

**Application for Permit to Operate a
Class III Solid Waste Disposal Site at the
Nevada Test Site**

U10c Disposal Site

August 2010
Rev. 1

Prepared for the
U.S. National Nuclear Security Administration
Department of Energy
Nevada Site Office
by
National Security Technologies, LLC

1 Facility Summary

The NTS is located approximately 105 km (65 mi) northwest of Las Vegas, Nevada. NNSA/NSO is the federal lands management authority for the NTS and NSTec is the Management & Operations contractor. Access on and off the NTS is tightly controlled, restricted, and guarded on a 24-hour basis. The NTS is posted with signs along its entire perimeter.

NSTec is the operator of all solid waste disposal sites on the NTS. The U10C Disposal Site is located in the northwest corner of Area 9 at the NTS (Figure 1) and is located in a subsidence crater created by two underground nuclear events, one in October 1962 and another in April 1964. The disposal site opened in 1971 for the disposal of rubbish, refuse, pathological waste, asbestos-containing material, and industrial solid waste. A Notice of Intent form to operate the disposal site as a Class II site was submitted to the state of Nevada on January 26, 1994, and was acknowledged in a letter to the DOE on February 8, 1994. It operated as a state of Nevada Class II Solid Waste Disposal Site (SWDS) until it closed on October 5, 1995, for retrofit as a Class III SWDS. The retrofit consisted of the installation of a minimum four-foot compacted soil layer to segregate the different waste types and function as a liner to inhibit leachate and water flow into the lower waste zone. Five neutron monitoring tubes were installed in this layer to monitor possible leachate production and water activity. Upon acceptance of the installed barrier and approval of an Operating Plan by NDEP/BFF, the site reopened in January 1996 as a Class III SWDS for the disposal of industrial solid waste and other inert waste.

1.1 Facility Information

The site will be used for the disposal of refuse, rubbish, garbage, sewage sludge, pathological waste, Asbestos-Containing Material (ACM), industrial solid waste, hydrocarbon-burdened soil, hydrocarbon-burdened demolition and construction waste, and other inert waste (hereafter called permissible waste). Waste containing free liquids or regulated under Subtitle C of the Resource Conservation and Recovery Act (RCRA) will not be accepted for disposal at the site. Waste regulated under the Toxic Substance Control Act (TSCA), excluding Polychlorinated Biphenyl [PCB], Bulk Product Waste (see Section 6.2.5) and ACM (see Section 6.2.2.2), will not be accepted for disposal at the site.

1.2 Owner/Operator

Owner: U.S. National Nuclear Security Administration
Department of Energy
Nevada Site Office
P.O. Box 98518
Las Vegas, NV 89193-8518

Authorized Agent: Ken M. Small

Program Manager, Resource Conservation and Recovery Act

Operator: National Security Technologies, LLC
P. O. Box 98521
Las Vegas, Nevada 89193-8521

Authorized Agent: Stephen M. Younger
President and General Manager

1.3 Facility Location

Name: U10C Solid Waste Disposal Site
County: Nye County
Location: Nevada Test Site Area 9
NSO Coordinates: 266395 N - 206715 E (meters)
(Based on Nevada State Plane Grid - Central Zone, North
American Datum, 1983)

1.4 Facility Design

Records indicate that the subsidence crater volume after the detonation of the Tuff event was approximately 1.6 million m³ (2.1 million yd³) (Williams, 1965). From the time the site opened in 1971 until the barrier layer was installed in 1995, approximately 0.84 million m³ (1.10 million yd³) of waste and cover material were added to the disposal site. Construction of the barrier layer incorporated another 91,760 m³ (120,000 yd³) of volume, leaving approximately 676,000 m³ (885,000 yd³) of landfill capacity currently available for use. Assuming the continued use of space at the same rate, a constant waste weight, and consistent use of cover material, approximately 169,000 metric tons (221,000 tons) of waste will be disposed of during the remaining site's useful lifetime. A volume study performed in December 2008 estimated that the lifetime of the site is approximately 16 years with an estimated remaining volume of 412,086 m³ (539,833 yd³). The maximum elevation is approximately 1,298 m (4,260 ft) on the north and northwest side and 1,294 m (4,245 ft) on the south and southeast side.

2 General Permit Conditions

2.1 Definitions

Unless the context otherwise requires, the definitions used in this Permit have the meanings ascribed to them in NAC 444.5701 to 444.631.

2.2 Permit Actions (NAC 444.643)

This Permit is based upon the information submitted in the Permit application, and as approved by the Nevada Division of Environmental Protection. This Permit may be modified by the Division, for cause, in accordance with NAC 444.643 or if there is a change in the statutes or regulations upon which the issuance of the Permit is based, or if a modification is otherwise necessary to protect public health, safety and the environment. This Permit may be revoked or suspended if written notice is given by the solid waste management authority and the disposal site does not remain in compliance with the applicable statutes and regulations. The filing of a request by the Permittee for a Permit modification or termination, or a notification of planned changes or anticipated noncompliance, or termination of activities authorized in the Permit does not stay any Permit condition. The Permittee shall inform the Division of any deviation from or change in the operations as presented in the application, which may affect the Permittee's ability to comply with applicable regulations or conditions of this Permit. This Permit may be transferred to a subsequent owner or operator only if the solid waste management authority approves the transfer based on documentation of financial responsibility provided by the new owner or operator.

2.3 Availability of Permit Documents

The Permittee shall keep, at the NTS a complete copy of this Permit and incorporated documents, as identified herein.

2.4 Compliance with Statutes and Regulations

The Permittee shall comply with NRS 444.440 through 444.620, and NAC 444.570 through 444.7499, as applicable.

2.5 Duty to Provide Information

The Permittee shall furnish to the Division, within a reasonable time, any relevant information which the Division may request to determine compliance with this Permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit. The Permittee shall also furnish to the Division, upon request, copies of records required to be kept by this Permit.

2.6 Incident Reporting

The Permittee shall report incidents to the Division as provided in the Maintenance and Operation Plan (Exhibit 1) and the Health and Safety Plan (Exhibit 2). In addition, the Permittee shall report any noncompliance, imminent or existing hazard from a release of waste or hazardous constituents, or from a fire or explosion at the facility, which may endanger human health or the environment. Such information shall be reported by telephone to 800-331-6337

within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. A written report shall be submitted within 15 days of the incident and shall include the following:

- Name and title of person making report;
- Date, time, and type of incident;
- Name and quantity of material(s) involved;
- A complete description of the occurrence and its cause;
- The extent of injuries, if any;
- An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable;
- Estimated quantity and disposition of recovered material that resulted from the incident; and
- Actions taken by the Permittee in response to the incident.

2.7 Reporting Anticipated Non-Compliance

The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with Permit requirements.

2.8 Inspection and Entry

The Permittee shall allow the Nevada Division of Environmental Protection, or an authorized representative, upon the presentation of credentials or other documents as may be required by law to:

- Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
- Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
- Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- Sample or monitor at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized, any substances or parameters at any location subject to the Permit.

2.9 Construction Quality Assurance and Quality Control (NAC 444.645)

A minimum 1.2 m (4 ft) compacted soil barrier was installed in late 1995 before opening the site for the disposal of permissible waste. A review of the construction project is provided in Appendix A. The purpose of the soil layer is to segregate the two different portions of the disposal site and inhibit leachate through the barrier, thus acting as a liner for the permissible waste. As an indicator of the amount of water and hydrocarbon leachate entering into the soil barrier, five neutron monitoring tubes have been placed three feet into the layer. Initial neutron

logging started on a monthly basis in January 1996. Annual readings will be performed thereafter to determine if water or hydrocarbon leachate has entered this barrier.

3 Permit Documents

The following documents, as submitted by the Permittee and approved by the Nevada Division of Environmental Protection also describe and/or restrict the operation of this disposal site:

- Operation and Maintenance Plan (Exhibit 1)
- Health and Safety Plan (Exhibit 2)
- Waste Acceptance Criteria (Exhibit 3)
- Closure and Post-Closure Plan (Exhibit 4)

4 Waste Acceptance Criteria

4.1 Solid Wastes Permitted for Disposal

1. Industrial Waste as described in the Waste Acceptance Criteria (Exhibit 3)
2. Construction Waste as described in the Waste Acceptance Criteria
3. Hydrocarbon-burdened Soil as described in the Waste Acceptance Criteria
4. Hydrocarbon-burdened Demolition and Construction Waste as described in the Waste Acceptance Criteria
5. Permissible Waste as described in the Waste Acceptance Criteria
6. Regulated Asbestos Containing Material as described in the Waste Acceptance Criteria
7. Polychlorinated Biphenyl Bulk Product Waste as described in the Waste Acceptance Criteria
8. Special Waste as described in the Waste Acceptance Criteria

4.2 Prohibited Solid Wastes

The Permittee is prohibited from placing in the landfill the following wastes:

- Liquid waste as defined by NAC 444.692(4)
- Hazardous waste as defined by NAC 444.580
- Household waste as defined by NAC 444.581
- Garbage as defined by NAC 444.578
- All other wastes not specifically identified in the Waste Acceptance Criteria

5 Recordkeeping

5.1 The Permittee Shall Maintain Records at the Site as Described in the Operation and Maintenance Plan

5.2 The Permittee Shall Maintain the Following Records at the Site in Accordance with NAC 444.747

1. Any documentation of cost estimated and financial assurances required pursuant to NAC 444.685
2. Plans for closure and postclosure care and any monitoring, testing, or analytical data required pursuant to NAC 444.6891 to 444.6896, inclusive
3. How the site conforms to the restrictions on location set forth in NAC 444.735
4. Any plan to characterize solid waste required pursuant to NAC 444.737
5. Any demonstration, certification, finding, monitoring, testing or analytical data from the program for monitoring ground water required by NAC 444.7481 to 444.7499, inclusive
6. The owner or operator shall promptly notify the Division after the owner or operator has place the information in the operating record of the facility pursuant to this subsection. The information must be furnished to the Division or made available for inspection by the Division at any reasonable time.

6 Reporting

Class III Facility

1. Submit annually to the Division a report of the solid waste received at the site. The report must be submitted within 30 days following the end of each calendar year.
2. The Permittee shall at least once every 5 years thereafter until the site is closed
 - Indicate the remaining volume and disposal capacity of the site;
 - Indicate the volume used and waste disposed of since the original report of design; and
 - Calculate the remaining life of the site, in years.
3. Submit annually to the Division a Neutron Monitoring Report. The report must be submitted by the last Friday of the second quarter.
4. All reports, notifications, or other submissions which are required by this Permit must be submitted by the specified due date to:

Bureau of Federal Facilities
Nevada Division of Environmental Protection
2030 East Flamingo Road, Suite 230
Las Vegas, NV 89119

6.1 Financial Assurance Reporting

Nevada Administrative Code (NAC) 444.685 exempts entities of the federal government from the financial assurance requirements outlined in the state of Nevada solid waste disposal regulations.

