



National Nuclear Security Administration  
Sandia Site Office  
P. O. Box 5400  
Albuquerque, NM 87185



AUG 11 2011

**CERTIFIED MAIL-RETURN RECEIPT REQUESTED**

John E. Kieling  
Acting Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Bldg. 1  
Santa Fe, NM 87505



SUBJECT: Responses to the New Mexico Environment Department *Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Report, January 2010 Sandia National Laboratories, EPA ID NM5890110518, HWB-SNL-10-005*

REFERENCE: Wagner/Kieling Letter dated May 20, 2011, Subject: *Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Report, January 2010 Sandia National Laboratories, EPA ID NM5890110518, HWB-SNL-10-005*

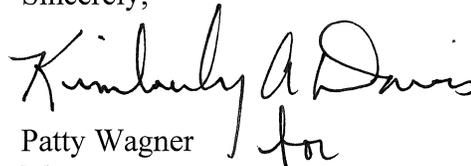
Dear Mr. Kieling:

On behalf of the United States Department of Energy/National Nuclear Security Administration (DOE/NNSA), and Sandia Corporation (Sandia), DOE/NNSA is submitting responses to the comments provided in the referenced letter.

This Notice of Disapproval (NOD) Comment Response submittal contains two enclosures: a NOD Comment Response document (comb-bound) and replacement materials provided in a three-ring binder to update hardcopies of the Mixed Waste Landfill (MWL) Corrective Measures Implementation Report (CMIR). Electronic versions of the revised MWL CMIR (Sandia National Laboratories/New Mexico January 2010, Revision 1) and the NOD Comment Response document are provided on a compact disc.

Should you have any questions regarding this correspondence, please feel free to contact me at (505) 845-6036 or Joe Estrada of my staff at (505) 845-5326.

Sincerely,

  
Patty Wagner  
Manager

Enclosure

cc:  
See Page 2

cc w/enclosure:

William Moats, NMED-HWB (via Certified Mail)  
Laurie King, EPA, Region 6 (via Certified Mail)  
Thomas Skibitski, NMED-OB, MS-1396  
Barry Birch, NMED-OB, MS-1396  
Mike Mitchell, SNL/NM, Org. 6234, MS-0718  
Zimmerman Library, UNM  
SNL ES&H Records Center, SNL/NM, Org.6234, MS-0718

cc w/o enclosure:

Robert Fleming, HQ/GTN, NA-173  
Joanna Serra, HQ/FORS, NA-173  
Amy Blumberg, SNL/NM, Org. 11100, MS-0141  
Andrew Orrell, SNL/NM, Org. 6200, MS-0771  
David Miller, SNL/NM, Org. 6234, MS-0718  
John Cochran, SNL/NM, Org. 6234, MS-0719  
Carolyn Daniel, SNL/NM, Org. 6234, MS-0718  
Kimberly Davis, SSO/MO, MS-0184  
Shirley Mondy, SSO/MO, MS-0184  
Daniel Pellegrino, SSO/ESH, MS-0184  
Carolyn Holloway, SSO/ESH, MS-0184  
Michael McFadden, SSO/FP, MS-0184  
Joe Estrada, SSO/FP, MS-0184

# CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

**Document title:** Responses to the New Mexico Environment Department  
"Notice of Disapproval: Mixed Waste Landfill Corrective  
Measures Implementation Report, January 2010"

**Document author:** Michael Mitchell, Department 06234

---

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature: \_\_\_\_\_

**S. Andrew Orrell, Director**  
Nuclear Energy & Fuel Cycle Programs  
Center 6200  
Sandia National Laboratories/New Mexico  
Albuquerque, New Mexico 87185  
Operator

8/3/11  
Date

and

Signature: \_\_\_\_\_

**Ms. Patty Wagner, Manager**  
U.S. Department of Energy  
National Nuclear Security Administration  
Sandia Site Office  
Owner and Co-Operator

8/11/11  
Date



**Sandia  
National  
Laboratories**

---

---

## **Sandia National Laboratories/New Mexico Environmental Restoration Project**

# **MIXED WASTE LANDFILL CORRECTIVE MEASURES IMPLEMENTATION REPORT**

**JANUARY 2010  
Revision 1**



United States Department of Energy  
Sandia Site Office

---

---

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

## EXECUTIVE SUMMARY

*This document represents a revision to the January 2010 Mixed Waste Landfill Corrective Measures Implementation Report in response to the New Mexico Environment Department Notice of Disapproval dated May 20, 2011.*

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base, immediately south of the city of Albuquerque in Bernalillo County, New Mexico. Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation, manages and operates SNL/NM for the U.S. Department of Energy (DOE). Sandia performs research and development in support of various energy, weapons, and national security programs. It also performs work for the U.S. Department of Defense, the U.S. Nuclear Regulatory Commission, and other government agencies.

The Mixed Waste Landfill (MWL) is located 4 miles south of SNL/NM central facilities and 5 miles southeast of the Albuquerque International Sunport. The MWL is a fenced, 2.6-acre Solid Waste Management Unit in the north-central portion of Technical Area 3 that was a disposal area for low-level radioactive and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (in 1988) were disposed of in the MWL. The New Mexico Environment Department (NMED) is authorized by the U.S. Environmental Protection Agency to implement and enforce the corrective action requirements for the MWL.

