filled to capacity at the end of a workday, the lid will be closed without securing the clips and tamper-resistant tape will be placed on the box.

A secondary containment system will only be required if containers (such as 208-L [55-gal] drums) hold free liquid or are unprotected from contact with accumulated liquid. Because the majority of the waste produced during this project is anticipated to be soil and debris, secondary containment will not be required. If, however, free liquid is placed into containers, such as the water from the decontamination pad, the containers will be placed on spill containment pallets.

Appropriate labels and relevant information will be marked on each container with an indelible marker, or equivalent. The information will be legible and clearly visible for inspections. Pertinent data may be written on duct tape or a blank adhesive label affixed to the side of the container. The containers will be labeled with information such as:

- RAD Track label or Waste-tracking label, as appropriate.
- Type of waste in the container.
- Location waste was derived from.
- Date of accumulation.
- Awaiting/pending analysis if sampling is required.

2.3.4 SITE CONTROL

Airborne radionuclides may be generated during field activities. Dust suppression will be used as appropriate to limit dust generation. Where appropriate, temporary fencing will be constructed around the exclusion zone and work areas. Appropriate warning signs will be posted. Only properly trained personnel wearing appropriate PPE will enter the exclusion zone. All equipment and materials will be radiologically surveyed prior to removal from the exclusion zone. Waste management areas will be located outside of the exclusion zone. The proposed waste management areas and proposed exclusion zone are shown in Figure 2.

2.3.5 PERSONNEL TRAINING

All personnel responsible for packing low-level or mixed radioactive waste will be required to read and understand BN Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (1999b).

Title 29 Code of Federal Regulations §1910.120 (U.S. Environmental Protection Agency [EPA], 1996) details the occupational safety and health requirements that will be followed for personnel supporting excavation activities. All personnel will be required to read and understand the SSHASP prior to working at the site. A tailgate safety briefing will be conducted every morning and as needed as activities or circumstances change. In addition, all personnel entering the exclusion zone will require 40-hour Occupational Safety and Health Administration and Radiation Worker II training.

2.3.6 WASTE MINIMIZATION

For the duration of the project, site workers will adhere to the BN Waste Minimization and Pollution Prevention Program. Care will be taken to segregate waste from non-waste materials, when possible, to avoid the generation of additional regulated waste.

2.4 CLEAN-UP VERIFICATION

2.4.1 VERIFICATION SAMPLING

Verification sampling is required for a site closure. A verification program must support the field decision that any remaining constituents of concern are less than remediation standards and provide the regulator with confidence that sufficient samples have been collected to verify that the site has been remediated. For the Area 25 Vehicle Washdown, the approved CADD (DOE, 1999b) indicated that petroleum hydrocarbons and radionuclides are the only constituents of concern above remediation standards. All verification samples will be analyzed for TPH as

diesel and 20-minute gamma spectrometry. The closure criteria will be based on the presence of hydrocarbons and radionuclides in the verification samples. The TPH as diesel concentration will not exceed 100 mg/kg for any sample. The average radionuclide concentration of all soil samples collected will not exceed 7 pCi/g and no individual sample will exceed 21 pCi/g. If this criteria is not met, additional excavation and verification sampling will be done. A summary of the type and number of samples to be collected and the analyses to be performed is provided in Table 3. A two-week analytical turnaround time will be requested for all samples.

A total of 25 verification samples will be collected from the excavations including 3 from under the pad. Samples will be collected from the bottom a minimum of every 1.5 m (5 ft) along the length of each excavation. In addition, samples will be collected from the sidewalls of the excavation on the southwest side of the pad because its depth is expected to be greater than 1.5 m (5 ft). Proposed verification sample locations are shown in Figure 3. Sample locations may be adjusted depending on site conditions. For excavations up to 1.2 m (4 ft) deep, samples will be collected by hand using a decontaminated stainless steel scoop. Soil will be placed in the proper containers. For excavations exceeding 1.2 m (4 ft) in depth, the samples will be collected as grab samples from the soil in a decontaminated bucket of the excavation equipment, and placed in the proper containers.

All samples will be labeled with a unique sample number using the following nomenclature:

FJW-BOT1

Where:

- FJ is the site location.
- W is the compass direction of the excavation in relation to the pad.
- BOT is a bottom sample (SW will be used for excavation sidewall samples).
- 1 is the number of the sample.

