

LONG-TERM SOIL STOCKPILE PLAN

FORMER COMMUNICATIONS SITE REMEDIAL INVESTIGATION/FEASIBILITY STUDY

**FORT WAINWRIGHT,
ALASKA**

**FINAL
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ATTACHMENTS

- Attachment 1 Stockpile Integrity Inspection Form
- Attachment 2 Technical Requirements for the Construction of Long-Term Soil Stockpiles

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ASTM	American Society for Testing and Materials
COPC	contaminant of potential concern
FCS	Former Communications Site
Jacobs	Jacobs Engineering Group Inc.
°F	degrees Fahrenheit

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1.0 INTRODUCTION

A component of the Remedial Investigation/Feasibility Study at the Former Communications Site (FCS) at Fort Wainwright, Alaska will be stockpiling contaminated soil encountered during the RI in Area A of the FCS prior to final disposition of the waste by others. Storage of these materials is regulated by the Alaska Department of Environmental Conservation (ADEC). This Long-Term Soil Stockpile Plan presents the design of the contaminated soil stockpile containment cells and identifies the requirements for constructing, maintaining, monitoring, and decommissioning the cells. It also provides guidance for testing the ground surface for potential contamination before the cells are constructed and after they are removed. The containment cells are designed to meet or exceed the requirements of the Alaska Administrative Code, Title 18, Section 75.370, and the guidance contained in *Guidance for Cleanup of Petroleum Contaminated Sites* (ADEC 2006).

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2.0 APPROACH

Sections 2.1 through 2.3 describe guidelines that will be used in constructing, monitoring, and decommissioning the long-term soil stockpiles.

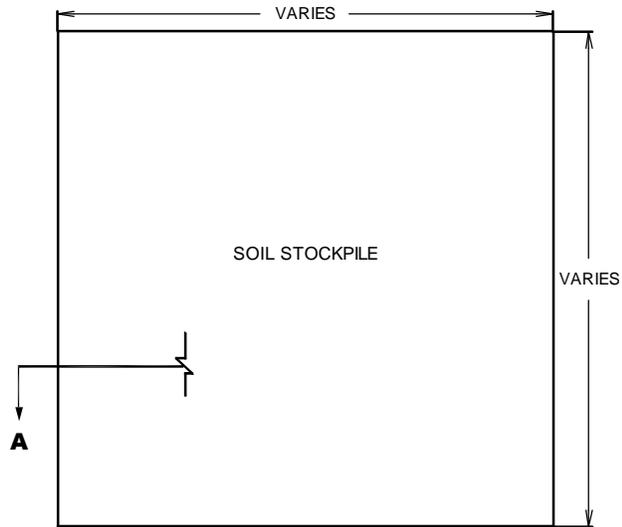
2.1 DESIGN AND CONSTRUCTION

If a portion, or all, of the cell is to be constructed on soil, baseline surface soil samples will be collected within the footprint of the stockpile. The samples will be tested for the contaminants of potential concern (COPCs) identified in the FCS Drum and Debris Investigation Work Plan (U.S. Army Engineer District, Alaska 2007) to determine background concentrations in the soil. These data will be used to document baseline contaminant concentrations prior to cell construction. A multi-incremental sample will be collected from an appropriate number of sample locations based on the size of the stockpile. After the stockpiled soil is removed and the cells are decommissioned, the surface soil will be resampled to determine any impacts from stockpiling activities (see Section 2.3).

