APPENDIX C

Waste Management Plan

THIS PAGE INTENTIONALLY LEFT BLANK

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

WASTE MANAGEMENT PLAN
BULK FUELS FACILITY SPILL
SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111

November 2010

Prepared for
U.S. Army Corps of Engineers
Albuquerque District
Albuquerque, New Mexico 87109

USACE Contract No. W912DY-10-D-0014
Delivery Order 0002

Prepared by
Shaw Environmental & Infrastructure, Inc.
7604 Technology Way, Suite 300
Denver, Colorado 80237

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

Section **Page**

1. INTRODUCTION 1-1

1.1 Purpose 1-1
1.2 Definitions 1-1
1.3 IDW Minimization 1-4
1.4 Regulatory Context 1-5

2. WASTE MANAGEMENT APPROACH 2-1

2.1 Project-Specific Wastes 2-1
2.2 Waste Accumulation and Storage Areas for Containers 2-1
2.3 Container Management 2-2
2.4 Additional Requirements for Hazardous Waste Containers 2-3
2.5 Waste Staging Area for Stockpiles 2-3
2.6 Waste Characterization 2-4
2.7 Waste Management Implementation 2-7

TABLES

Table **Page**

1 Kirtland AFB Landfill-268 Waste Acceptance Criteria.....2-5
2 Management of Projected Waste Streams 2-8

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
BTEX	benzene, toluene, ethylbenzene, and xylenes
CFR	Code of Federal Regulations
CHOX	chemical oxidation
CMBST	high-temperature organic destruction
DOT	U.S. Department of Transportation
EPA	U. S. Environmental Protection Agency
IDW	investigation-derived waste
INCIN	incineration
LF	landfill
mg/kg	milligrams per kilogram
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PCB	polychlorinated biphenyl
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
STABL	stabilization
SVOC	semivolatile compound
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
WMP	Waste Management Plan
WWT	wastewater treatment

THIS PAGE INTENTIONALLY LEFT BLANK

1. INTRODUCTION

This document will serve as the Waste Management Plan (WMP) for environmental activities performed at Kirtland Air Force Base (AFB) in support of investigation of the BFF Spill, under U.S. Army Corps of Engineers contract W912DY-10-D-0014, Delivery Order 0002. The WMP governs the minimization, generation, management, storage, and transport and disposal of wastes that are routinely encountered during these environmental activities. The primary focus of this WMP is the management of investigation-derived waste (IDW). Wastes generated during the execution of remedial actions will be governed by this plan to the extent that they can be predicted and easily accommodated with the scope of this WMP.

1.1 Purpose

The purpose of waste management, particularly IDW management, is to leave the site in no worse condition after the implementation of activities than existed before the activities began, and to comply with federal and state waste management regulations and applicable or relevant and appropriate requirements to the extent practicable. These management procedures are directed toward waste minimization to reduce the quantity of waste that will require treatment, storage, or disposal.

1.2 Definitions

Cross-contamination—spread of chemicals from one item to another or from one location to another.

Debris—a solid material exceeding a 60 millimeters particle size that is intended for disposal that can be classified as a manufactured object, plant, or animal matter, or natural geologic material. The following materials are not debris—any material for which a specific treatment standard is provided in Resource Conservation and Recovery Act (RCRA) Subpart D, Part 268; process residuals such as smelter slag and

residues from treatment of waste, wastewater sludges, or air emission residues; and intact containers of hazardous waste that are not ruptured and that retain at least 75 percent of their original volume.

Decontamination Fluids—fluids generated after decontamination of equipment. Fluids include soapy water, rinse water, solvents (e.g., isopropanol), and contaminated media removed from equipment during the decontamination process.

Dewatering Fluids—liquid waste generated from dewatering operations in excavations, retention ponds, and drainage channels.

Disposable Equipment—equipment that cannot be decontaminated at the conclusion of an environmental restoration activity and requires disposal. IDW disposable equipment includes bailers, coliwasas (samplers designed to permit representative sampling of multi-phase wastes from drums and other containerized wastes), jars and containers, plastic sheeting, foil, disposable laboratory equipment, etc. Disposable equipment from remedial activities includes small tools, barrier materials, decontamination pad equipment, hoses, chains, timber, survey stakes, etc.