6.2 Notification of New Cell Construction

In accordance with NRS 444.556, the Permittee shall notify the Division in writing within 10 days following the commencement of construction of a new cell.

7 Groundwater Monitoring

The state of Nevada may suspend groundwater monitoring requirements if it can be demonstrated that “there is no potential for migration of pollutants and contaminants from the site to the waters of the state during the active life of the site, including the period of closure and post closure” [NAC 444.683]. This demonstration must be based on “processes affecting the fate and transport of contaminants and predictions of the fate and transportation of contaminants and a consideration, of the impacts on public health and the environment” [NAC 444.7481]. The major factors affecting leachate generation and migration into the groundwater are climate, geology and hydrogeology, water availability, and the condition of the waste before and after placement into the disposal site.

7.1 Climate

The average annual precipitation is less than 15 cm (6 in) with the majority occurring during the winter months. This weather pattern is followed by mild temperatures and windy conditions in the spring. Summer weather is hot and breezy with low humidity. There are isolated periods of stormy weather late in the season. The fall is usually balmy and variably windy.

These climatic factors favor a high evaporation rate. An evaporation study was performed from February 1993 to September 1993 at a site approximately 14 km (9 mi) south of the disposal site (French, 1993). Results of the study indicated that the annual precipitation for the area is 125 mm (5 in), and the estimated evaporation potential is 1,814 mm (71.4 in). Therefore, evaporation is a dominant factor influencing surface and upper vadose zone moisture. High evaporation rates inhibit the potential for leachate generation and subsequent transport into the groundwater.

7.2 Geology and Hydrogeology

Surface soils consist predominantly of silty sand. Moisture profiles of similar soils monitored over time at the low-level radioactive waste site in Beatty indicate that water percolates and redistributes to depths of only 2 m (6.6 ft) below the surface after an intense rainfall (Nichols, 1987). Fischer (1992) found that water potential gradients between depths of 7 and 13 m (23 to 43 ft) acted in an upward direction.

The depth to groundwater is over 549 m (1,800 ft). Although information on the working point depth of the U10C event is classified, it is likely that this nuclear event and others in the area have compromised the quality of the groundwater under this disposal site. NNSA/NSO is currently studying the effects of nuclear blasts on groundwater through its Underground Testing

Area Corrective Action Work Plan. Given these studies, geology/hydrogeology factors inhibit or prevent infiltrate or leachate from reaching the groundwater.

7.3 Water Availability

The soil moisture monitoring system consists of five vertical neutron access tubes within the disposal site margins and one monitoring tube outside the perimeter of the disposal site (see Figure 2). The access tubes extend 1 m (3 ft) into the barrier layer. The compacted liner material at the bottom is necessary as a clean zone for background counts, as well as a buffer zone in the unlikely event of hydrocarbon or water transport.

The monitoring system is designed to detect liquid movement through the four-foot layer of compacted soil, as well as monitor changes in the industrial solid waste. Only changes within the four-foot layer of compacted soil will trigger a response to NDEP/BFF; changes within the waste will simply be monitored. Should the Action Level be reached, the NDEP/BFF will be advised and appropriate action will be determined in conjunction with NDEP/BFF.

Logging will continue annually throughout the active life of the disposal site. Continued use of the system will be addressed in the closure and post-closure plans for the site.

A neutron soil moisture gauge will be used to monitor for changes in the soil moisture content within the 1.2-m (4-ft) interval. All data will be reported as either counts per minute or percent soil moisture content. The Action Level requiring NDEP/BFF notification will be the midpoint between the existing baseline data (representing dry conditions) and saturated conditions measured at a point approximately 0.3 m (1 ft) above the bottom of the monitoring tube. The NDEP/BFF will be notified of any Action Level reached or exceeded within 21 days of the confirmation.

7.4 Condition of Waste

The condition of the waste and cover material are factors which inhibit the formation of leachate. The following factors are relevant:

- “Free liquids” are prohibited in the disposal site.
- Permissible waste added to the disposal site is not water saturated and sufficient unburdened soil is added as cover to assure that the total soil mass in the site is unsaturated. Due to the lack of moisture, there is no driving force for potential liquids to form leachate.

Given these factors, the potential for leachate formation is considered minimal.

Figure 1 Location of U10C Disposal Site

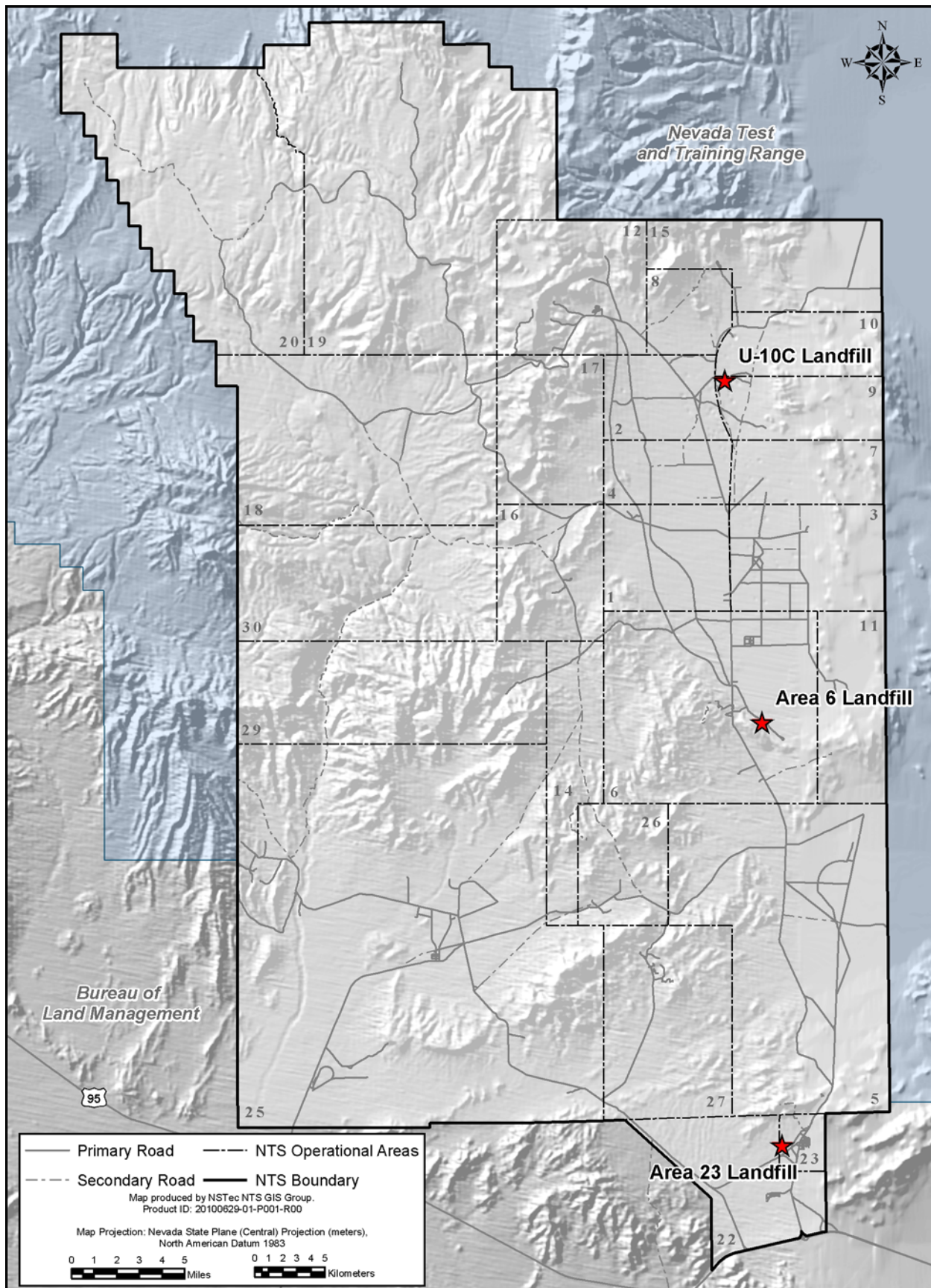
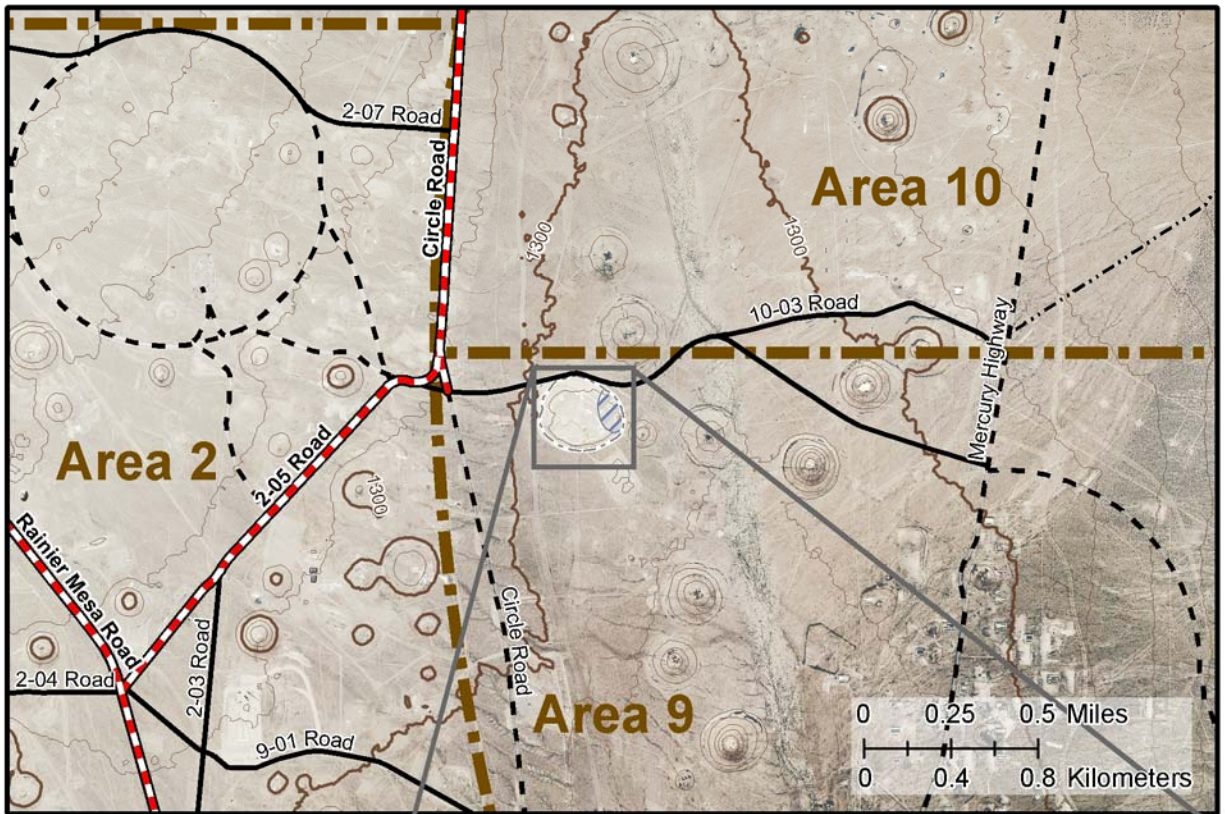