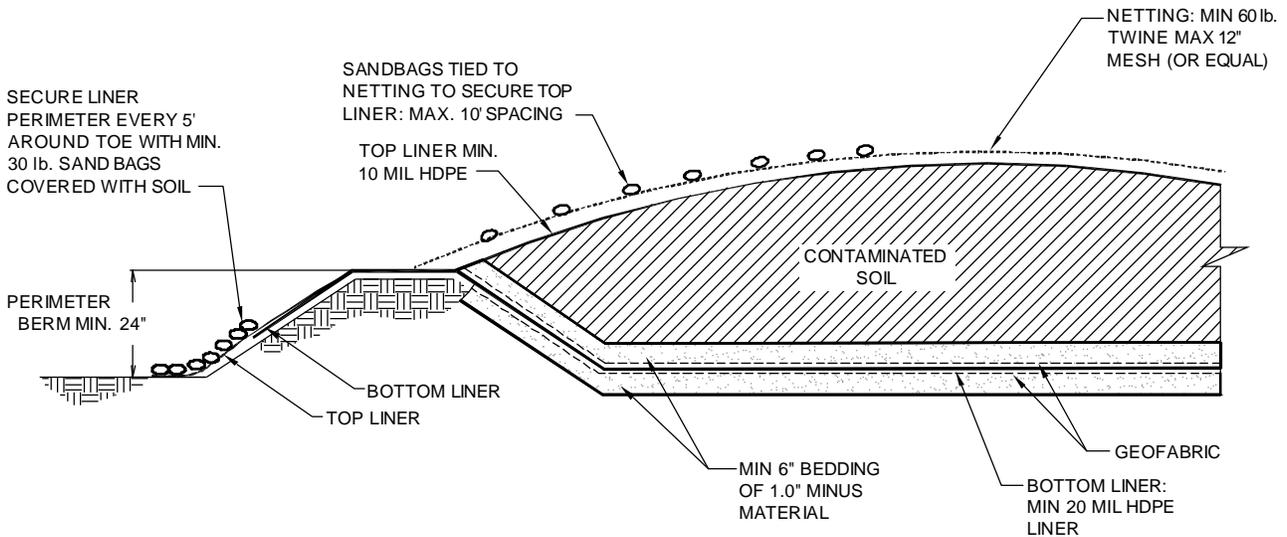
Figure 1 illustrates a typical cross-section of the containment cell design and notes preparation and construction requirements. The cells will be constructed with dimensions applicable to their locations and positions based on the estimated quantity of soil to be excavated and stockpiled. The design addresses ADEC requirements by including the following:

- Preparation of the subgrade including grading/brushing and berming the area
- Placement of a sand base or similar material as necessary to prevent damage to the liner
- Placement of a bermed petroleum-resistant bottom liner of sufficient thickness (minimum 20-millimeter) to withstand puncturing or tearing during soil stockpiling activities
- Stockpiling soil in a configuration designed to shed water
- Placement of a top cover (minimum 10-millimeter thickness)
- Securing the top cover by using either rope or netting and sandbags to protect stockpiles from storm events
- Lapping the top cover over the bottom liner to prevent water from infiltrating into the contaminated soils

CLEARED GRAVEL
AREA SURROUNDING
STOCKPILE



PLAN VIEW



SECTION A
LINER SYSTEM DETAIL FOR CONTAINMENT BERM

NOTE:

NETTING EXTENDS TO WITHIN 10' OF PERIMETER BERM

LEGEND:

-  CONTAMINATED SOIL
-  NATIVE SOIL
-  1.0" MINUS BEDDING MATERIAL

STOCKPILE CONSTRUCTION DIAGRAM		
FORT WAINWRIGHT, ALASKA		
PROJECT MANAGER: T. Heikkila	FILE NAME: Stockpile Diagram.dwg	DATE: Aug 24, 07
	DRAWN BY: BJP	LAYOUT TAB: Stockpile Diagram
	FILE LOCATION: ERS-UR \ 05F50601	
		FIGURE NO.: 1

Leachate collected from the soil stockpiles will be analyzed by appropriate laboratory methods based on the COPCs for the soil excavation sites. The leachate that collects in the stockpile will be filtered and pumped to an onsite storage tank or drums as appropriate to the volume to be transferred. Storage tanks and drums will be maintained within a lined bermed area. The stored liquids will be characterized prior to being transported for disposal. Active stockpiles will be covered nightly during project execution. The stockpiles may remain uncovered during working hours except during times of high wind or precipitation.

2.2 MONITORING

After soil stockpile construction is complete, the responsible party shall inspect the stockpile on a weekly basis, or more frequently if unusual weather conditions occur that may jeopardize stockpile integrity. These conditions include severe winds or heavy rains. The Stockpile Integrity Inspection Form (Attachment 1) will be completed as part of each inspection. The inspector will provide a report to the Fort Wainwright Department of Public Works of any required repair, and the stockpile will be repaired as quickly as possible to minimize the potential for contaminant migration from the stockpile.

2.3 DECOMMISSIONING

The soil will be removed from the containment cell in a manner that prevents spillage. Liner and cover material determined to be unsalvageable and free of loose visible contamination will be disposed of at the Fort Wainwright Landfill.