In this MWL Corrective Measures Implementation (CMI) Report, the DOE and Sandia demonstrate that the deployment of the MWL alternative evapotranspirative (ET) cover (hereafter referred to as the ET Cover) was performed in accordance with the requirements, specifications, and design drawings presented in the MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM November 2005). The MWL ET Cover was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil. The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The overall footprint of the ET Cover is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards of soil fill and 6,800 cubic yards of rock (in-place, compacted volumes) that meet CMIP specifications based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor.

This MWL CMI Report meets the requirements stipulated in the NMED Final Order In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the MWL (Final Order) (NMED May 2005); the CMIP (SNL/NM November 2005); the SNL/NM Resource Conservation and Recovery Act Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED April 2004); and the NMED conditional approval for the MWL CMIP (Bearzi December 2008). The MWL Alternative Cover CQA Report (Appendix A of this CMI Report) is certified by a New Mexico-registered Professional Engineer and provides all construction quality control and CQA data and documentation required to verify that the MWL ET Cover meets NMED requirements and the specifications of the CMIP.

On May 26, 2005, the Secretary of the NMED selected a vegetative soil cover with a biointrusion barrier (i.e., the ET cover) as the remedy for the MWL. The remedy selection was documented in the NMED Final Order for the MWL (NMED May 2005) that also required submittal within 180 days of a CMIP incorporating the selected remedy. The MWL CMIP (SNL/NM November 2005) was submitted to the NMED in November 2005 and outlines the deployment of the MWL ET Cover (Chapter 2.0), the regulatory basis (Chapter 3.0), MWL characteristics (Chapter 4.0), the technical basis for the cover (Chapter 5.0), the MWL alternative cover design (Chapter 6.0), and cover performance monitoring (Chapter 7.0). Appendices include Construction Specifications (Appendix A), a CQA Plan (Appendix B), and other supporting documentation. The MWL CMIP was conditionally approved by the NMED in December 2008 (Bearzi December 2008), and all conditions related to construction of the MWL ET Cover were addressed and incorporated into the CMIP through replacement pages (Davis February 2009).

Deployment of the MWL alternative ET Cover was conducted in two main phases. During the first phase in 2006, MWL Borrow Pit and Subgrade construction activities were conducted in preparation for ET Cover construction. Soil fill material was excavated, screened to 2-inch minus, and stockpiled at the MWL Borrow Pit from June through July 2006. Following the NMED approval in September 2006, Subgrade construction was performed from October through December 2006, and protective measures installed on the completed Subgrade surface in April 2007. After NMED conditional approval of the CMIP in December 2008 (Bearzi December 2008), the MWL ET Cover was constructed during the second phase, which took place from May through September 2009.

The MWL Alternative Cover CQA Report (Appendix A) is the comprehensive report that documents all aspects of MWL ET Cover deployment and addresses all CMI Report data and documentation requirements. All ET Cover materials and layers were approved by the CQA Engineer as specified in the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer. All nonconformances and design changes were identified; documented; resolved in consultation between the Sandia Project Staff, the Construction Team, and the CQA Team; and approved by the CQA Engineer. The design changes were implemented and resulted in a thicker, more conservative and protective MWL ET Cover.

Longer-term aspects of site revegetation, monitoring and maintenance, and institutional controls will be addressed in a revised MWL Long-Term Monitoring and Maintenance Plan that will be prepared and submitted to the NMED within 180 days of approval of this MWL CMI Report.

# TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	i
LIST OF FIGURES .....	iv
LIST OF TABLES.....	v
LIST OF APPENDICES .....	vi
ACRONYMS AND ABBREVIATIONS.....	vii
1.0 INTRODUCTION.....	1-1
1.1 Purpose and Scope .....	1-4
1.2 Regulatory Background .....	1-4
1.3 Mixed Waste Landfill Evapotranspirative Cover Deployment Summary .....	1-6
2.0 ALTERNATIVE COVER DOCUMENTATION .....	2-1
2.1 Requirements Cross-Walk.....	2-1
2.2 Data and Documentation Requirements .....	2-1
2.2.1 Data Requirements.....	2-3
2.2.2 Documentation Requirements .....	2-3
2.3 Regulatory Oversight Quarterly Reporting .....	2-5
2.4 Cover Deployment Health and Safety Program .....	2-5
3.0 CONCLUSIONS.....	3-1
4.0 REFERENCES.....	4-1

## LIST OF FIGURES

### Figure

1-1	Location of Kirtland Air Force Base and Sandia National Laboratories, New Mexico.....	1-2
1-2	Location of Technical Areas 3 and 5 and the Mixed Waste Landfill .....	1-3
1-3	Map of the Mixed Waste Landfill .....	1-5
1-4	Schematic Diagram of the Mixed Waste Landfill Alternative Evapotranspirative Cover .....	1-8

## LIST OF TABLES

### Table

2-1	MWL CMI Report Requirements Cross-Walk Table.....	2-2
2-2	MWL CMI Report Requirements – Data Requirements Summary and Cross-Walk.....	2-4
2-3	MWL CMI Report Requirements – Documentation Requirements Summary and Cross-Walk.....	2-6

## LIST OF APPENDICES

### Appendix

- A Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report,  
January 2010

Volume 1 – Main Text and Tabbed Sections

Volume 2 – Attachments (provided electronically on a CD at the end of the report)

Separately bound hard copies of Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico); the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico); and the SNL/NM Customer Funded Records Center (formerly known as the ES&H and Security Records Center).