Figure 2 Landfill Volume

Figure 3 Asbestos Cell



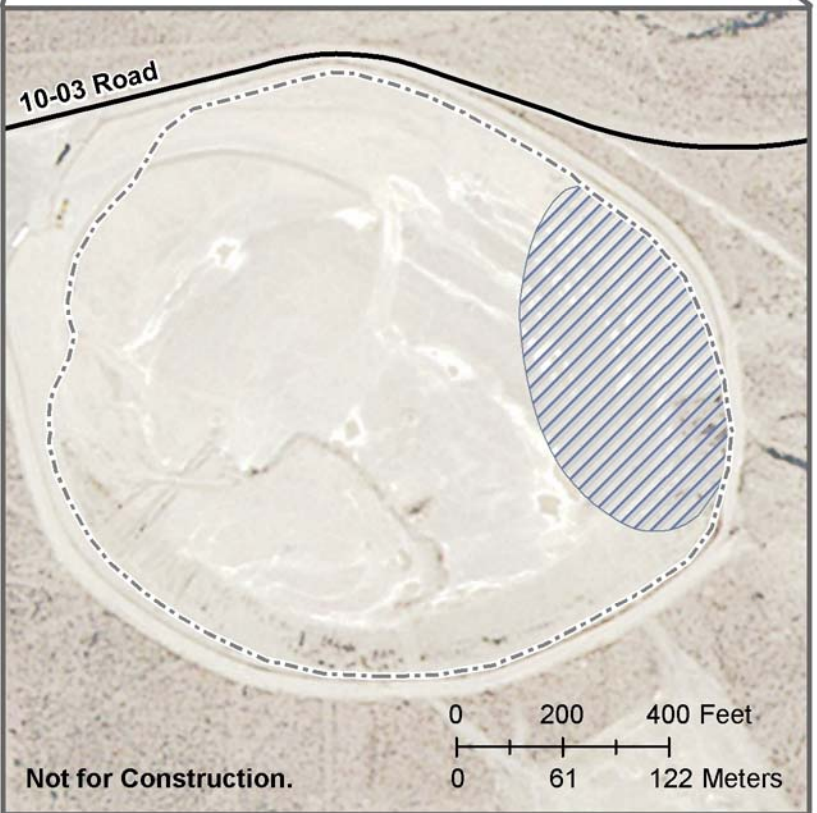
Explanation

- Approximate Areal Extent of Planned Asbestos Cell*
Elevation Contour (10-m interval)
- Approximate Pit Boundary
- Primary Road
- Secondary Road
- Unimproved road
- Trail

*Calculated to be approximately 100,000 cubic yards and 15 ft deep, assumed simple geometry for the floor and ceiling.
Background imagery is one-meter resolution orthophoto, acquired in 1998.
Topographic contours are derived from 10-meter (horizontal spacing) Digital Elevation Model.
Nevada State Plane (Central) Projection (meters) North American Datum 1983



Map produced by NSTec NTS GIS Group.
Product ID: 20100609-01-P001-R01



U-10c Landfill

Exhibit 1

**Operation and Maintenance Plan for
Area 9 U10c Solid Waste Disposal Site**

August 2010

Rev. 1

Prepared for the

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

by

National Security Technologies, LLC

Operation and Maintenance Plan for Area 9 U10c Solid Waste Disposal Site

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Exhibit 1
Operation and Maintenance Plan for Area 9 U10c
Solid Waste Disposal Site

Acronyms

AED	Automated External Defibrillator
CPR	Cardiopulmonary Resuscitation
NAC	Nevada Administrative Code
NDEP/BFF	Nevada Division of Environmental Protection Bureau of Federal Facilities
NTS	Nevada Test Site
RACM	Regulated Asbestos-Containing Material
SWDS	Solid Waste Disposal Site
WAC	Waste Acceptance Criteria
WW	Water and Waste

1.0 Area 9 U10c Solid Waste Disposal Site Operation

1.1 Collection and Transportation

WW personnel will be responsible for the operation and maintenance of the disposal site. Collection and transportation will be the responsibility of the facility manager or generator of the permissible waste. If collection and transportation will be performed by WW personnel, a FRM-1003, "Service Request," must be completed and submitted.

1.2 Personnel

One disposal site operator and a teamster are regularly assigned to the disposal site to control access during hours of operation, determine acceptance of the waste, and weigh the solid waste before the collection vehicle enters the disposal site. However, under no circumstances will the disposal site have less than two workers in attendance during heavy equipment operation. During abnormal circumstances, additional personnel may be required.

1.3 Processing In

Loads of waste may only be processed while WW personnel are working at the disposal site. Each load of industrial solid waste or special waste will be accompanied with the following paperwork:

- Signed load verification documentation which contains waste characterization information, a statement on the absence of prohibited materials, and the waste source by location;
- Radiological certification, if necessary; and
- Weight or weight estimate.

A truck scale is available at the disposal site to determine the weight of the waste. However, disposal site operators may accept weight measurements from other scales. If the truck scale at the disposal site is not functioning or it is not practical to weigh the waste due to its size or other physical characteristics, other adequate measures can be used to determine the weight of the waste. If the truck scale is not functioning, WW personnel will correct the deficiency. Scales used are electronic and are designed and manufactured to remain in calibration; an annual calibration check is conducted.

1.4 Off-Loading

Before entering the disposal site, transporters of industrial waste will be required to have a weigh ticket or estimated weight. Disposal site operators shall designate the area of the disposal site where the transporter will off-load. Industrial waste may be offloaded either by the transporter or disposal site personnel. Disposal site operators will ensure that bulky waste larger than two feet in any axis will be arranged horizontally across the base of the disposal site to achieve the thinnest lift possible.

1.5 Daily Log

A daily log will be maintained to indicate the following:

- Each load of industrial solid waste which is disposed;
- Identification of personnel entering the disposal site;
- Routine disposal site activities such as operational/temporary cover installation, litter control, dust suppression; and
- Nonroutine events such as unforeseen circumstances (fire, medical, equipment failure, recyclable material retrieval, hazardous or toxic waste identification), rainfall indicators, and those events that cause pooling water or erosion.

1.6 Random Inspections

WW personnel will inspect one randomly selected load of waste monthly. Once the waste has been dumped onto the ground, the inspector will closely examine the load of industrial solid waste or special waste to determine if prohibited materials are contained in the waste. Each inspection will be documented, signed by the inspector, and placed in the disposal site operating record.

If prohibited waste is identified in the disposal site by site personnel or during randomly selected inspections, the area will be cordoned off and operations in the area will be discontinued. The area will not be reopened until an investigation of the circumstances responsible for the disposal of the hazardous or toxic waste are completed and documented. This procedure does not apply to recyclable items that may be considered a hazardous waste (i.e., batteries, lead bricks, partially full aerosol cans). Recyclables must be segregated when discovered, documented in the daily log, and turned over to WW supervision for proper disposal.

NDEP/BFF will be notified if prohibited wastes are discovered at the site either through random inspections or during daily operations.

Operation and Maintenance Plan for Area 9 U10c Solid Waste Disposal Site

1.7 Signage/Hours of Operation

A sign is posted at the entrance to the disposal site that informs personnel of the hours of operation, prohibited materials, and an emergency contact telephone number. The site is protected from entry by a locked chain between two guard posts at the entry and a fence completely surrounding the site.

1.8 Disposal Site Equipment

Many types of vehicles may be used at the NTS to collect and transport solid waste. Collection vehicles may consist of 4-cubic yard load luggers, 20-cubic yard roll-off boxes, short and long flat bed and dump bed trucks, pickup trucks, or trailers.

The equipment used at the disposal site consists of a D-8 dozer, a 4- or 8-cubic yard front end loader, a non-potable water truck, and a motor grader. Other types of equipment that may be used at the disposal site on an irregular basis includes cranes, forklifts, and rollers.

1.9 Operating Records

Records and a log will be maintained by designated disposal site personnel. The following documentation must be present with each load of permissible waste, if applicable:

- A load verification document;
- Analytical results or written documentation of process knowledge;
- Weigh ticket or estimated weight; and
- Radioactive Material Clearance.

Before acceptance, the disposal site operator will ensure that all documentation is complete, accurate, and legible. If the documentation is not acceptable, the disposal site operator will reject the waste for disposal. The disposal operator may also reject the waste, if upon a random inspection, it is determined that the waste does not conform to the WAC or is falsely represented.

The amount and source of permissible waste delivered to the disposal site will be documented in the operating record. Additional documentation required as operating records are Access Records and Inspection Checklists.

Operation and Maintenance Plan for Area 9 U10c Solid Waste Disposal Site

1.10 Cover and Lift Control

Cover material will consist of native soil obtained from a borrow pit south of the disposal site that provided soil for the barrier layer.

1.10.1 Cells/Compaction

Waste will be spread evenly and compacted to form a lift that will not vary by more than 0.6 m (2.0 ft) along the face. The height of the lift can vary but shall not exceed 2.0 m (6.0 ft). Each lift will be covered with at least six inches of compacted earthen material. Compaction will be uniform making at least two passes with a D-8 bulldozer or an equivalent piece of equipment.

Waste that has confined open areas (i.e., storage tanks, vehicles) will be filled with native soil or other inert material so that more than 90 percent of the original volume will remain filled when compacted. Bulky items will be covered with the major axis horizontal to minimize the lift height.

It is expected that large quantities of combustible construction and demolition debris will not be disposed in the site. Therefore, the requirements of NAC 444.652, which require cross-sectioned cells separated by compacted cover material, are not applicable.

1.10.2 Asbestos Cell

A separate area within the disposal site has been designated for the disposal of RACM. This area has signs notifying personnel of the hazards of asbestos. Records of the location and quantity of asbestos that is accepted will be kept. The following procedures will be used when handling and disposing of RACM:

- Each package or container will be handled in a manner that limits breakage;
- Vehicles that contained a package or container that leaked, will be rinsed out; and
- RACM will be covered within 24 hours after placement with at least 15 cm (6 in) of compacted material that does not contain asbestos.

Operation and Maintenance Plan for Area 9 U10c Solid Waste Disposal Site

1.10.3 Special Wastes

Other special wastes will be disposed of according to Section 3.10.1.

1.10.4 Operational/Temporary Cover

Permissible waste will be covered daily, as required by NAC 444.688. The operational cover will consist of native material compacted to a layer that is at least six inches thick using a D-8 dozer or equivalent piece of equipment. It will be graded to disperse direct rainfall on the disposal site and maximize evaporation of the water. Cracks, depressions, and erosion will be promptly repaired to maintain the cover's integrity. A temporary cover, consisting of at least 30 cm (12 in.) of compacted earthen material, will be placed on waste disposal areas that have not received waste for more than 90 days.