If any stained soil is observed beneath the area of the bottom liner, the soil will be removed and its location noted. A multi-incremental soil sample will be collected from an appropriate number of points that were covered by the bottom liners, as close as reasonably achievable to the location of the baseline sample locations. The sample will be analyzed for the COPCs of the soil excavation sites.

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3.0 REPORTING

The following information will be provided:

- **Maintenance Log:** All repairs to the liner and operations that remove water from the liner will be recorded. Completed copies of the inspection report will be in the after-action report.
- **Analytical Data:** The results of baseline and decommissioning soil sampling will be evaluated and provided in the after-action report.
- **Certificates of Disposal:** Upon completion of treatment or off-island transportation and disposal, certificates of disposal will be provided in the after-action report.

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4.0 SCHEDULE

Within two years of construction, the soil will be removed for treatment or disposal, and the soil stockpiles will be decommissioned. Completed copies of the inspection reports, as well as results of baseline and decommissioning soil sampling results, will be provided in a report.

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5.0 REFERENCES

- ADEC (Alaska Department of Environmental Conservation). 2006 (December). *Oil and Other Hazardous Pollution Control Regulations – Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances*. 18 AAC 75.
- U.S. Army Engineer District, Alaska. 2007 (August). *FCS Drum and Debris Investigation Work Plan*. Prepared by Jacobs Engineering.

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ATTACHMENT 1
Stockpile Inspection Report

Stockpile Integrity Inspection Form

Date	Stockpile Number/ID	Top Liner ¹	Netting ²	Soil Berm ³	Sand Bags ⁴	Liquid Present ⁵	Comments ⁶

Notes:

¹ Top liner covers the soil completely and runs over the top of the berm. No holes or other problems with liner are visible.

² Netting is intact.

³ Berm intact and continuous around perimeter of stockpile.

⁴ Sandbags placed at 5-foot intervals along the entire perimeter of the netting, 10-foot spacing on entire top of liner. Sandbags intact and not leaking.

⁵ Liquid puddle on liner.

⁶ If repairs are needed indicate materials needed and cost estimates.

ATTACHMENT 2

**Technical Requirements for the
Construction of Long-Term Soil Stockpiles**

1.0 GENERAL

1.1 WORK INCLUDED

Construction of long-term (greater than 180 days) petroleum-contaminated soil stockpiles in accordance with the requirements of 18 AAC 75.370.

1.2 QUALITY CONTROL

- Provide a qualified, experienced individual to supervise construction. The qualified individual will verify that the containment system, including the bottom and top liners, are adequately installed and sealed to minimize the migration of contaminants.
- Ensure that equipment and materials satisfy the specifications as measured by the stated test methods.

1.3 DELIVERY, STORAGE, AND HANDLING OF FACTORY-MANUFACTURED LINERS

- Factory-manufactured liners and covers shall be supplied in rolls or bundles wrapped in relatively impermeable and opaque protective covers.
- Factory-manufactured liners and covers shall be marked or tagged in accordance with American Society for Testing and Materials (ASTM) D4873 and with the following information:
 - Manufacturer's name
 - Production dates
 - Product identification
 - Roll number
 - Roll dimensions
- Inspect all factory-manufactured liners, covers, and geofabric for damage and provide onsite storage from time of delivery until installed.
- Ensure that all materials are unloaded and handled in such a way as to avoid damage.
- Store and protect factory-manufactured liners and covers from dirt, excessive temperatures, water, ultraviolet light exposure, and other potential sources of damage in accordance with ASTM D4873.

2.0 PRODUCTS

2.1 EQUIPMENT

Equipment proposed shall be capable of properly installing liners and placing soils so as not to damage the liner materials.