## ACRONYMS AND ABBREVIATIONS

CMI	Corrective Measures Implementation
CMIP	Corrective Measures Implementation Plan
CMS	Corrective Measures Study
CQA	Construction Quality Assurance
CQC	Construction Quality Control
cy	cubic yard(s)
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ES&H	Environment, Safety, and Health
ET	Evapotranspirative
KAFB	Kirtland Air Force Base
LTMMP	Long-Term Monitoring and Maintenance Plan
MKM	MKM Engineers, Inc.
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
NOD	Notice of Disapproval
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
TA	Technical Area
URS	URS Group, Inc.

## 1.0 INTRODUCTION

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base (KAFB), immediately south of the city of Albuquerque in Bernalillo County, New Mexico (Figure 1-1). SNL/NM includes five Technical Areas (TAs), designated 1 through 5, occupying approximately 2,842 acres. Additional SNL/NM remote test areas total approximately 12,200 acres located on KAFB and adjacent land withdrawn from the U.S. Forest Service. TA-1, TA-2, and TA-4 are separate research facilities in the northwestern portion of KAFB. TA-3 and TA-5 are contiguous research facilities forming a 4.5-square-mile, rectangular area in the southwestern portion of KAFB (Figure 1-2). TA-3 alone occupies 2,000 acres. The Mixed Waste Landfill (MWL) is a 2.6-acre, fenced Solid Waste Management Unit (SWMU) located in north-central TA-3 at SNL/NM (Figure 1-2).

Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation, has a Management and Operating Contract with the U.S. Department of Energy (DOE) for SNL/NM. SNL/NM is owned by the DOE. Sandia performs research and development in support of various energy and weapons programs. It also performs work for the U.S. Department of Defense, the U.S. Nuclear Regulatory Commission, and other government agencies.

In this MWL Corrective Measures Implementation (CMI) Report, the DOE and Sandia demonstrate that the deployment of the MWL alternative Evapotranspirative (ET) Cover (hereafter referred to as the ET Cover) was performed in accordance with the requirements, specifications, and design drawings presented in the MWL Corrective Measure Implementation Plan (CMIP) (SNL/NM November 2005). The MWL CMIP was conditionally approved by the New Mexico Environment Department (NMED) in December 2008 (Bearzi December 2008), and all NMED conditions related to construction of the MWL ET Cover were addressed and incorporated into the CMIP through replacement pages (Davis February 2009).

The MWL ET Cover was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil. The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The overall footprint of the ET Cover is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards (cy) of soil fill and 6,800 cy of rock (in-place, compacted volumes) that meet CMIP specifications (SNL/NM November 2005) based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor.

The MWL Alternative Cover CQA Report is a stand-alone document prepared by the CQA contractor responsible for independent third-party oversight of MWL ET Cover deployment, and is incorporated as Appendix A of this CMI Report. The MWL Alternative Cover CQA Report contains all construction quality control (CQC) and CQA data and documentation required to provide a comprehensive, integrated report for the deployment of the MWL ET Cover. This stand-alone report verifies that the MWL ET Cover was installed in a manner that meets the CMIP specifications and requirements (SNL/NM November 2005) and is certified by a New Mexico-registered Professional Engineer.