1.11 Dust Control

Water trucks containing non-potable water will be used to suppress dust on the compacted dirt roads, as necessary, and during operations involving the compaction of cover material or the production of borrow material.

1.12 Litter Control

WW personnel will remove, on a continuing basis, windblown material collected on the fence surrounding the disposal site. Scavenging and salvaging are not permitted in the disposal site.

1.13 Vector Control

Pathological waste (dead animals) and putrescible animal and vegetable waste from food service operations will be covered immediately. Pathological waste will be dispersed to the degree practical throughout the non-putrescible waste.

1.14 Fire Protection

Open burning of solid waste is prohibited by NAC 444.6675. However, fires could be initiated through malfunctioning electrical devices or disposal site equipment. Fire extinguishers are located in the base station and on disposal site equipment.

Disposal site personnel will use hand held fire extinguishers to control small fires. Where fires cannot be extinguished with small, hand held extinguishers, the NTS Fire Department will be notified by calling 911 on the telephone or using a "Mayday" signal

Operation and Maintenance Plan for Area 9 U10c Solid Waste Disposal Site

on the NTS radio communication system. Under no circumstances will disposal site operators attempt to extinguish a large fire.

The fire station serving the disposal site is located in Area 6 (approximately 18 miles away) and operates 24 hours per day, seven days a week.

1.15 Methane Gas/Explosive Gas Monitoring

It is not anticipated that the waste and environmental media will generate methane gases. Based on the physical and chemical composition of the buried material and low annual rainfall at the disposal site, the generation and accumulation of explosive or toxic gases is considered minimal or non-existent. Therefore, methane gas/explosive gas monitoring is not considered necessary.

1.16 Unforeseen Circumstances

1.16.1 Medical Emergency

Emergency medical services are located in Area 6, approximately 18 miles away. This facility operates 24 hours per day, 365 days per year. Disposal site personnel may contact Medical Services by calling 911 or by using a “Mayday” signal on the NTS radio communication system. Additional emergency services are available through the Fire Department. All WW personnel will have an operable NTS radio with them at all time. The landfills are all in close proximity to a telephone if it is needed for communication. WW personnel are trained in first aid, CPR, and in the operation of an AED.

1.16.2 Natural Events

The disposal site is protected from run-on water through flood channel control and compacted soil berms. However, rainfall falling directly on the site may result in muddy conditions that require that the site be closed for a short period of time until additional native soil is added to muddy areas to provide a workable surface.

1.16.3 Equipment Failure

Equipment at the disposal site will be maintained to prevent failure. However, there may be circumstances where equipment failure may occur and the equipment cannot be repaired in a timely manner. Backup equipment (i.e., loaders, scrapers, dozers) will be obtained from other NTS operations to provide, as a minimum, an operational cover in the interim while the equipment dedicated for the disposal site is being repaired.

1.17 Site Inspections

The disposal site will be inspected semi-monthly (twice a month). The inspection will consist of the following items:

- Erosion of the berm or walls;
- Settling of the covered material;
- Condition of fencing;
- Condition of roadway;
- Accumulation of litter; and
- Accumulation of water.

Each inspection will be noted in the log. Corrective measures will be taken as soon as possible to correct the deficiency. All corrective measures and their completion dates will be noted in the log.

Where there is an excessive accumulation of water, the approximate area and depth of the ponded water will be noted in the log.

Exhibit 2

Health and Safety Plan for Area 9 U10c Solid Waste Disposal Site

**August 2010
Rev. 1**

Prepared for the

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

by

National Security Technologies, LLC

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Acronyms

ARL/SORD	Air Resources Laboratory/Special Operations and Research Division
ESH&Q	Environment, Safety, Health & Quality
HASP	Health and Safety Plan
IH	Industrial Hygiene
JHA	Job Hazard Analysis
LED	Local Emergency Director
NDEP/BFF	Nevada Division of Environmental Protection Bureau of Federal Facilities
NSTec	National Security Technologies LLC
NTS	Nevada Test Site
OCC	Operations Coordination Center
OS	Occupational Safety
PPE	Personal Protective Equipment
PTHR	Pretask Hazard Review
S&H	Safety and health
SOW	Scope of Work
SSHASP	Site-Specific Health and Safety Plan
TWA	Time-Weighted Average
WBGT	Wet Bulb Globe Thermometer
WO	Work order
WW	Water and Waste

1.0 Introduction

1.1 Foreword

National Security Technologies, LLC (NSTec) has developed this Health and Safety Plan (HASP) to address safety and health requirements for the disposal site located in Area 9 at the Nevada Test Site (NTS). The HASP has been developed in conjunction with Occupational Safety (OS) and Industrial Hygiene (IH). The HASP is an extension of the Worker Safety and Health Program and activities outlined are to be performed under an approved work order using an integrated work control process. Safety and health (S&H) activities will be addressed as part of that process. The specific area is:

1. Area 9 U10C Solid Waste Disposal Site.

1.2 Scope

This HASP provides guidelines to support the identified waste disposal site which is permitted by the Nevada Division of Environmental Protection Bureau of Federal Facilities (NDEP/BFF).

1.3 Applicability

This HASP is applicable only for the following types of work:

1. NSTec personnel and subcontractors who perform work at the disposal site located in Area 9;
2. Environment, Safety, Health & Quality (ESH&Q) oversight related to disposal of non-hazardous material within the disposal site located in Area 9;
3. Visitors to the disposal sites located in Area 9.

1.4 Conditions

1. A work order (WO) will be maintained for routine work to be performed. New work will require modification of the existing WO or initiation of a specific work order.
2. NSTec OS and IH will determine safety and industrial hygiene requirements, mitigations, and compensatory activities as required for NSTec work.
3. Periodic work will require either a WO or discrete work order to be developed before the performance of work.

1.5 Discussion

Specific hazard control objectives are discussed in the individual WO and may include a Job Hazard Analysis (JHA), Pretask Hazard Review (PTHR) requirements, and IH Plans, as applicable. Controls will be adopted based upon sampling and monitoring results for enhancements to worker safety. Controls will be identified to ensure personnel are not exposed to hazards at harmful levels. The need for additional monitoring and sampling to evaluate the adequacy of the controls will be performed as necessary.

1.6 Project Personnel Responsibilities

Each person is responsible for the health and safety of themselves and their coworkers, for completing tasks safely, and for reporting unsafe acts or unanticipated hazards or conditions.

All personnel are responsible for continuous adherence to this HASP during work. All personnel have the right and responsibility to call a “Time Out” or “Stop Work” in the event of unsafe acts or conditions. In the event that the scope of work changes, an emergency or incident occurs (e.g., fatality, injury or illness, skin/clothing contamination, vehicle accident, radiological contamination of personnel, serious property damage, or spill), or unexpected hazards arise, personnel shall take a “Time Out” or “Stop Work” as appropriate and notify the Water and Waste (WW) Superintendent.

1.7 Project Positions and Responsibilities

WW Superintendent

- Determines and provides labor and equipment requirements
- Coordinates site activities
- Implements project plans and work activities
- Directs personnel to medical upon report of an occupational injury or illness or suspicion that an employee has been injured or become ill due to an occupational accident
- Notifies the appropriate chain of command if something unusual occurs or work is out of scope
- Oversees compliance with HASP and job-specific JHA
- Evaluates effectiveness of control measures and recommends changes/additions, if required
- Monitors work area, exposures, and hazards, and documents as necessary
- Provides and documents daily safety briefings
- Verifies site personnel have completed the required training before work start
- Reviews and assists in the completion of all paperwork required as a result of an occupational accident, injury, illness, vehicle or property damage, or near miss

WW Staff

- Conduct activities as directed by the WW Superintendent
- Comply with HASP, applicable work package, JHA, and PTHR requirements

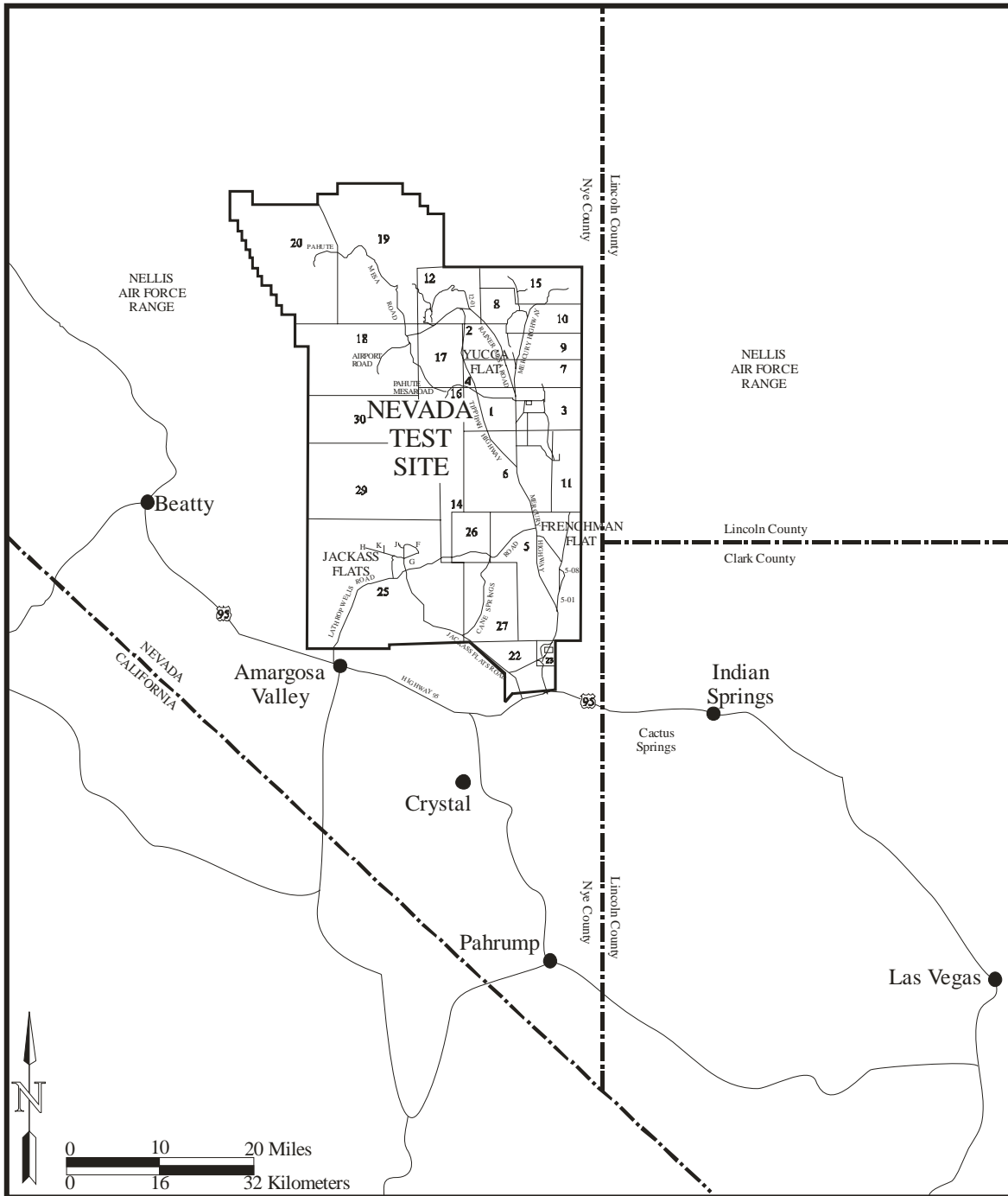
Other NSTec Staff

- Conduct activities as directed by the WW Superintendent
- Obtain a safety briefing upon entering the disposal sites as necessary

2.0 Site Information

The NTS is located 65 miles northwest of Las Vegas, Nevada (Figure 1). The disposal site is located in Area 9 within the NTS boundaries.