Free Liquids—liquids that readily separate from the solid portion of a waste under ambient temperature and pressure.

Hazardous Waste—a solid waste is a hazardous waste if it is not excluded from regulation as a hazardous waste and exhibits any characteristic of hazardous waste identified in Subpart C and/or D of 40 Code of Federal Regulations (CFR) part 261.

Mixed Waste—radioactive waste that also contains a hazardous waste component regulated under RCRA (see definition of hazardous waste). Although not strictly a mixed waste, radioactive waste containing

wastes regulated by the Toxic Substances Control Act (e.g., polychlorinated biphenyls [PCBs], asbestos) or naturally occurring radioactive materials are also considered to be a mixed waste under this plan.

Personal Protective Equipment (PPE)—coveralls, gloves, respirator cartridges, tape, boots, etc.

Purge Water—groundwater pumped from a borehole (monitoring well) prior to sampling.

Radioactive Waste—waste that contains higher than background levels of radioactivity, or is otherwise not releasable for use by the general public. Waste that can be disposed of without regard to its radioactivity is not considered radioactive waste.

Remediation Waste—any media or debris resulting from environmental restoration activities that meet the definition of solid waste in 40 CFR Part 261.

Representative Sample—a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) that can be expected to exhibit the average properties of the universe or whole.

Soil Cuttings—excess soil removed by the direct-push and hollow-stem auger drilling techniques.

Special Waste—New Mexico defines "Special Waste" as the following types of solid wastes that have unique handling, transportation, or disposal requirements to ensure protection of the environment and public health and safety:

- Treated formerly characteristic hazardous wastes
- Packing house and killing plant offal
- Asbestos waste
- Ash
- Infectious waste
- Sludge

- Industrial process waste
- Residue from a spill of a chemical substance or commercial product (including contaminated soils)
- Dry chemicals, which when wetted, become characteristically hazardous

The New Mexico Environment Department (NMED) also defines petroleum-contaminated soil as "Special Waste" if the sum of benzene, toluene, ethylbenzene, and xylene (BTEX) isomer concentrations is greater than 500 milligrams per kilogram (mg/kg), with benzene individually greater than 10 mg/kg, and total petroleum hydrocarbon (TPH) concentration greater than 1,000 mg/kg.

1.3 IDW Minimization

A primary goal of the WMP is to minimize, to a practical extent, the volume of waste that will be generated, stored, and removed from the site for disposal. In order to minimize the volume of waste, the following general rules will be applied:

- Do not contaminate materials unnecessarily:
  - Plan work ahead, based on the work procedure to be used.
  - Take only the material (i.e., chemicals) needed to perform the work activity. Additional material can be brought to the work location if it is found to be necessary. Materials can be stored in large containers but the smallest reasonable container will be used to transport the material to the location where it is needed.
  - Maintain cleaning and extra sampling supplies outside any potentially contaminated area to keep them clean and to minimize additional waste generation.
  - Maintain or construct prefabricated materials, barriers, support equipment, etc., outside potentially contaminated areas.
  - Perform mixing of detergents or decontamination solutions outside potentially contaminated areas.
  - Do not place media considered hazardous for different reasons together.
  - Use drop cloths or other absorbent material to contain small spills or leaks.
  - Avoid a bellows effect when double-bagging contaminated materials.
  - Use containers to minimize the spread of contamination.

- Do not place contaminated materials with clean materials.
- Cover wooden pallets inside the exclusion zone with plastic. Decontaminate and re-use material and equipment when practical. Use volume reduction techniques when practicable.
- Verify that waste containers are solidly packed to minimize the number of containers.
- Use only the size of container to meet needs (i.e., do not use a drum or garbage can when a small polyethylene bag will do).
- Use less hazardous substances whenever possible (i.e., bring only the volume of standard solutions needed for testing, use minimal amounts of decontamination water and solvent rinses).
- Use direct-push, hydropunch, or any other waste minimizing sample acquisition techniques whenever possible.