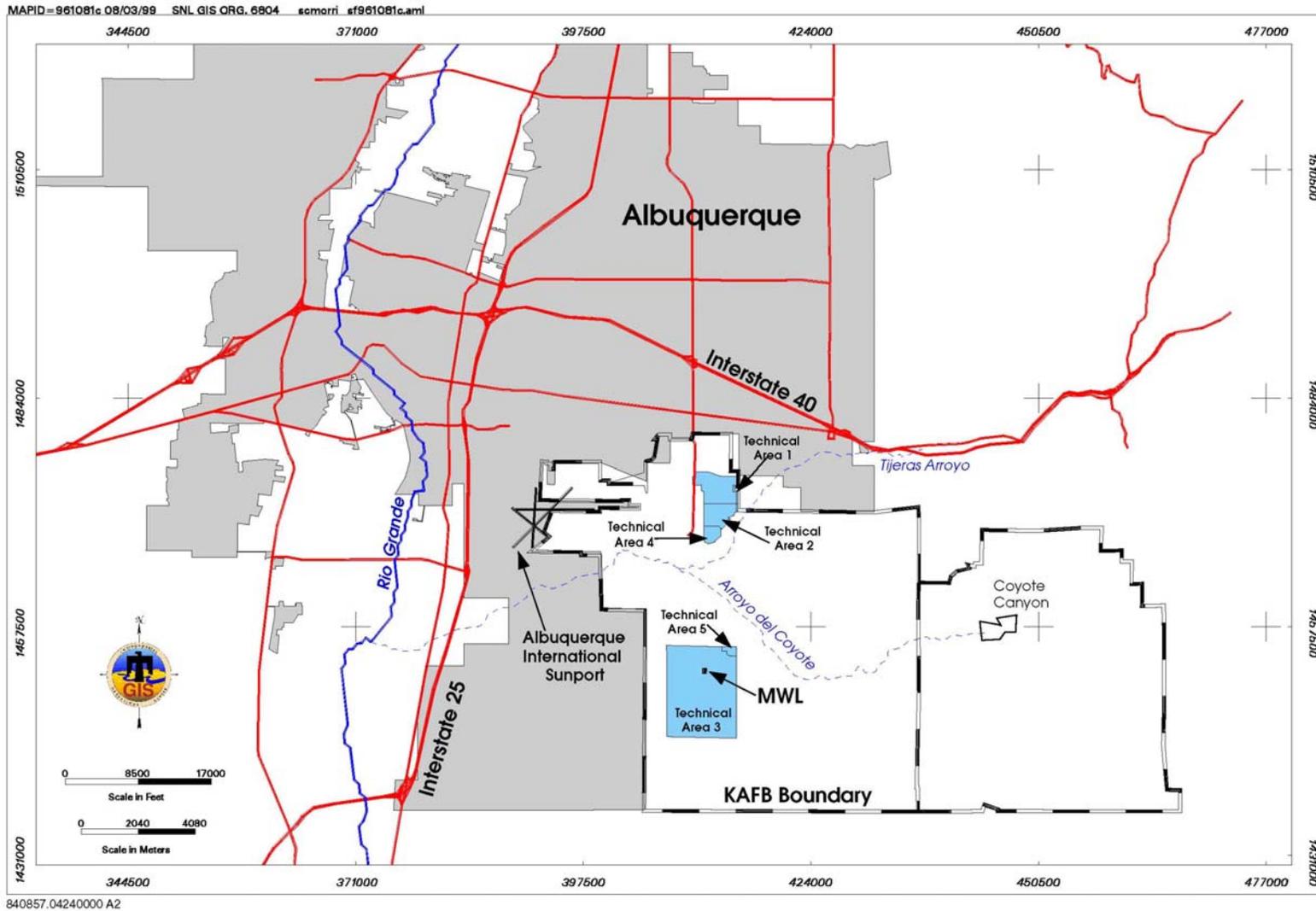


Figure 1-1  
 Location of Kirtland Air Force Base and Sandia National Laboratories, New Mexico