2.2 REINFORCED BOTTOM AND TOP LINERS

The reinforced high-density polyethylene (or equivalent) top and bottom liners shall meet the following minimum specifications for long-term (180 days to 2 years) storage of contaminated solids using a coated fabric (18 AAC 75.370):

- Cold crack (ASTM D2136): -60 degrees Fahrenheit (°F) or lower
- Black carbon content (ASTM D1603): 2 percent
- Carbon dispersion (ASTM D3015): A-2 range
- Tensile strength (ASTM D751A) (for coated fabric liner only): 300 pounds (warp)
- Mullen burst (ASTM D751A) (for coated fabric liner only): 500 pounds per square inch
- Nominal thickness: 20 millimeter for bottom liner, 10 millimeter minimum for top liner
- Oil resistance (ASTM D471): No signs of deterioration and more than 80 percent retention of tensile and seam strength after immersion for 30 days at 73 °F

3.0 EXECUTION

3.1 GROUND SURFACE PREPARATION

- The area that will provide the foundation for the bottom liner shall be relatively even and graded/sloped as necessary to provide drainage of leachate. All pointed rocks and other pointed materials that may puncture the liner will be removed.
- As necessary, up to 6 inches of 1-inch-minus material will be placed as a foundation layer to provide a smooth unobstructed surface.

3.2 BERM

Jacobs shall construct a berm made of clean soil and surround the perimeter of the stockpile area with the berm. The bottom liner shall extend beyond the peak of the berm and toward the outer edge on all sides of the stockpile. The top liner shall extend further than the end of

the bottom liner around all outer sides of the berm and shall be anchored to maintain the integrity of the stockpile.

3.3 LINER INSTALLATION

- **Nonwoven Geotextile Liner:** Handle geotextiles in a manner that ensures they are not damaged and are in accordance with manufacturer's instructions. Comply with the following:
 - Anchor geotextile securely and deploy it in a controlled manner to continually keep geotextile in tension.
 - Place geotextile liner within the perimeter of the constructed berm and on top of foundation layer.
 - Weight geotextile with sandbags or equivalent in presence of wind. Do not remove weight from geotextile liner until replaced with bottom liner.
 - Prevent damage to underlying layers during placement of geotextile.
 - During geotextile deployment, do not entrap stones or excessive fine material that could cause clogging of drains or filters in or beneath geotextile.
 - Visually examine entire geotextile surface. Ensure that no potentially harmful foreign objects are present. Remove foreign objects encountered or replace geotextile.
 - Overlap adjacent edges at least 12 inches. Top edges shall face downgrade. Seaming is not required.
 - Repair holes or tears in geotextile as directed by manufacturer's instructions.
 - When placing soil materials on top of geotextile, ensure that geotextile and underlying liner materials are not damaged, minimal slippage of geotextile on underlying layers occurs, no excess tensile stresses occur in the geotextile, and overlapping of adjacent edges is maintained.
- **Bottom Liner:** Handle bottom liner in a manner to ensure it is not damaged and is in accordance with manufacturer's instructions. Comply with the following:
 - Use a single piece of bottom liner that has been pre-seamed by the manufacturer. Place bottom liner on top of nonwoven geotextile liner and surrounding berm.
 - Anchor bottom liner securely and deploy it in a controlled manner to continually keep bottom liner in tension to prevent overlap.
 - Weight bottom liner with sandbags or equivalent in presence of wind.
 - Trim bottom liner with scissors or other approved device.
 - During bottom liner deployment, do not entrap stones or excessive fine material that could damage the bottom liner.

- Visually examine entire bottom liner surface. Ensure no potentially harmful foreign objects are present. Remove foreign objects encountered or replace bottom liner.
- Deploy upper layer of nonwoven geotextile using procedures previously described.
- Place 6 inches (minimum) of clean sand on top of bottom liner in a manner that prevents damage to liner. Colored warning tape (minimum of 1 inch in length) may be placed on top of clean sand to mark boundary.
- Place contaminated soil in stockpile containment cell in a manner that prevents damage to the liner system.
- Repair holes or tears in bottom liner as directed by manufacturer’s instructions.
- Top Liner:
 - Anchor top liner securely and deploy it in a controlled manner to continually keep top liner in tension. Extend liner to footing of stockpiled soil to cover soil and bottom liner.
 - Weight top liner with sandbags or equivalent until the netting material has been placed and anchored.
 - Repair holes or tears in top liner as directed by manufacturer’s instructions.
- Netting:
 - Netting will be placed over top liner as shown in the drawings. The purpose of the netting is to hold the top liner in place during periods of high winds (up to 50 miles per hour) and to mitigate any wind damage to the high-density polyethylene liner.
 - Netting seams should be overlapped by at least 1 foot.
 - Sandbags will be secured along the perimeter of the netting as well as tied to the netting on top of the liner.