1.4 Regulatory Context

NMED regulates environmental activities in the State of New Mexico. Environmental restoration work at Kirtland AFB is under the jurisdiction of both NMED and the U.S. Environmental Protection Agency (EPA), Region 6. Consequently, the following federal and state regulations form the regulatory context in from which waste management decision making at Kirtland AFB will derive:

- 40 CFR Parts 260 -299, EPA regulations for identification and management of hazardous waste
- 40 CFR Part 761, EPA regulations for management of PCBs
- 49 CFR Parts 100-178, U.S. Department of Transportation (DOT) rules for hazardous materials transport
- 20 New Mexico Administrative Code (NMAC) Chapter 9, New Mexico Solid Waste Management Regulations
- 20 NMAC Chapter 4, New Mexico Hazardous Waste Management Regulations
- 20 NMAC Chapter 5, New Mexico Underground Storage Tanks Regulations
- 20 NMAC Chapter 9, New Mexico Special Waste Requirements Regulations
- 20 NMAC Chapter 6, New Mexico Water Quality Control Commission Regulations

THIS PAGE INTENTIONALLY LEFT BLANK

2. WASTE MANAGEMENT APPROACH

From the time that waste is generated through its ultimate disposal, waste will be managed in compliance with applicable regulatory requirements and in a manner that is protective of human health and the environment. All waste will be managed in compliance with applicable federal, state, local, and Kirtland AFB regulations. A regulatory expert will be actively involved in all planned activities to ensure that the appropriate characterization strategy will be used on a waste-to-waste basis. Furthermore, once characterization data are available, the regulatory expert will interpret the data and in combination with all other associated site history and project circumstance, provide a path forward for managing each waste generated in a timely and compliant manner.

2.1 Project-Specific Wastes

IDW anticipated to be generated during BFF Spill investigation and remediation field activities will consist of contaminated environmental media and associated waste materials from soil (excavation and sampling), drill/soil cuttings (from boreholes and well installation), monitoring well purge and development water, decontamination water, and water generated from pump tests. Waste material associated with these activities includes disposable PPE, disposable sampling equipment (e.g., scoops, bowls), and other inert materials (e.g., plastic, rope, tape, and paper).

2.2 Waste Accumulation and Storage Areas for Containers

Wastes governed by this plan shall be properly managed in an appropriate waste accumulation or storage area from the time it is generated until it is removed from the area (e.g., for disposal or further management). These areas will be, when practical, within the area of contamination at the point of generation. Otherwise waste containers will be staged at strategic and secure areas onsite until waste is properly disposed.

Waste accumulation and storage areas will be kept orderly and clear of non-waste-related items at all times. Minimum standards for the accumulation of waste in containers will be implemented at waste storage areas to ensure that waste is managed in a protective manner. Waste staging areas are not bound by specified time limits as are hazardous waste accumulation/storage areas. Inspections will be required weekly and will included visual confirmation of the following:

- Container is closed securely and/or locked.
- Container is in good condition (i.e., no excessive rust or dents that could compromise container integrity).
- All container labels are legible.
- Pertinent information is marked on drum/label (i.e., site of origin, waste contents, date of generation).
- Waste volume in container has not changed since the last inspection (only for containers where a visual assessment of volume is possible).

2.3 Container Management

IDW may be contained in drums, roll-off boxes, polyethylene tanks, or similar containers. IDW that is placed in a container (i.e., drum, roll-off box) will be managed in accordance with the following practices:

- Containers will be inspected upon receipt and/or before use to ensure the structural integrity of the containers.
- Only DOT-compliant containers will be used to accumulate, store, or transport waste generated at Kirtland AFB.
- Containers used for management of bulk IDW will be secured with a mechanism to prevent tampering. All access points to IDW containers (e.g., drum bungs, roll-off tarps) will be tightened with tools, as necessary, to prevent casual access.
- Once IDW is placed in the container, an appropriate label will be affixed to the container. The label must include the following basic waste identification information:
  - A unique container number
  - Accumulation start date
  - Site identification
  - Contents (e.g., soil, purge water)
  - Emergency contact information

- Drums will be positioned to allow for clear observation of labels and visual inspections for potential leaks. If an aisle is required in the drum storage area in order for a clear visual inspection of the drums, a minimum of three feet aisle space is recommended.
- Containers must always be closed, unless waste is being added to the container.
- Once the waste evaluator has fully characterized a particular waste stream, appropriate label(s) and markings will be placed on the container to reflect the characterization. Any previous labels or markings that were not accurate will be removed.
- Unless special circumstances warrant, IDW from different area of contaminations will not be mixed within a single container.