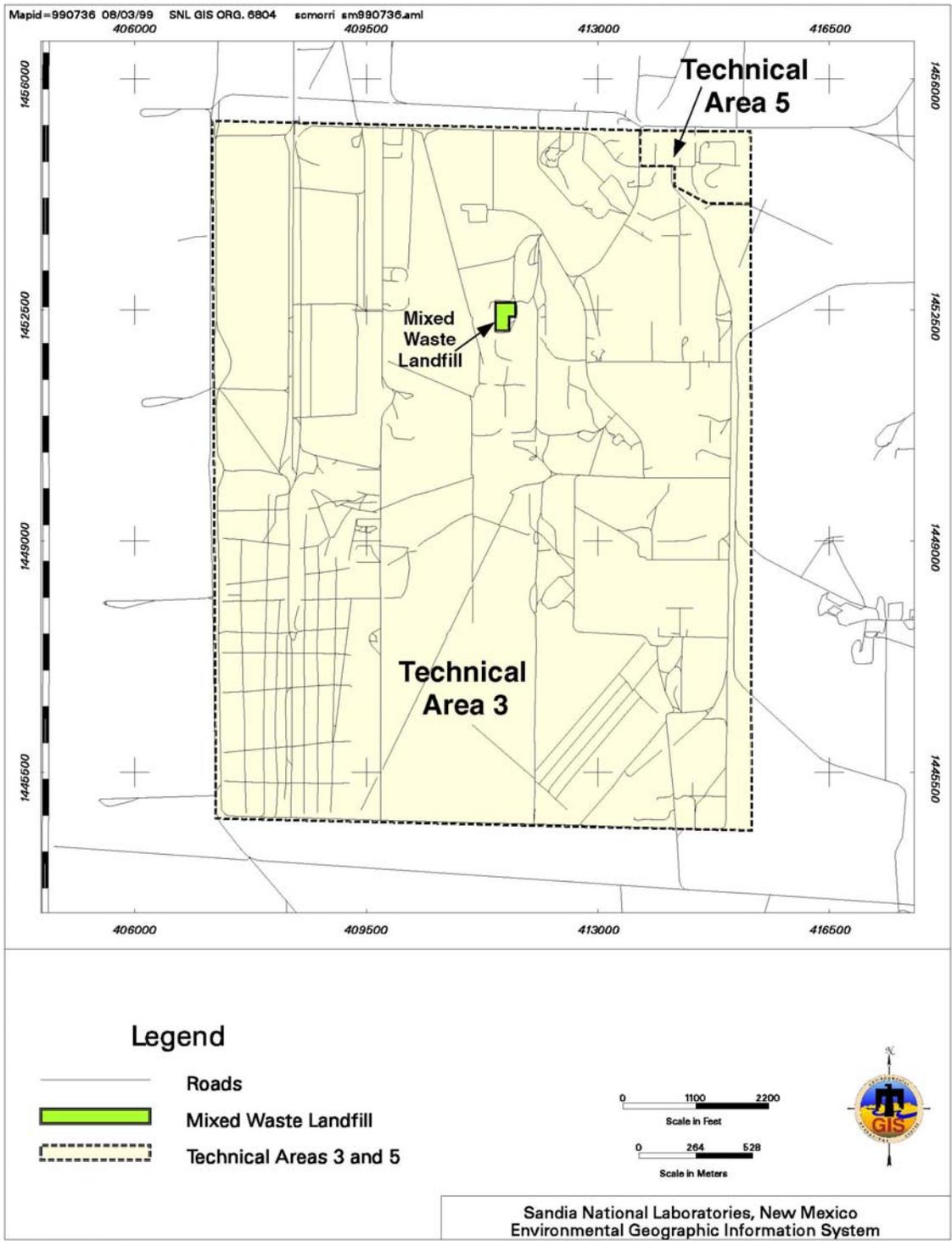


Figure 1-2  
Location of Technical Areas 3 and 5 and the Mixed Waste Landfill

In this CMI Report, regulatory background information and a summary of ET Cover deployment are presented in Sections 1.2 and 1.3, respectively. All CMI Report data and documentation requirements defined in the NMED Final Order for the MWL (NMED May 2005); the CMIP (SNL/NM November 2005); the SNL/NM Resource Conservation and Recovery Act Permit (RCRA) Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi December 2008) are presented in Chapter 2.0 (Sections 2.1 and 2.2). In addition, Sections 2.1 and 2.2 provide cross-walk information indicating where these requirements are addressed in the MWL Alternative Cover CQA Report (Appendix A). Section 2.3 briefly summarizes NMED oversight and DOE/Sandia quarterly progress reporting during ET Cover deployment, and a summary of the cover deployment safety program is provided in Section 2.4. Chapters 3.0 and 4.0 provide conclusions and references cited, respectively.

The MWL is located 4 miles south of SNL/NM central facilities and 5 miles southeast of Albuquerque International Sunport (Figure 1-1). The MWL is a fenced, 2.6-acre SWMU in the north-central portion of TA-3 that was a disposal area for low-level radioactive and minor amounts of mixed waste generated by SNL/NM research facilities from March 1959 through December 1988. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (in 1988) were disposed of in the MWL.

The MWL consists of two distinct disposal areas. The classified area occupies 0.6 acres and the unclassified area occupies 2.0 acres (Figure 1-3). Low-level radioactive and minor amounts of mixed waste were disposed of in each of these areas. Classified wastes were buried in unlined, cylindrical pits in the classified area. Unclassified wastes were buried in shallow, unlined trenches in the unclassified area. The MWL is designated as an Underground Radioactive Materials Area under DOE requirements and a Hazardous and Solid Waste Amendments SWMU subject to NMED corrective action regulations as delegated by the U.S. Environmental Protection Agency (EPA). The NMED is authorized by the EPA to implement and enforce the corrective action requirements for the MWL.

## **1.1 Purpose and Scope**

The purpose of this MWL CMI Report is to provide the required data and documentation to demonstrate that the deployment of the MWL ET Cover was performed in accordance with the construction and design specifications detailed in the MWL CMIP (SNL/NM November 2005). The scope includes all required CQC and CQA documentation to provide a comprehensive, integrated report for the deployment of the MWL ET Cover. This CMI Report presents background information, regulatory requirements, and conclusions; the required CQC and CQA data and documentation are provided in the stand-alone MWL Alternative Cover CQA Report incorporated as Appendix A. Chapter 2.0 presents more specific information regarding data and documentation requirements and how these are addressed in the MWL Alternative Cover CQA Report (Appendix A).

## **1.2 Regulatory Background**

On October 11, 2001, the NMED directed the DOE and Sandia to conduct a Corrective Measures Study (CMS) for the MWL. The MWL CMS Report was submitted to the NMED on