Figure 1. Location of the Nevada Test Site



3.0 Scope of Work

This HASP addresses the safety-related actions required for operation of the disposal site located in Area 9. Individual tasks required to address specific work efforts will be developed according to integrated work control processes to implement the Integrated Safety Management System and ensure that the appropriate hazards are recognized and controls are in place. The scope of the project includes mitigation of safety hazards, characterization and removal of materials, and demolition of structures.

3.1 Mitigation of Safety Hazards

The following activities will be performed to mitigate safety hazards as necessary:

- Perform site set up
- Perform site inspections
- Establish work zones and construct containments
- Perform monitoring for personnel safety and determination of extent of work impact
- Perform housekeeping and clean-up activities

4.0 Hazard Analysis and Risk Assessment

4.1 Introduction

Based upon the scope of work (SOW) for this project, there may be a potential for exposure to a number of hazardous conditions during the execution of specific work packages required to complete this project.

4.1.1 Job Hazard Analysis and Pretask Hazard Review

The controlling safety documents for individual field activities are the work packages for each job or task, this HASP, and applicable NSTec company documents. This HASP provides the general and programmatic safety information required for activities. Information regarding job- or task-specific work scope, hazards, and mitigations will be included in the work packages, the accompanying JHA, and/or PTHRs. Personnel assigned to work at these sites or associated sites are responsible for compliance with this HASP, JHAs, and PTHRs.

Work packages will be issued to cover all activity-level work. A JHA will be associated with each Type 1 or 2 work package and must be reviewed at the start of work. In addition, before the start of work each day, a PTHR covering the day's specific SOW will be held to assure understanding of the work and hazards present. Personnel performing the work must sign the PTHR verifying they are aware of the specific hazards present. When new hazards are identified that are not addressed by the PTHR, a "Time Out" or "Stop Work" shall be taken until mitigation of the new hazards is implemented. New personnel assigned to this project must review the HASP, JHA, and, if involved in activity-level work, the specific hazards associated with the day's tasks before starting work.

4.1.2 Risk Assessment

Acceptance of residual risk is based upon established NSTec criteria, as well as an industry standard approach to risk reduction and acceptance. Hazard exposure risk reduction can be achieved using appropriate engineering controls, administrative controls, and personal

protective equipment (PPE). Through these measures, the residual risk associated with closure work has been determined to be within acceptable limits, per established NSTec criteria. The list of controls under each hazard does not imply a requirement to use them all. They will be chosen at the discretion of the WW Superintendent, based on professional judgment.

4.1.3 Engineering Controls

Engineering controls include the following:

- Removal/elimination of the hazards or hazardous conditions by design or substitution
- Use of specialized equipment
- Use of limiting barriers, along with associated warning devices (e.g., signs and lights), and other measures to warn and control employee access to the hazard

4.1.4 Administrative Controls

Administrative controls include the following:

- Use of the NSTec work control process and JHAs/PTHRs to identify, discuss, and resolve specific hazard exposure potential
- Implementation and enforcement of approved NSTec operating procedures, manuals, and directives for specific work activities
- Controlled access and personnel exposure monitoring (noise and temperature)
- Enforced employee safety training and skill requirements before work assignment and on-the-job hazard/mitigation information for site-specific hazards

4.1.5 Personal Protective Equipment

Task-specific PPE will be used when required (see Section 7.0, Personal Protective Equipment).

5.0 Hazards

5.1 Radiological Hazards

Precautionary measures will be taken as necessary at the Area 9 disposal site to limit potential personnel exposure to radiological constituents.

Controls:

- Dosimetry
- PPE use

5.2 Biological Hazards and Surveys

5.2.1 Hantavirus

There is a potential for hantavirus pathogens to be encountered in rodent feces, urine, and saliva, as well as live or dead rodents (especially deer mice). Inspection of the work area is required before initial project start. If hantavirus cleanup is required, it will be done according to current procedures for hantavirus prevention and control.

5.2.2 Valley Fever (Coccidioidomycosis)

A potential exists that personnel may be exposed to the Coccidioidomycosis fungus, which is common in the soils of the southwestern United States, Mexico, and South America. Valley Fever disease is caused by the inhalation of spores from the fungus and may affect those workers who conduct tasks outdoors. The fungus thrives in dry conditions in locations with mild winters and long dry summers. The spores are released when soil is disturbed. They do not spread person to person but only by direct contact with inhaled spores.

5.2.3 Bites and Stings

The potential exists for encountering venomous animals and insects (e.g., snakes, scorpions, bees, spiders), as well as other biting, non-venomous animals (e.g., birds, rats, coyotes, badgers) and insects (e.g., flies). Personnel are advised to avoid crevices, shrubs, and other areas that these creatures may inhabit. Individuals with allergies to wasps or bees must notify the WW Superintendent of their condition and if they have a prescription sting kit, before working at the site. Employees should not handle or feed animals or insects.

5.2.4 Wild Animals

It is possible for wild animals to be in or near the work area (e.g., coyotes, rabbits, owls, bobcats, badgers). Personnel are prohibited from feeding, harassing, or otherwise disturbing wildlife. Also, employees will be made aware of the potential for encountering wildlife, especially antelope, on the roads to and from these sites and near any water source.

Before work at these sites is initiated, a biological survey will be conducted. Whenever a desert tortoise is encountered, the date and time of the sighting, where the tortoise was seen (area, distance to closest intersection), the size of the tortoise, and whether the tortoise had any markings should be recorded. The sighting is then to be reported to the WW Superintendent and a FRM-1537, "Desert Tortoise Sighting Report," must be completed.

If a desert tortoise is encountered in a roadway, the tortoise should be moved 25 feet off the road in the direction it was heading and the necessary reports shall be made. If a desert tortoise is encountered in a work area or an area not considered a roadway, and if it is not in immediate harm's way, the tortoise is to be left undisturbed. Site personnel are to immediately report the sighting to NSTec Ecological Services.

5.2.5 Poisonous Plants

Certain native and non-native plants may have sharp spines or leaves that can present a hazard upon contact (e.g., cuts, abrasions, punctures). Unnecessary contact with plants must be avoided. Employees should pay attention to skin irritations or rashes and report changes to the WW Superintendent.

5.3 Physical Hazards**5.3.1 Cold Stress**

In winter months, cold stress and hypothermia must be a concern when establishing work procedures, especially in wet weather. Other adverse weather conditions such as wind, blowing dust, rain, or snow can cause workers to be distracted, preoccupied, or irritable. Factors such as wet clothing and personal illness can compound the effects of cold stress. Personnel will be briefed on how to recognize and identify the symptoms of cold stress and be required to wear

proper clothing to mitigate the effects of cold stress. Work breaks will be provided as needed so that personnel may take shelter and warm up. The WW Superintendent will observe work site conditions and monitor weather forecasts to determine if work activities need to be altered or suspended.

Controls:

- Current procedure for mitigating heat and cold stress
- Weather monitoring
- Awareness information
- Appropriate protective clothing

5.3.2 Heat Stress

In summer months, heat stress can be a serious concern, especially when working in the high deserts of the NTS. Heat stress monitoring will be conducted if warranted by hot weather conditions. Wet Bulb Globe Thermometer (WBGT) temperature monitoring or heart rate monitoring may be used as a guide for determining work/rest regimens in hot weather. Personnel will be briefed on how to identify the various stages of heat induced illness (heat stress, heat exhaustion, and heat stroke).

Controls:

- Current procedure for mitigating heat and cold stress
- Weather monitoring
- Awareness information
- Appropriate protective clothing
- Fluid intake
- Work breaks when needed
- Cool zones (trailers, vehicles, and tents)

5.3.3 Weather

The following information must be provided during the initial briefing before the start of work.

Severe weather warnings are issued by the Operations Coordination Center (OCC) using the all-nets announcements on NTS radios. These warnings include high wind speed warnings, flash flood advisories, and severe thunderstorm warnings. In all cases, the WW Superintendent will direct personnel to take appropriate actions when such warnings are issued by OCC.

Upon notification by the OCC of thunderstorm warnings involving lightning, the WW Superintendent will then ensure continual monitoring of the storm. Electrical storms may move very quickly and may be extremely dangerous. When lightning strikes are observed within 10 miles of the work site, work must stop, and all personnel must seek shelter as directed by the WW Superintendent. Work cannot continue until either the storm has moved beyond 10 miles from the work site or 30 minutes have elapsed following the last observed lightning strike.

Flashflood warnings may require that personnel evacuate a work site if the site is within a low-lying or drainage area. The WW Superintendent will determine whether evacuation is necessary or appropriate. In all cases, it is incumbent upon all workers to assess site conditions and take protective actions as needed.

When high winds create a hazard to employees or work being performed, work activities will stop, and responsible supervision will be contacted for further direction.

Controls:

- Current procedure for inclement weather protection
- Weather monitoring
- Seeking shelter as needed
- Suspending work as needed

5.3.4 Noise

Heavy equipment (e.g., bulldozers, front end loaders, water masters) is a potential source for excessive noise. Personnel within ten feet of operating equipment and operators are required to wear hearing protection. When it is uncertain if the ten-foot zone is protective enough, noise exposure assessments will require IH support.

The three-foot rule is recommended for general guidance during field operations. It states that if two people standing three feet apart must shout to hear each other above the background noise, then hearing protection is warranted.

Controls:

- Current procedure addressing the noise and hearing conservation program
- Noise monitoring to assess sound level exposures
- Noise monitoring to assess proper selection and use of hearing protection
- Proper selection and use of PPE (ear plugs, insets, or muffs)
- Separation of personnel from noise source (establish work distances from sources or placing barriers between the source and person)
- The following types of hearing protection are required:
 - Single protection at or above 85 decibels, A-weighted (dBA) action limit
 - Double protection at or above 104 dBA
 - Placing personnel in the Hearing Conservation Program at or above 85 dBA for an 8-hour time-weighted average (TWA)

5.3.5 Vehicle Operations

Motor vehicles present the potential for personnel to be struck by or caught in or between moving vehicles. Personnel will be aware of moving vehicles at all times. Reflective vests are required for all onsite personnel, unless the WW Superintendent downgrades this requirement due to site conditions, if the vests pose additional safety hazards, or if all heavy equipment is shut down.