2.4 Additional Requirements for Hazardous Waste Containers

IDW that has been characterized as hazardous waste will be accumulated or stored in accordance with 40 CFR 262. The following requirements are applicable to only hazardous waste and are in addition to the general container management requirements.

- Containers of fully characterized hazardous waste accumulated in a generator 90-day area will have a hazardous waste label affixed to them and will be marked with the following information:
  - Generator information (name, address)
  - Kirtland EPA identification number
  - Applicable EPA waste number(s) (e.g., D008, F001)
  - Accumulation start date
  - Proper DOT shipping name
  - Appropriate DOT hazard class sticker(s)

In accordance with applicable state and federal hazardous waste and/or DOT regulations additional markings and/or labels may be required in preparation for transport of waste containers off-site.

2.5 Waste Staging Area for Stockpiles

Waste staging areas are defined strictly for the purposes of this plan, as areas within an area of contamination that will be used for the accumulation of stockpiling of soil or water, awaiting further management (e.g., treatment, disposal). Waste staging areas will be established within the boundaries of an area of contamination. Waste staging areas will be established and maintained by the contractor field

team manager. For the purpose of the BFF spill remediation activities, centralized waste staging will be located at the BFF spill site location at Kirtland AFB.

2.6 Waste Characterization

IDW will be characterized using data obtained from the analysis of environmental samples collected during the investigation and quarterly monitoring activity that generated the waste, through analysis of samples collected directly from the waste, through knowledge of waste-generating process, or through a combination of these methods. A hazardous waste evaluation will occur for all waste generated at the site. If a particular waste meets the definition of a solid waste and is not excluded from regulation, it will then be determined if the waste meets the criteria of hazardous (characteristic and/or listed) or non-hazardous.

For the purpose of the BFF project, the Kirtland AFB active onsite landfill (LF-268) will be used for disposal of solid non-hazardous wastes. Kirtland AFB currently requires all waste being disposed at LF-268 to be analyzed for the following list of parameters for submittal in order to obtain approval for disposal at the landfill. The requirements include the following:

- Ignitability characteristic as defined in 40 CFR Part 261,
- Corrosivity characteristic as defined in 40 CFR Part 261,
- Reactivity characteristic as defined in 40 CFR Part 261, and
- Toxicity characteristic as defined by EPA Test Method 1311, toxicity characteristic leaching procedure (TCLP) for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), RCRA l metals, herbicides, and pesticides

Analysis for petroleum hydrocarbons is only required for wastes suspected of having petroleum-based contamination. The required petroleum hydrocarbon analyses include:

- TPH by EPA Test Method 8015B
- BTEX by EPA Test Method 8260B or 8021B

The following Table, Landfill-268 Waste Acceptance Criteria, summarizes acceptable levels that are applicable when utilizing the onsite landfill for waste disposal.