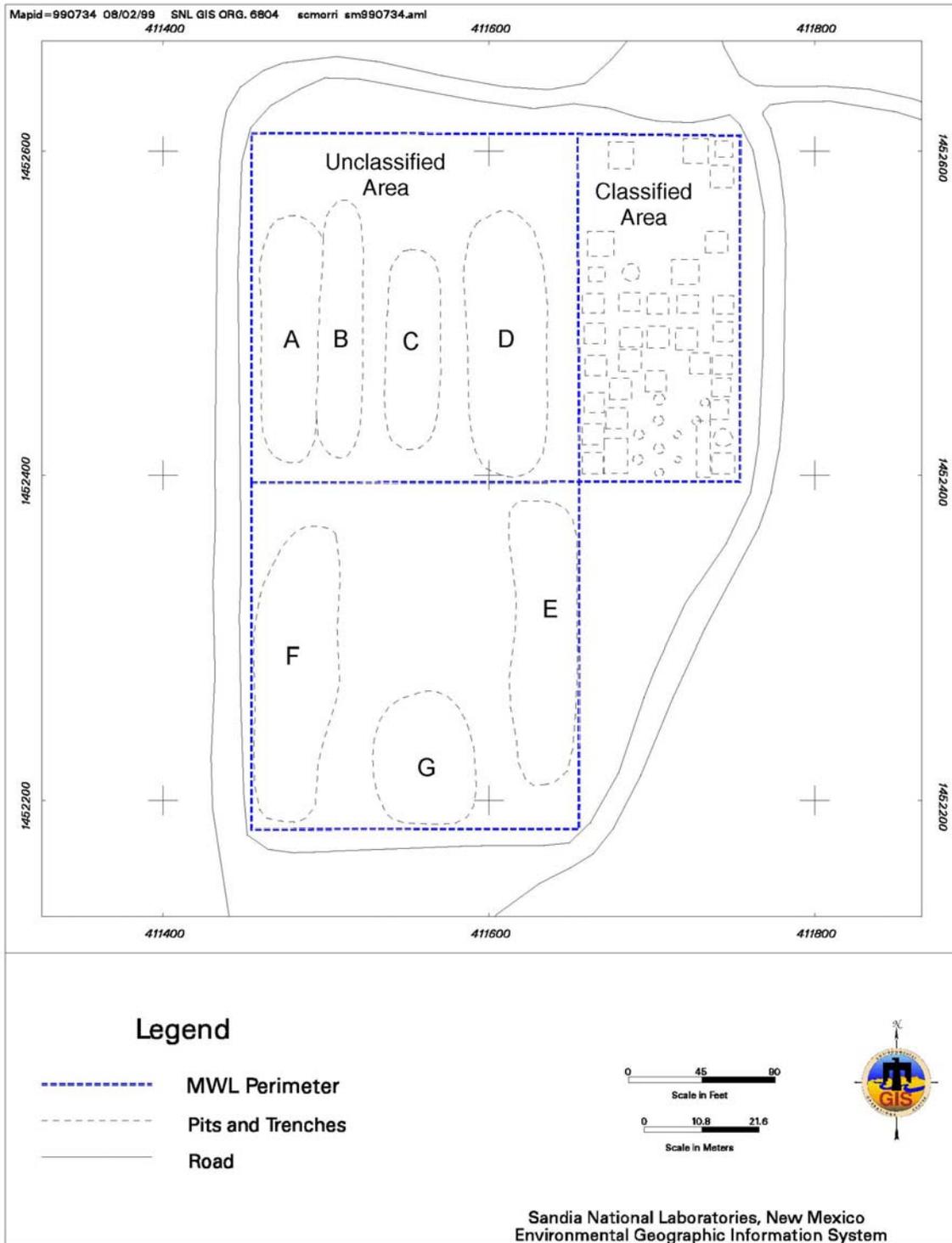


Figure 1-3  
Map of the Mixed Waste Landfill

May 21, 2003, for technical review and comment (SNL/NM May 2003). The purpose of the CMS was to identify, develop, and evaluate corrective measures alternatives and recommend the corrective measure(s) to be taken at the MWL. Based upon detailed evaluation and risk assessment using guidance provided by the EPA and NMED, the DOE and Sandia recommended that an alternative vegetative soil cover (i.e., ET Cover) be deployed as the preferred corrective measure for the MWL.

The NMED held a public comment period on the MWL CMS from August 11 to December 9, 2004. A public hearing was held for the MWL CMS from December 2 to December 3 and December 8 to December 9, 2004. On May 26, 2005, the Secretary of the NMED selected a vegetative soil cover with a biointrusion barrier as the remedy for the MWL. The selection was based upon the administrative record, including the Hearing Officer's report, and was documented in the NMED Final Order In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill (Final Order) (NMED May 2005). The Secretary requested that a CMIP incorporating the selected remedy be developed within 180 days following the selection of the remedy. The draft permit modification issued by the NMED in the matter prior to the hearing was revised by the NMED in accordance with the Secretary's final decision.

The MWL CMIP (SNL/NM November 2005) was submitted to the NMED in November 2005 and incorporates the remedy selected by the NMED. The CMIP outlines the deployment of the ET Cover (Chapter 2.0), the regulatory basis (Chapter 3.0), MWL characteristics (Chapter 4.0), the technical basis for the cover (Chapter 5.0), the MWL alternative cover design (Chapter 6.0), and cover performance monitoring (Chapter 7.0). Appendices include Construction Specifications (Appendix A), a CQA Plan (Appendix B), identification and qualifications of key persons implementing the remedy (Appendix C), a health and safety plan (Appendix D), and a comprehensive fate and transport model with triggers for monitoring (Appendix E).

In September 2006, approval to proceed with MWL security fence removal and Subgrade construction was received from the NMED (Bearzi September 2006). The NMED issued the first of two Notices of Disapproval (NODs) on the CMIP in November 2006 (Bearzi November 2006). Sandia responded to the first NOD in two parts (Wagner December 2006 and January 2007). The majority of the second NOD comments (Bearzi October 2008) were holdover issues from the first NOD. The response to the second NOD (Davis November 2008) resolved these remaining comments, and the CMIP was conditionally approved by the NMED (Bearzi December 2008). Comments related to construction of the ET Cover were incorporated into the CMIP through replacement pages that were submitted to the NMED (Davis February 2009). The MWL ET Cover construction began in May 2009 after the NMED was notified of the start of ET Cover construction fieldwork on April 10, 2009 (Davis April 2009).