The commute to and from remote locations may expose personnel to potential driving fatigue. Drivers shall take breaks as needed, switch off driving, or drive with another person. Workers shall drive defensively. All posted speed limits and other traffic regulations will be strictly observed. Seat belts shall be worn by the driver and all passengers. Operating vehicles in reverse poses additional risk to personnel. Employees are encouraged to do a 360-degree walk-around before moving the vehicle, use a spotter, and/or honk the vehicle horn.

Controls:

- Current procedure for safe motor vehicle operation
- Driver Safety Training
- Vehicle safety inspection and safe vehicle operation
- Use of seat belts and driver/passenger awareness of safety requirements

5.3.6 Heavy Equipment Operations

Heavy equipment will be used during landfill activities. Before use, the heavy equipment operator shall perform a pre-operational visual inspection to determine if the equipment is in safe working condition. If a deficiency that could affect operational safety is discovered, equipment shall be removed from service, red-tagged, and the WW Superintendent shall be notified. All leaks of transmission fluid, hydraulic fluid, coolant, or fuel shall be immediately reported to the WW Superintendent. Action shall be taken to minimize and clean up the spill. All spills, regardless of volume, are required to be reported in conjunction with current procedures.

Heavy equipment and other powered industrial equipment create a potential for personnel to be struck by or caught in or between moving equipment. While in the operational reach of heavy equipment, personnel will wear high visibility vests and are to stay in the line of sight of the equipment operator at all times. Equipment will be operated only by those qualified to do so. Only essential personnel will be within the operational reach where heavy equipment is in operation. Personnel will not be allowed inside the swing radius of the heavy equipment without specific consent of the operator.

Heavy equipment shall be equipped with a back-up alarm or a spotter will be required when equipment is traveling in reverse.

High visibility vests are required for all personnel working on site, unless the WW Superintendent downgrades this requirement due to site conditions, if the vest poses an additional safety hazard, or if all heavy equipment is shut down.

Controls:

- Current procedure for warning and notice tags
- Current procedure for powered industrial trucks
- Use of qualified operators
- Red tags and other warning devices, alarms, and/or signs
- Use of vests, backup alarm, and/or spotter

5.3.7 Manual Lifting

There will be numerous times when personnel are required to handle and move objects of varying weights and sizes. Proper lifting techniques shall always be used when manual lifting or pulling is required. Personnel shall seek assistance and/or use material handling equipment when a load is determined to be too heavy or awkward.

Controls:

- Current procedure for back injury prevention program
- Proper lifting techniques
- Use of assistance when needed
- Necessary lifting aids

5.3.8 Slips, Trips, and Falls

The walking surface around these sites is uneven or otherwise presents a tripping hazard to personnel. High traffic areas at the sites with irregular surfaces will be graded to minimize risks.

Another potential hazard is falling from equipment. Personnel will use the “Three-Point Rule,” meaning there will be three points of contact at all times by either hands and feet when mounting or dismounting equipment.

Controls:

- Good housekeeping
- Use of the “Three-Point Rule”
- Keeping eyes on path while walking

5.3.9 Housekeeping

Good housekeeping practices are the responsibility of every person assigned to the area. Awareness of such hazards is a major factor in the prevention of housekeeping-related accidents and decreasing fire hazard concerns. Construction materials shall be stored or placed in a convenient location in an orderly manner. Good housekeeping helps minimize the attraction of animals and insects.

Controls:

- Current procedure for housekeeping and fire protection
- Current procedure for flammable/combustible liquids and aerosol products

5.3.10 Lighting

In winter months, the sunrise and sunset may impact the work schedule. Work will not be conducted if lighting conditions inhibit sight or create a hazard.

5.3.11 Dust

Due to the nature of the work, there is potential for nuisance dust hazards. Dust generated from equipment operations or wind-borne dust will be kept to a minimum and control measures (e.g., wet methods) will be used as necessary.

Controls:

- Wet methods as needed
- Enclosed, pressurized cabs for heavy equipment
- Site control
- Controlled operations while dumping soil

5.3.12 Pinch Point Hazards

Pinch point hazards exist during the general operation of the waste disposal sites. Potential consequences of being caught in a pinch point include damage to PPE and personnel injury.

Controls:

- Personnel should evaluate the work being performed for the presence of pinch points
- Leather or other appropriate work gloves shall be worn during activities involving pinch points
- Workers should remain alert to the tasks they are performing

5.4 Fire and Explosion Hazards**5.4.1 Refueling Operations**

Refueling operations present the potential for chemical releases and fire/explosion hazards in the presence of static electricity or flame/spark-producing devices. If refueling onsite is necessary, the equipment used to transfer the flammable/combustible liquids shall be approved for the material being transferred.

Any fuel brought to the site must be in U.S. Department of Transportation-approved containers and properly labeled. If more than five gallons are required at any one time, it will be brought to the site by fuel trucks and transferred to smaller containers using proper grounding and bonding techniques.

Controls:

- Use of fire extinguisher
- Use of proper grounding and/or bonding
- Removal of ignition sources
- Fire extinguisher training

5.4.2 Smoking Areas

Smoking and/or open flames are not permitted where there may be dry grass, flammable material, or wherever procedures or rules forbid such practices. Improperly discarded cigarettes and other smoking materials could cause brush fires in the area. Smoking will not be permitted in vehicles, operating equipment, or office trailers. Smoking will be allowed only in designated areas and personnel shall appropriately dispose of spent smoking materials.

Controls:

- Appropriate containers for cigarette butts
- Fire extinguisher readily available

5.4.3 Brush Fires

Vehicles and equipment will not be left idling in or around areas where exhaust systems may cause fires by contacting grease or vegetation. When operating project vehicles and/or equipment in high grass, weeds, brush, or similar combustibles, care needs to be taken to monitor for the accumulation of these materials adjacent to the exhaust system. To reduce the potential for this type of fire, the vehicle/equipment operators should periodically stop, examine the undercarriage, and remove any accumulated combustibles.

During high fire hazard season, additional requirements may be in effect. Those requirements will be provided as needed.

Controls:

- Parking in designated parking areas
- Fire extinguisher readily available
- Walk-around inspections of vehicles after off-road travel

6.0 Training

6.1 Training Requirements

NSTec personnel are responsible for verifying that personnel assigned to support closure activities meet the training requirements. Personnel assigned to this project shall receive training as outlined in Table 4, as applicable to the type of activity and role being performed. Employees, including subcontractor personnel, will not participate in field activities until they have been trained to a level required by their job function and responsibility. If work activities create additional training requirements not covered in this HASP, the appropriate training will be identified, provided, and documented.

The specific training requirements for each task will be identified in the work package.

6.2 Site-Specific Training

It is the employee's responsibility to ensure he/she is familiar with the requirements relating to their job tasks. Before performing activity-level work, all employees will read and become familiar with this HASP and sign a statement indicating that they have read and understand this document. Personnel unable to read or understand this document must have their supervisor explain its contents. Individuals who have questions on information found in this document should discuss their questions with their supervisor for clarification. If the question cannot be answered to the satisfaction of the individual, the WW Superintendent should be contacted for assistance. Once the briefing and/or review of the HASP is completed and employees understand its contents, they will sign the Safety Compliance Agreement form acknowledging they understand and agree to comply with this Site-Specific HASP (SSHASP). If an employee feels they do not understand the contents of the SSHASP, another briefing shall be administered and/or they may request a current copy of the SSHASP from the WW Superintendent.

6.3 Daily Briefings

Daily briefings will be conducted for all involved personnel for activity-level work. The briefings will meet the requirements of NSTec integrated work control processes and pre-job briefings and post-job debriefings. New personnel must receive a thorough briefing that adequately describes the remaining portions of the job and the hazards presented in the remaining work.

6.4 Visitor Clearance

Visitors to the sites will be given a site-specific briefing by the WW Superintendent or designee.

TABLE 1. TRAINING REQUIREMENTS

Course	Activity Level Work
General Employee Radiological Training	X
Toxic Metals/Beryllium/Lead Awareness	X
Asbestos Awareness	X
Hazard Communication	X
Fire Extinguishers (video)	X
Personal Protective Equipment	X
Driver Safety (for government vehicle use)	X
Hearing Conservation (if sound levels potentially exceed 85 dBA)	X
Bloodborne Pathogens (two personnel on job site)	X
First Aid (two personnel on job site)	X
Cardiopulmonary Resuscitation (two personnel on job site)	X

7.0 Personal Protective Equipment

7.1 Levels of Personal Protective Equipment

PPE levels may be upgraded or downgraded as instructed by IH. PPE specific to all work will be developed consistent with the requirements of NSTec integrated work control processes.

All PPE requirements will be identified in applicable work documents or posted at work areas.

At a minimum, the following program requirements apply:

- Current procedures for personal protective equipment
- Current procedures for noise and hearing conservation

7.2 Level D

Level D PPE, at a minimum, is required for all activity-level work. Level D PPE includes the following:

- Safety glasses with side shields
- Hard hats (when overhead hazards exist)
- Safety shoes
- Work clothing
- Work gloves (when required)
- Reflective vests (when working around heavy equipment or in high traffic areas)

Hard hats, safety shoes, and safety glasses must meet current and applicable American National Standards Institute standards. Personnel in the cab of equipment or vehicles that are equipped with overhead protection are not required to wear hard hats while inside the cab.

Appropriate work gloves are determined by specific work requirements and/or the applicable PTHR. Personnel in non-office work areas shall wear ankle-length pants. Shorts, skirts, dresses, shirts without sleeves, or other such clothing is not permitted. (Modesty garments worn under protective clothing are exempt from this requirement.)

7.3 Hearing Protection

Hearing protection and hearing conservation will be implemented consistent with noise and hearing conservation program requirements. Those personnel who are subject to hearing conservation requirements will be identified by IH (e.g., heavy equipment operators). Personnel will apply the three-foot rule. If it is difficult to carry on a conversation with personnel within three feet due to noise, then hearing protection should be worn. If personnel have any concerns related to ambient noise and the need for hearing protection, then they are to notify the WW Superintendent or IH and noise surveys will be completed, as required.

Hearing protection must be worn as prescribed by the manufacturer. If ear insert hearing protection is used, it should be tested for proper fit. Testing for fit is performed by covering the ears after the protectors have been inserted. The noise levels should drop or sound fainter when the ears are cupped by the hands.

8.0 Medical Requirements

All onsite employees are required to meet the appropriate medical requirements before beginning work. Medical requirements for specific individuals will depend on the tasks to be performed, associated hazards or risks, and safety requirements.