All samples will be cooled to 4°C (40°F) and transported to the BN Analytical Services Laboratory under strict chain-of-custody procedures.

2.4.2 QUALITY CONTROL SAMPLES

One quality control sample (blind replicate) will be collected for every 10 samples collected. Each blind replicate will be labeled with its own distinct sample number so that the laboratory will not be able to readily identify it as a quality control sample. One sample from each TPH sample batch will be designated for the laboratory to run a matrix spike and a matrix spike duplicate. In addition, at least one equipment blank will be collected for each sample batch. The data packages provided by the laboratory will be validated and any laboratory method blanks will be evaluated by qualified personnel.

TABLE 3— AREA 25 VEHICLE WASHDOWN SITE VERIFICATION SAMPLING PARAMETERS

PARAMETER	NUMBER OF SAMPLES	NUMBER OF QUALITY CONTROL SAMPLES	SAMPLE TOTAL	ANALYTICAL METHOD	SAMPLE CONTAINER
20-minute Gamma Spectrometry	25	2 Blind Replicates 1 Equipment Blank	28	L-E10.602.PC (BN, 1996)	500-milliliter (mL) Nalgene® bottle
Total Petroleum Hydrocarbon (TPH) as Diesel	25	2 Blind Replicates 1 Matrix Spike/Matrix Spike Duplicate* 1 Equipment Blank	29	SW846, EPA Method 8015B, Modified	1 250-mL glass jar 1 1 L glass bottle

* The matrix spike/matrix spike duplicate will not be a unique sample. One of the samples collected for analysis will be designated the matrix spike/matrix spike duplicate sample.

2.5 PERMITS

Required permits for this project include a Radiological Work Permit (RWP), an Excavation and Penetration Permit, and a Real Estate/Operations Permit.

2.5.1 Radiological Work Permits

RWPs will be prepared and approved to inform workers of the specific PPE necessary to protect them while performing their tasks. The workers will be required to read the permits and acknowledge their understanding of the requirements before entry into the exclusion zone. The RWPs will be maintained by the radiological control personnel at the access station. All site workers will be required to be Radiological Worker II or Radiological Control Technician-certified. The RWPs and any associated bioassay plan will be included as part of the SSHASP.

2.5.2 Excavation and Penetration Permit

An approved Excavating and Penetration Permit will be obtained prior to any excavation. The permit contains a justification for the trenching operation and a checklist of pertinent organizations who must inspect the site so that the trenching will not impact utilities or cause a hazardous situation to workers. A copy of this permit will be kept at the project site by the construction superintendent.

2.5.3 Real Estate/Operations Permit (REOP)

A REOP will be completed prior to starting field activities. This DOE permit authorizes BN the right of occupancy and use of the DOE real estate (Area 25 Vehicle Washdown) for closure activities.

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3.0 SCHEDULE

3.1 PROJECT SCHEDULE

A project schedule is provided in Table 4. The schedule will require modifications if conditions exist that are outside the assumptions on which the schedule is developed. The DOE will keep the NDEP apprised of any conditions that may impact the project schedule. In the event that the project schedule requires modifications, the DOE will consult with NDEP personnel prior to making any changes.

3.2 FIELD WORK CLOSURE SCHEDULE

A tentative schedule for planned field work consists of the following:

- Prefield Activities July 2000
- Excavation Activities August 2000
- Verification Sampling August 2000
- Final Site Restoration August 2000
- Management and Disposal of Waste August-November 2000

Field work will be done in the safest and most efficient manner possible. Sufficient flexibility has been placed in the project schedule to account for minor difficulties (weather, equipment breakdown, etc.). The schedule may require modification if conditions exist that are outside the assumptions on which the schedule was developed.

TABLE 4 - PROJECT SCHEDULE FOR AREA 25 VEHICLE WASHDOWN CLOSURE

Activity ID	Activity Description	Orig Dur	Cal ID	Early Start	Early Finish	FY00												FY01																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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4.0 POST-CLOSURE PLAN

The clean closure of the Area 25 Vehicle Washdown is expected to remove waste to levels below proposed remediation standards. Post-closure care is not required.

4.1 INSPECTIONS

Because this is a clean closure, all constituents of concern will have been removed to the remediation standards. Inspections will not be required following closure and the land can be released for unrestricted use.

4.2 MONITORING

Because this is a clean closure, post-closure monitoring is not required at the Area 25 Vehicle Washdown as all constituents of concern will have been removed to the remediation standards. The land can be released for unrestricted use.