### **1.3 Mixed Waste Landfill Evapotranspirative Cover Deployment Summary**

Deployment of the MWL ET Cover was conducted during two main construction phases consisting of the 2006 Subgrade Construction and the 2009 ET Cover Construction. The MWL Alternative Cover CQA Report (Appendix A) documents both phases of ET Cover deployment.

In preparation for the ET Cover Construction phase, rock needed to construct the Biointrusion Layer was selected and delivered to the Bulk Waste Staging Area in TA-3. Approximately 6,000 cy of crushed, angular rock were delivered from October 4 through November 14, 2005. From June 14 through July 17, 2006, Storm Water Pollution Prevention Plan surface water and site controls were implemented at the MWL Borrow Pit in TA-3, and soil fill material needed for construction of the Subgrade and ET Cover layers was excavated, screened to 2-inch minus, and stockpiled following the specifications provided in the CMIP (SNL/NM November 2005). Screened soil fill was hauled and stockpiled at the MWL for the Subgrade Construction phase from July 31 through November 5, 2006.

After receiving NMED approval (Bearzi September 2006), the Subgrade Construction phase began on October 2, 2006, and was completed on April 11, 2007. This phase involved preparation of the existing MWL surface, construction of the Subgrade, and installation of protective measures on the completed Subgrade surface. Subgrade construction was performed from October 2 through December 21, 2006, and measures to protect the completed Subgrade surface while awaiting final NMED approval of the CMIP (SNL/NM November 2005) were completed on April 11, 2007 (i.e., installation of erosion control straw mats). The ET Cover Construction phase was performed from May 20 to September 3, 2009, and involved the construction of the ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers), revegetation of the Topsoil Layer, and installation of the final administrative security fence around the perimeter of the MWL. Third-party CQA services were provided by MKM Engineers, Inc. (MKM) during the 2006 Subgrade Construction phase (under subcontract to URS Group, Inc. [URS]), and by URS during the 2009 ET Cover Construction phase.

The completed ET Cover is shown schematically in Figure 1-4. The Subgrade varies in thickness from 0 to 3.3 feet and is the base layer that established the broad, central crown and 2-percent east-to-west surface design slope. The combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet, which is 1.2 feet thicker than the minimum specifications provided in the CMIP (SNL/NM November 2005). The ET Cover overlies the 2.6-acre disposal area, with an overall footprint of 4.1 acres including side slopes. The Subgrade and ET Cover layers were constructed with approximately 33,000 cy of soil fill and 6,800 cy of rock (in-place, compacted volumes) that meet CMIP specifications based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. The approximate in-place compacted soil and rock volumes for each component of the ET Cover are as follows:

- Subgrade (soil) – 7,700 cy
- Biointrusion Layer (rock) – 6,800 cy
- Biointrusion Layer void space and thin overlying soil layer (soil) – 2,600 cy
- Native Soil Layer (soil) – 17,300 cy
- Topsoil Layer (soil) – 5,400 cy

All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party CQA contractor.

A Subgrade CQA Report was prepared as a draft in 2007 by MKM and included certification by the CQA Engineer that the Subgrade Construction conformed to the CMIP construction and design specifications (SNL/NM November 2005). This draft report was completed in August 2007 (MKM August 2007) and updated in 2009 and 2010 to incorporate the ET Cover