8.1 Medical Surveillance

All NSTec personnel must participate in the NSTec Medical Surveillance Program. Medical surveillance will ensure that personnel have the following:

- Physical fitness to perform intended work activities
- The ability to work in thermally hot environments

The WW Superintendent or designee will review medical documentation from the physician to ensure fitness for duty. Any restrictions will be noted and adhered to.

9.0 Monitoring Requirements

The following sections describe the monitoring program to be implemented and action levels.

9.1 Radiological Monitoring

Radiation dosimeters will be furnished by NTS External and Internal Dosimetry.

9.2 Miscellaneous Monitoring

Other potential hazards exist which may require real-time monitoring. These hazards include noise, wind speed, heat and cold stress. Additional monitoring may be performed and equivalent instruments may be substituted at the discretion of the IH.

9.2.1 Noise Monitoring

Noise levels have been monitored with an audio dosimeter to delineate activities where hearing protection is required and to assess the effectiveness of hearing protection and whether or not personnel need to participate in a Hearing Conservation Program. The monitoring determined that personnel would not be required to participate in a Hearing Conservation Program but would be required to wear hearing protection.

9.2.2 Wind Speed Monitoring

At the direction of the Air Resources Laboratory/Special Operations and Research Division (ARL/SORD) Duty Forecaster, high wind advisories are issued by the OCC when sustained winds exceed 20 mph. High Wind warnings are issued by the OCC using the all-nets announcements on NTS radios and by way of the Communicator Nxt System.

When high winds create a hazard to employees or work being performed (instability in elevated areas, limited visibility due to dust or particles, unmanageable materials, etc.) work activities need to stop, materials must be stored/secured, and responsible supervision contacted for further direction.

9.2.3 Heat and Cold Stress Monitoring

Current procedures for heat and cold stress list work/rest requirements and action levels for work involving PPE. If necessary, physiological heat stress monitoring may be performed.

Cold stress monitoring will be accomplished by obtaining air temperature and wind speed and calculating the equivalent chill temperature using the guidelines found in current procedures for heat and cold stress.

10.0 Site Control

Site control prevents unauthorized, untrained, or unprotected personnel or visitors from being exposed to the hazards associated with the sites. Site control measures will include the following:

- A fence will be maintained around each site.
- Project personnel and visitors will enter the site through the primary access point only.
- Visitors shall be scheduled through the responsible person before arrival.
- Visitors shall sign their name, time in, and time out on the visitor control log.
- Signage or barriers will communicate information such as hazards, required PPE, and work zone boundaries.
- The site will be secured at the end of each shift.

10.1 Communications

NTS personnel, including emergency responders, will be able to be reached in case of injury. Telephones are available onsite. Field radios will be the primary communication tool.

11.0 Emergency Response Plan

The Emergency Response Plan is designed to establish a program/plan to optimize a safe and informed response to incidental and emergency situations with the intent of protecting project personnel, co-located workers, the public, the environment, and property in the event of hazardous substance releases, employee contamination, accidents, injuries, fire, or natural disasters. Preparatory steps necessary for responding to an emergency situation are given below and they should be complied with before beginning any work at the site.

11.1 Emergency Response Personnel

Once an emergency has occurred, the facility manager/facility owner (for facility events) assumes the role of Local Emergency Director (LED) and is responsible for initial response, mitigating the event at the scene, and implementing applicable emergency plans and procedures. During an Operational Emergency, the LED is relieved of emergency management decision making, with the exception of categorization and classification as applicable, by the arrival of a senior fire officer, and becomes a member of the unified Incident Command System. The senior fire officer assumes the role of Incident Commander. If a security emergency has been declared, the senior fire officer becomes a member of the unified Incident Command System and site security acts as the Incident Commander.

11.2 Notifications

Accident and incident reporting will be according to current procedures for accident/incident notifying, investigating, and reporting. In the event of an emergency (e.g., significant injury or illness, fatality, serious property damage, or spill), the OCC will be notified and NTS emergency responders will be contacted at 911.

Initial discovery and reporting of an emergency or abnormal event is essential to completing the proper response, assessment, and mitigation actions. All site personnel are responsible for reporting emergencies, abnormal events, uncontrolled releases, or unusual incidents that could impact the health and safety of project personnel, co-located workers, the public, or the environment.

The individual who discovers an emergency or abnormal event shall report the condition to the WW Superintendent as applicable and as follows:

- Life-Threatening Situations – In case of a life-threatening emergency, NTS emergency services must be notified. NSTec maintains an emergency response telephone number of 911 at the NTS. 911 may be reached from onsite radios by pressing the orange button or by dialing 911 from any site telephone. Either option will immediately connect the caller with the Fire Department, Central Alarm Station. 911 will also be used when the facts of the situation are not fully known.
- Non-Life-Threatening Situations – Individuals will notify the WW Superintendent for non-life-threatening situations.

11.3 Personnel Accountability

Personnel accountability is accomplished using sign in sheets and the visitor log.

11.4 Site Evacuation

The Responsible Supervisor directs all evacuations of any of the facilities. Based on the nature and severity of the situation, there are at least two ways that each facility can be evacuated. These are as follows:

- Immediate Evacuation: Site radios will also be used to communicate an immediate evacuation. Personnel inside the structure will egress via the nearest exit without stopping.
- Controlled Evacuation: Site radios will also be used to communicate a controlled evacuation. Non-essential personnel inside the structure shall egress following normal exit means.

11.5 Medical Support

Occupational Medicine in Building 23-650 and the NTS Fire Department facilities will be used for medical injuries and emergencies. Depending on the seriousness of the injury, injured personnel may also require care by an offsite hospital. The need for offsite care will be determined by the Fire Department or Occupational Medicine.

The NTS Fire Department will be called at 911 for all medical injuries and emergencies regardless of the severity. In addition, the Fire Department will be responsible for transporting all injured personnel to NTS Occupational Medicine. When a medical facility or physician is not accessible within five minutes of a group of two or more workers for the treatment of injuries, at least two employees on each shift shall be qualified to administer first aid and Cardiopulmonary Resuscitation/Automated External Defibrillator, shall have received bloodborne pathogens training, and shall be assigned a first aid kit.

Waste Acceptance Criteria for Area 9 U10c Solid Waste Disposal Site

**August 2010
Rev. 1**

Prepared for the

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

by

National Security Technologies, LLC

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Acronyms

ACM	Asbestos-Containing Material
CFR	Code of Federal Regulations
cm	centimeter
CWMA	Controlled Waste Management Areas
EPA	U. S. Environmental Protection Agency
FFACO	Federal Facilities Agreement and Consent Order
in	inch
NAC	Nevada Administrative Code
NDEP/BFF	Nevada Division of Environmental Protection Bureau of Federal Facilities
NNSA/NSO	U.S. Department of Energy National Nuclear Security Administration Nevada Site Office
NTS	Nevada Test Site
ORD	Office of Repository Development
PCB	Polychlorinated Biphenyls
POC	Performance Objective for Certification
ppm	parts per million
RACM	Regulated Asbestos-Containing Material
RCRA	Resource Conservation and Recovery Act
SWDS	Solid Waste Disposal Site
TCLP	Toxicity Leaching Characteristic Procedure
TSCA	Toxic Substance Control Act
WW	Waste and Water

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1.0 Area 9 U10c Solid Waste Disposal Site Acceptance Criteria

1.1 Summary

The site will be used for the disposal of industrial solid waste, hydrocarbon-burdened soil, regulated asbestos-containing material (RACM), hydrocarbon-burdened demolition and construction waste, and other inert waste (hereafter called permissible waste). Permissible waste that has free liquids or waste that is regulated under the RCRA or TSCA (except for PCB, Bulk Product Waste, see paragraph 6.2.5) will not be accepted for disposal at the site.

The disposal site will be used as the sole depository of permissible waste that is:

- Generated by entities covered under the EPA Hazardous Waste Generator Identification Number for the NTS;
- Generated at sites identified in the FFACO;
- Hydrocarbon-burdened soil and solid waste from areas covered under the EPA Hazardous Waste Generator Identification Number for the NTS;
- RACM generated by NNSA/NSO or its contractors according to Section 3.2.3, as necessary;
- Industrial solid and inert waste from the Yucca Mountain Office of Repository Development activities; and
- Other waste on a case-by-case approval by NDEP/BFF.

Disposal site operators, before accepting waste, will obtain a signed document attesting to:

- The absence of prohibited materials;
- Waste characterization information that identifies each load by the type of permissible waste;
- Process by which the waste was characterized (i.e., process knowledge, sampling and analysis, or waste minimization/segregation); and
- Its source by location (i.e., Area 2, Area 25 - ORD, Double Tracks -Tonopah Test Range).

Load verification information will be prepared by the generator or worker familiar with the waste and accepted by disposal site operators before waste disposal. Inadequate documentation is cause to refuse entry and disposal of any load of solid waste.

1.2 Waste Acceptance Criteria

1.2.1 Waste Characteristics

Permissible waste shall be consistent with the following examples:

- Asphalt;
- Non-asbestiform insulation;
- Metal sheet, bars, rods, tubes, and castings;
- Wood;
- Rubber;
- Plastic;
- Cloth;
- Paper;
- Cement and concrete;
- Soil;
- Rocks and other unaltered geologic materials;
- Cable and wire;
- Empty containers;
- Manufactured items, such as swamp coolers, furniture, rugs, carpet, electronic components;
- Drained fuel filters (gasoline and diesel);
- Crushed non-terne plated oil filters;
- Solid fractions from sand/oil/water separators;
- Decontaminated underground or aboveground storage tanks;
- RACM;
- Non-friable asbestos contained in buildings, housing structures, and trailers; and
- PCB bulk product waste.

Permissible waste may contain the following types of petroleum hydrocarbons or coolants:

- Various types of jet fuel;
- Various grades of diesel fuel;
- Hydrocarbon lubricants and hydraulics;
- Mineral oil;
- Kerosene;
- Asphaltic petroleum hydrocarbon; and
- Ethylene glycol.

The disposal of hydrocarbon-burdened soil and hydrocarbon-burdened demolition and construction waste will be limited to only one truck load per day, not to exceed 50 cubic yards per week. Larger amounts will require approval from NDEP on a case-by-case basis.

1.2.2 Prohibited Wastes

The following wastes are prohibited from disposal at this site:

- Hazardous waste per NAC 444.580 - see Section 3.2.2.1;
- Waste regulated by TSCA - see Section 3.2.2.2;
- Permissible waste that exceeds the criteria in Section 3.2.2.3;
- Waste containing “free liquid” per NAC 444.692 - see Section 3.2.2.4;
- Dead animals;
- Medical waste per NAC 444.589;
- Pathological waste per NAC 444.600; and
- Garbage per NAC 444.578.