Table 1 – Kirtland AFB Landfill-268 Waste Acceptance Criteria

Constituent	Regulatory Level*	Constituent	Regulatory Level*
Arsenic (D004)	5.0 mg/L	Hexachlorobenzene (D032)	0.13 mg/L
Barium (D005)	100.0 mg/L	Hexachlorobutadiene (D033)	0.5 mg/L
Benzene (D018)	5.0 mg/L	Hexachloroethane (D034)	3.0 mg/L
Cadmium (D006)	1.0 mg/L	Lead (D008)	5.0 mg/L
Carbon Tetrachloride (D019)	0.5 mg/L	Lindane (D013)	0.4 mg/L
Chlordane (D020)	0.03 mg/L	Mercury (D009)	0.2 mg/L
Chlorobenzene (D021)	100.0 mg/L	Methoxychlor (D014)	10.0 mg/L
Chloroform (D022)	6.0 mg/L	Methyl ethyl Ketone (D035)	200.0 mg/L
Chromium (D007)	5.0 mg/L	Nitrobenzene (D036)	2.0 mg/L
o-Cresol (D023)	200.0 mg/L	Pentachlorophenol (D037)	100.0 mg/L
m-Cresol (D024)	200.0 mg/L	Pyridine (D038)	5.0 mg/L
p-Cresol (D025)	200.0 mg/L	Selenium (D010)	1.0 mg/L
Cresol (D026)	200.0 mg/L	Silver (D011)	5.0 mg/L
2,4-D (D016)	10.0 mg/L	Tetrachloroethylene (D039)	0.7 mg/L
1,4-Dichlorobenzene (D027)	7.5 mg/L	Toxaphene (D015)	0.5 mg/L
1,2-Dichloroethane (D028)	0.5 mg/L	Trichloroethylene (D040)	0.5 mg/L
1,1-Dichloroethylene (D029)	0.7 mg/L	2,4,5-Trichlorophenol (D041)	400.0 mg/L
2,4-Dinitrotoluene (D030)	0.13 mg/L	2,4,6-Trichlorophenol (D042)	2.0 mg/L
Endrin (D012)	0.02 mg/L	2,4,5-TP (Silvex) (D017)	1.0 mg/L
Heptachlor (D031)	0.008 mg/L	Vinyl Chloride (D043)	0.2 mg/L
BTEX	50 mg/kg	Benzene	10 mg/kg
TPH	100 mg/kg		

* 40 CFR 261.24, Table 1

In addition to the analytical thresholds, listed, the following LF-268 guidance to generators needs to be adhered to in considering the landfill as a disposal option for IDW.

1. The Kirtland AFB civil engineer and Kirtland AFB Landfill require that soil and/or debris from any restoration site or monitoring well installation have analytical documentation characterizing the waste

prior to consideration for disposal. Analytical requirements will be based on the specific site knowledge of the Restoration project manager and/or site engineer.

2. Minimum analytical requirements necessary for soil and debris characterization derived from restoration site or monitoring well activities are defined above (See Table 1, Landfill-268 Waste Acceptance Criteria). For waste and debris that have been characterized during the completion of site activities, analyses previously generated during the characterization process may be used in determination of suitability for disposal.

3. Soil or debris that has been analyzed for hazardous constituents and does not exceed any RCRA regulatory limits (40 CFR 261.24 Table 1) may be disposed of in the Kirtland AFB landfill. Soil and debris containing hazardous constituents exceeding regulatory limits and/or illustrating hazardous waste characteristics will be disposed of at a facility permitted to accept hazardous wastes following appropriate DOT procedures.

4. Petroleum-contaminated soil that has a total BTEX concentration greater than 50 mg/kg, or a benzene concentration greater than 10 mg/kg, or a TPH concentration greater than 100 mg/kg is considered a special waste. Special wastes will not be disposed of in the Kirtland AFB landfill but will be disposed of at a facility permitted to handle special wastes.

5. Kirtland AFB retains the right to reject all material for disposal into the Kirtland AFB Landfill on a case-by-case basis, even if the waste does not exceed regulatory limitations.

6. If a waste is approved for disposal at the Kirtland AFB landfill, a Kirtland AFB Landfill Pass will be issued to the requestor for the waste hauling vehicle. When using a government vehicle to haul waste to the Kirtland AFB landfill, a waste disposal authorization letter is required but a Kirtland AFB landfill pass is not.

The LF-268 specific waste characterization process and analytical requirements will be sufficient to make a general waste determination and allow for appropriate waste management onsite or off site. If the waste exceeds any of the levels listed in the Table 1, with the exception of the TPH and BTEX parameters, the waste will be considered a hazardous waste. That waste will then have to be profiled, treated, and disposed of offsite as a hazardous waste according to the level and type of contamination indicated in the waste characterization results.

In the event there are other reasons why the waste cannot be disposed of at the onsite landfill and all of the waste acceptance criteria are met, that waste will be managed as NMED special waste and shipped offsite accordingly.