4.3 MAINTENANCE AND REPAIR

The site will be clean closed. Maintenance or repairs will not be necessary at the site following closure.

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5.0 REFERENCES

BN, see Bechtel Nevada

Bechtel Nevada, 1996, "Gamma Ray Spectrometry Operations," L-E10.602.PC, Las Vegas, NV.

Bechtel Nevada, 1998, "General Radiological Control Technician Field Instructions" OI-0441.203, Las Vegas, NV.

Bechtel Nevada, 1999a, Environment, Safety, and Health Manual, Las Vegas, NV.

Bechtel Nevada, 1999b, "Radioactive Waste Tracking, Handling, and Management at the NTS," OP-2151.304, Las Vegas, NV.

Bechtel Nevada, 1999c, "Radioactive Waste Evaluation," OP-2151.301, Las Vegas, NV.

Bechtel Nevada, 2000a, Waste Certification Program Plan for Radioactive Waste Storage or Disposal at the Nevada Test Site, PD-3200.001, Revision 0, Las Vegas, NV.

Bechtel Nevada, 2000b, "Management of Hazardous Waste Satellite Accumulation Areas- Nevada Test Site and North Las Vegas Facility", OP-2100-006, Revision 0, Las Vegas, NV.

Bechtel Nevada, 2000c, "Management of Hazardous Waste 90-Day Accumulation Areas- Nevada Test Site and North Las Vegas Facility", OP-2100-007, Revision 0, Las Vegas, NV.

DOE, see U.S. Department of Energy.

EPA, see U.S. Environmental Protection Agency.

Federal Facility Agreement and Consent Order (FFACO) of 1996. Prepared by the Nevada Division of Environmental Protection, U.S. Department of Energy, and U.S. Department of Defense.

NAC, see Nevada Administrative Code.

NDEP, see Nevada Division of Environmental Protection.

Nevada Administrative Code, 1996, NAC 445A, "Corrective Action," As adopted by the Nevada Environmental Commission, September, Carson City, NV.

U.S. Department of Energy, Nevada Operations Office, 1994, Standard Operating Procedure ERD-05-210, "Management and Minimization of Nonhazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project," September 30, 1994, Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office, 1999a, Corrective Action Investigation Plan for CAU 240: Area 25 Vehicle Washdown, Nevada Test Site, Nye County, Nevada, DOE/NV--532, Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office, 1999b, Corrective Action Decision Document for Corrective Action Unit 240: Area 25 Vehicle Washdown, Nevada Test Site, Nevada, DOE/NV--564, Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office, 1999c, Nevada Test Site Waste Acceptance Criteria, Revision 2, Las Vegas, NV.

U.S. Environmental Protection Agency, 1996, Title 29 Code of Federal Regulations §1910.120, "Hazardous Waste Operations and Emergency Response," Washington, D.C.

APPENDIX A

PROJECT ORGANIZATION

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The following are the DOE/NV project contacts:

Runore C. Wycoff
Division Director
Environmental Restoration Division
U.S. Department of Energy, Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518
(702) 295-0250

Janet L. Appenzeller-Wing
Project Manager
Industrial Sites Project
U.S. Department of Energy, Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518
(702) 295-0461

The identification of the project Health and Safety Officer and the Quality Assurance Officer can be found in the appropriate DOE plan. However, personnel are subject to change and it is suggested that the Project Manager be contacted for further information. The Task Manager will be identified in the FFACO Biweekly Activity Report prior to the start of field activities.

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Division of Environmental Protection

333 W. Nye Lane, Room 13B

Carson City, NV 89706-0866

Michael McKinnon, Las Vegas Office

1(Controlled)*

Bureau of Federal Facilities

Division of Environmental Protection

555 E. Washington, Suite 4300

Las Vegas, NV 89101-1049

U.S. Department of Energy

Janet Appenzeller-Wing

1 (Uncontrolled)*

Environmental Restoration Division

U.S. Department of Energy, Nevada Operations Office

P.O. Box 98518 M/S 505

Las Vegas, NV 89193-8518

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Las Vegas, NV 89193-8521

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Bechtel Nevada
P.O. Box 98521 M/S NTS306
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IT Corporation
P.O. Box 93838 M/S 439
Las Vegas, NV 89193-3838

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Las Vegas, NV 89193-3838

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