1.2.2.1 RCRA Constituents

Permissible waste will not be accepted for disposal if it is determined that the material is a RCRA listed constituent or displays a RCRA characteristic. Material or environmental media contaminated with gasoline must be tested using the RCRA Toxicity Characteristic Leaching Procedure for benzene and lead, as a minimum, unless process knowledge indicates the absence of these analytes. Fuel and oil filters are exempt from testing requirements after they have been drained of all liquid.

1.2.2.2 TSCA Constituents

Permissible waste must be tested for PCBs, unless process knowledge indicates their absence. The total concentration of PCBs must be below 50 ppm to be accepted for disposal. Infrequent disposal of fluorescent light ballasts, which may contain small amounts of PCBs, is not prohibited.

PCB bulk product wastes specifically identified in 40 CFR 761.62(b)(1)(i) (i.e., plastics, molded rubber parts, caulking, applied dried paint, varnishes, non-liquid building demolition debris) and that meets waste acceptance criteria are to be disposed as permissible wastes regardless of PCB concentration. Further, NDEP requires that PCB bulk product waste disposal approval be handled on a case-by-case basis.

1.2.2.3 Radioactive Constituents

Permissible waste submitted for disposal must meet the surface activity release requirements in Article 422 of DOE/NV/25946--801, Nevada Test Site Radiological Control Manual, Rev. 1, February 2010, “Release to Uncontrolled Areas,” and not exceed the mass concentrations in 10 CFR 30.70, Schedule A or Table 3.1 of this document. When radionuclides not identified in this section are known or suspected to be present in permissible wastes, applicable limits will be established before waste is

accepted for disposal. All limits established for radionuclides not addressed in this section will be done with the concurrence of the state of Nevada.

Table 1.1 Radiological Volumetric Limits for NTS Landfill Disposal

Radionuclide*	Mass Concentration Limits (pCi/g)
²²⁶ Ra, ²³² Th, ²³⁷ Np, ²³⁸ Pu, ²³⁹ Pu, ²⁴⁰ Pu, ²⁴¹ Am, ²⁴² Cm, ²⁴⁴ Cm	10
²² Na, ⁶³ Ni, ⁹⁰ Sr, ⁹⁴ Nb, ⁹⁹ Tc, ¹³⁷ Cs, ¹⁵² Eu, ¹⁵⁴ Eu, ¹⁵¹ Sm, ²³⁴ U, ²³⁵ U, ²³⁸ U, ²⁴¹ Pu, ¹²⁵ Sb, ¹⁴⁷ Pm, ⁶⁰ Co	100

* Progeny in equilibrium with their parent radionuclide have been incorporated with these limits (e.g., ¹³⁷Cs, ⁹⁰Sr) and do not need a sum of fractions determination.

**²⁴¹Pu is an activation product, not a fission product. ²²⁶Ra is a daughter product of ²³⁸U.

Based upon process knowledge, permissible waste generated outside controlled areas, as defined in DOE/NV/25946--801, Nevada Test Site Radiological Control Manual, Rev. 1, February 2010, is assumed to have no added radioactivity and does not require surface contamination surveys or radiological analysis. Permissible waste generated inside controlled areas shall be segregated using one or more of the following: process knowledge, surface surveys, or radiological analysis.

When a mixture of radionuclides is known or potentially present, a sum of fractions must be performed using the following equation:

$$\sum_{i=1}^n \frac{C_i}{VL_i} \leq 1$$

Where C_i is the measured activity of radionuclide i ; VL_i is the mass concentration limit for radionuclide i ; and n is the number of radionuclides in the mixture.

1.2.2.4 Free Liquids

Waste shall not contain free liquids. If testing is required to verify the absence of free liquid, it shall be performed by Test Method 9095: "Paint Liquids Filter Test," described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication Number SW-846. Sufficient sorbing material will be mixed with the permissible waste to ensure that free liquids do not exist before being accepted at the disposal site. The sorbing material will have similar physical and chemical properties to dry, fine grained soil or meet the criteria established for nonbiodegradable sorbing materials found in 40 CFR 264.314, "Special requirements for bulk and containerized liquids." Coarse materials, which have poor sorbing characteristics and which may induce greater porosity in the compacted lifts, will not be used. Disposal site personnel shall inspect loads to verify the absence of free liquids. If free liquids are observed, the waste will be rejected.

1.2.3 Special Wastes**1.2.3.1 Automobiles and Military Transport Vehicles**

Automobiles and military transport vehicles will be accepted for disposal. They will not be compacted but will have all fluids (fuel, crankcase oil, differential oil, power steering fluid, and radiator anti-freeze), tires, and batteries removed before disposal. Areas of the vehicles contaminated with residual fluids will not be characterized to determine the extent of hydrocarbon contamination or potential RCRA/TSCA constituents, unless knowledge indicates that these analyses are required. To allow cover material to fill as much void space as possible, doors and hoods will be removed before covering with soil.

1.2.3.2 Regulated Asbestos-Containing Material

Regulated asbestos-containing material (RACM) means:

- Friable asbestos material;
- Category I nonfriable ACM that has become friable;
- Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading;
- Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by Title 40 CFR 61 Subpart M.

1.2.3.2.1 Packaging and Shipment Requirements

RACM will be wetted with a water and surfactant mixture and packaged in:

- A plastic bag that is not less than six mils thick and sealed so that it is airtight;
- A combination of plastic bags that equal at least six mils in thickness; or
- A container made of cardboard or metal that is lined with plastic.
- Each package will bear a label that conforms to the requirements identified in NAC 444.971.
- The vehicle used to transport RACM will be fully enclosed or be covered so as to prevent damage to the bags or containers and prevent the release of asbestos fibers.
- Each waste shipment will be accompanied by a shipping document and load verification documentation. After the RACM is disposed of in the landfill, NNSA/NSO will submit copies of the documentation to the state of Nevada.

1.2.3.2.2 Shipment Inspection and Refusal

WW personnel shall inspect each load to verify compliance with packaging and shipping requirements. The following examples are cause for refusal:

- Required paperwork not available or incomplete;
- RACM is not wetted;
- Packaging is not labeled;
- Labels do not bear the correct statement; or
- Packaging has been breached causing asbestos fibers to be released.

These discrepancies will result in all or portions of the shipment being set aside until the identified issue is resolved and corrective action taken by the generator. This may include, but is not limited to, wetting and repackaging the RACM.

1.2.3.2.3 Disposal Procedure

A separate area within the disposal site has been designated for the disposal of RACM. The following procedures will be used when handling and disposing of RACM:

- Each package or container will be handled in a manner that limits breakage;
- Vehicles that contained a package or container that leaked will be rinsed out; and
- RACM will be covered within 24 hours after placement with at least 15 cm (6 in) of compacted material that does not contain asbestos.

1.3 Waste Characterization

Waste will be characterized to ensure that it meets acceptance criteria and will not create an environmental hazard or threaten the health of the general public. Waste will be characterized through process knowledge, sampling, and analysis, or a combination of these methods.

1.3.1 Process Knowledge

Generators can adequately characterize permissible waste by their familiarity and experience with the process by which the material was generated. Process knowledge relies on a waste generator's knowledge of the chemical properties of process ingredients, including concentration levels of contaminants in the ingredients at the start of the process and how each step of the process chemically and/or physically affected the processed material by adding, removing, producing, depleting or neutralizing the contaminants in process ingredients, by-products, and/or finished products. Material Safety Data Sheets often are used as a means of identifying the process ingredients, and through the generator's knowledge of the process, the waste can be identified.

Process knowledge may also be "derived" through the repeated analyses of the same event. For example, repeated analyses of soil contaminated with a known type of motor oil reveals the same results. From these sampling and analyses, subsequent soil contaminated with this motor oil may be disposed of without further analysis.

Each generator using process knowledge will provide written documentation to the disposal site operator before disposal.

1.3.2 Sampling and Analysis

A sampling and analysis plan for all suspect permissible waste will be developed and implemented. The plan ensures that each waste can be properly characterized for RCRA analytes, PCBs, or free liquids.

Closure/Post-Closure Plan for

Area 9 U10c Solid Waste Disposal Site

**August 2010
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Prepared for the

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

by

National Security Technologies, LLC

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Closure Plan

Nevada Department of Environmental Protection/Bureau of Federal Facilities (NDEP/BFF) will be notified in writing of the intent to close the disposal site at least 15 days before beginning closure activities. Closure activities will commence within 30 days of written acceptance of the plan by NDEP/BFF and will be completed within 180 days after beginning the closure.

It is anticipated that the disposal site will be used until permissible waste reaches an elevation of approximately 1,298 m (4,260 ft) on the north and northwest side and 1,294 m (4,245 ft) on the south and southeast side (see Figure 1). The final design will incorporate a cap configuration that will have a slope of not less than three percent to the center and be graded along the sides to drain surface water into the borrow pit south of the disposal site. The southern and eastern edges of the closure cap will have an adequately designed drainage channel arrangement that will prohibit water from entering adjacent subsidence craters. This will prevent water from entering a potential preferential pathway to groundwater.

The cover will consist of an infiltration layer containing a minimum 0.46 m (18 in) of earthen material having a capability that is less than the permeability of the natural subsoils, but not greater than 1×10^{-5} cm/sec. Quality assurance checks will guarantee that the infiltration layer has met the specification requirements before completion of the final cover. An erosion layer, consisting of at least 15.2 cm (6 in) of native soil, will be placed on the infiltration layer. The erosion layer will be vegetated with native plants to stabilize the surface and reduce wind and water erosion.

An alternative design that meets or exceeds infiltration requirements, controls erosion, maintains cover stability, and protects ground waters of the state of Nevada may be recommended at the time of closure.

The closure plan will address all steps that will be taken to complete closure. This information will consist of a plan discussing the cover specifications, an estimate of the total volume of waste placed in the disposal site during its lifetime, decommissioning of any equipment or structures, and the installation of water, vadose zone, and/or gas-monitoring devices, as required. The plan will meet all applicable regulations and will follow all relevant and appropriate regulations to the extent possible. Closure activities will commence within 30 days of written acceptance of the plan by NDEP/BFF and will be completed within 180 days after beginning the closure.

August 2010

Closure/Post-Closure Plan for Area 9 U10c Solid Waste Disposal Site

Figure 1 U10c Disposal Site Closure Cover

Post-Closure Plan

The post-closure program will:

- Maintain the integrity and effectiveness of the final cover;
- Correct the effects of settlement, subsidence, erosion, or other circumstances, which may effect the integrity of the final cover;
- Demonstrate at closure that any leachate is present or demonstrate that any leachate does not pose a threat to public health and safety and the environment;
- Monitor groundwater or demonstrate that any leachate does not pose a threat to public health and safety and the environment (post-closure groundwater monitoring will be contingent upon discovery of large amounts of leachate); and
- Monitor gas or demonstrate that any potential gas generation does not pose a threat to public health and safety and the environment.

The post-closure program will be conducted for a period of 30 years. However, the land manager/operator maintains the right to request a waiver from the items listed above or request a waiver in the time period, if it can be demonstrated that a less extensive program is sufficient to protect public health and safety and the environment.