The field team manager will stage IDW pending analysis (i.e., waste that is not fully characterized) at the site of origin pending the receipt of analytical data and subsequent characterization, unless otherwise directed by Kirtland AFB personnel. IDW that is generated outside of the Kirtland AFB installation boundary will not be staged at the site of origin. Such wastes will be staged at a waste staging area within the installation boundary at the BFF site.

2.7 Waste Management Implementation

If it is determined that the LF-268 analytical waste acceptance criteria are satisfied, the following information will be presented in a "waste profile" format that will be used consistently to represent each individual waste stream encountered and considered for onsite disposal.

- Submit a memorandum requesting authorization to dispose of investigative-derived debris to the appropriate Solid Waste program manager.
  - Kirtland AFB Activities: Mr. Steven C. Kitt, 377 MSG/CEANC at 846-9014 or Steven.kitt@kirtland.af.mil
- Include in the submittal the name and phone number of the point of contact overseeing the activity, the location from which the waste was generated/site identifier, waste analytical results, hauling companies to be used to transport the waste to the landfill, roll-off identification numbers, and license plate numbers of transport vehicles, if not using roll-offs for waste containment.

As stated, if for any reason waste is not accepted for onsite disposal, arrangements will be made to manage the waste offsite in a compliant manner. Licensed and/or permitted facilities will be used for the purpose of transportation and disposal of waste from Kirtland AFB, as deemed necessary. Waste profile documentation will be prepared for review and signature by Kirtland AFB before shipment offsite. Upon receipt of the signed profile packages waste removal will be coordinated to ensure proper management of all waste being offered for disposal.

Table 2 lists the projected wastes to be generated during activities and the proposed analytical suite, the means of containerizing, probable waste status determinations and the two most likely methods of treatment and disposal.

Table 2 – Management of Projected Waste Streams

Waste Description	Characterization	Containerization	Waste Status	Treatment/Disposal
IDW Soils	LF 268 Suite	-Roll-off -Drum	Non-Hazardous	Direct Land Disposal 1.) LF268 2.) NMED permitted Subtitle D Landfill
IDW Soils	LF268 Suite	-Roll-off -Drum	Hazardous D004-D011 D018-D043	STABL, CHOX, and Land Disposal 1.) WCS Hobbs, NM 2.) Clean Harbors Deer Trail, CO
IDW Water, well purge water, well development water	-LF268 (exclude BTEX, TPH) -WWT specific parameters as needed	-Drum or bulk storage tank	Non-Hazardous	1.) Discharge to ground surface per approval 2.) On-site WWT
Aviation Fuel	-Total Metals -Total VOCs -Flash Point -pH -PCB	-Drum	Hazardous D018	CMBST, INCIN 1.) Off-site Fuel Blending 2.) Off-site Incineration
Spent Carbon	-TCLP Metals -Total VOCs -Flash Point -pH -PCB	-Drum	Hazardous D018	CHOX, INCIN & Land Disposal 1.) Clean harbors 2.) Rhino Environmental
SVE Condensate	-TCLP Metals -TCLP VOC's -Total VOC's -Flash Point -pH	-Drum	Hazardous D018	CHOX, WWT 1.) Clean Harbors 2.) Safety Kleen 3.) Other off-site WWT
Used Oil	Generator Knowledge	-Drum	NA	Recycled

Based on existing information, this table depicts an anticipated approach to waste streams generated in support of the BFF Spill field activities. However, if circumstances and/or analytical results deviate from the expected, necessary adjustments will be made to onsite waste handling and treatment and disposal selection. All procedures for handling and disposal of wastes, including necessary adjustments, will be in

accordance with applicable federal and state regulations (see Section 1.4). Any significant adjustments to procedures will be transmitted to stakeholders during monthly status meetings, DQCRs, and other ad hoc meeting/conference calls as discussed in Section 5.1 of the work plan.

All documentation generated in managing each waste stream will be kept on file and provided to the appropriate Kirtland AFB environmental staff.

THIS PAGE INTENTIONALLY LEFT BLANK