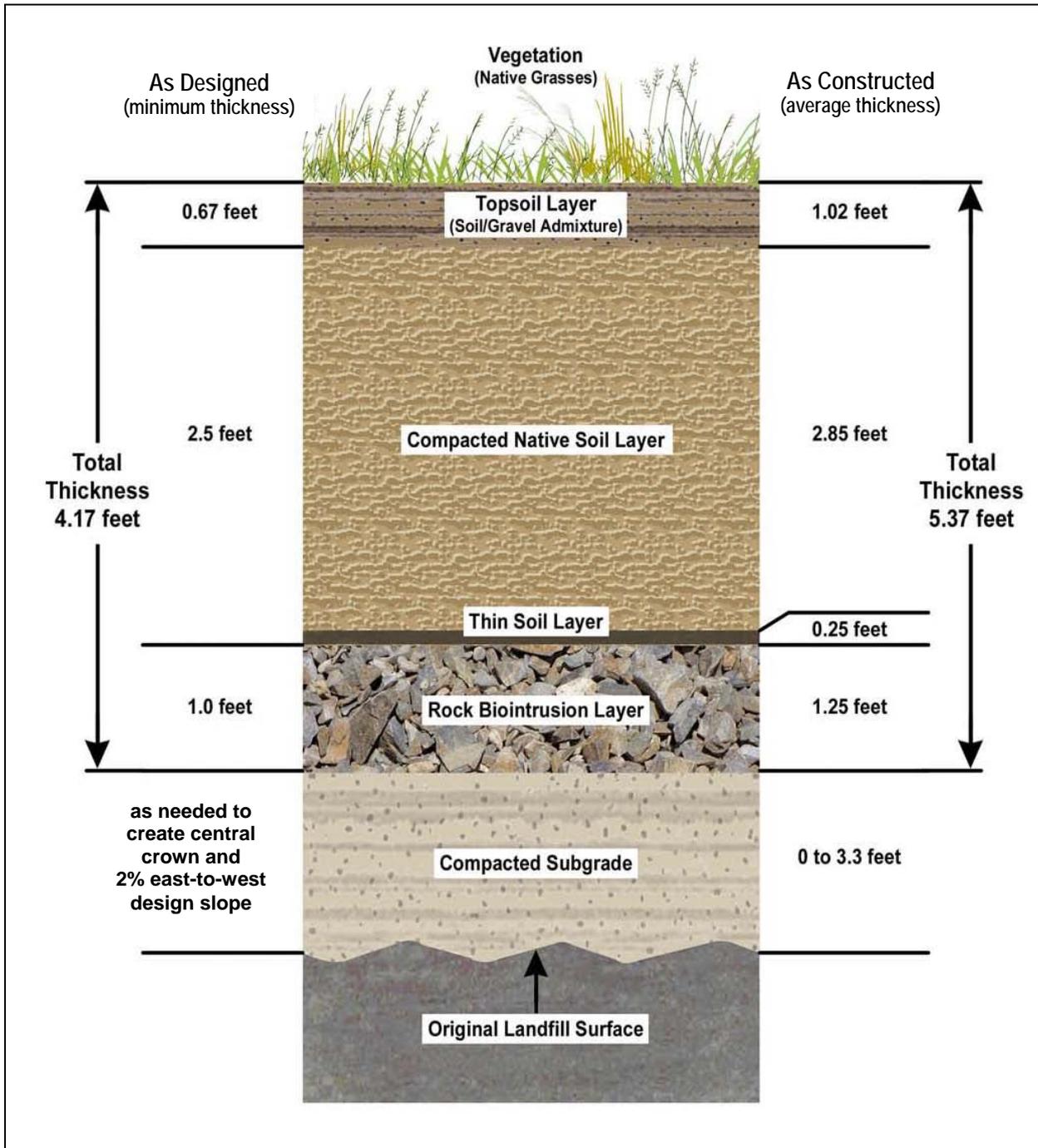


Figure 1-4  
Schematic Diagram of the Mixed Waste Landfill Alternative Evapotranspirative Cover

Construction phase CQA and CQC information. The resulting MWL Alternative Cover CQA Report (Appendix A) integrates NMED requirements, including a detailed summary of the construction activities, laboratory and field testing results, land surveying results, as-built drawings, quality assurance verification survey plates, a photographic record of the construction activities, and other CQA documentation (i.e., meetings, daily reports, inspection forms, and data and cover layer approvals).

For both the 2006 and 2009 construction phases, a representative of the CQA Team was at the construction site each workday to inspect and oversee construction activities, laboratory and field testing, and land surveying. The CQA inspections and oversight are documented in daily reports, inspection checklists/forms, and approval forms provided in the MWL Alternative Cover CQA Report (Appendix A). All ET Cover layers were approved by the CQA Engineer as stipulated by the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer. All nonconformances and design changes were identified, documented, and resolved in consultation between the Sandia Project Staff, the Construction Team, and the CQA Team. Overall, the design changes resulted in a thicker, more protective ET Cover and there were no adverse impacts to ET Cover quality as a result of the nonconformances and design changes.

## **2.0 ALTERNATIVE COVER DOCUMENTATION**

All required MWL ET cover deployment data and documentation are provided in the MWL Alternative Cover CQA Report (Appendix A). Section 2.1 presents an overview of MWL CMI Report data and documentation requirements as defined in various regulatory source documents. More specific information on data and documentation requirements as detailed in the CMIP (SNL/NM November 2005), and how CQC and CQA data are delineated for each phase of ET Cover construction (2006 Subgrade and 2009 ET Cover Construction), is presented in Section 2.2. The location of required CQC and CQA data and documentation in the MWL Alternative Cover CQA Report (Appendix A) is provided in the cross-walk tables presented in Sections 2.1 and 2.2. Section 2.3 provides information on regulatory oversight and quarterly reporting. Section 2.4 briefly summarizes the ET Cover deployment health and safety program.

### **2.1 Requirements Cross-Walk**

The NMED Final Order for the MWL (NMED May 2005) required the submittal of this MWL CMI Report within 180 days after completion of the MWL ET Cover. Data and documentation requirements for this MWL CMI Report are defined in the NMED-approved CMIP (SNL/NM November 2005); the SNL/NM RCRA Permit (as modified for the MWL after the Final Order); the NMED conditional approval of the MWL CMIP (Bearzi December 2008); and the Compliance Order on Consent (NMED April 2004). Table 2-1 lists the requirements for the MWL CMI Report as compiled from these source documents and provides the location where the related information can be found in the MWL Alternative Cover CQA Report (Appendix A).

The MWL CMI Report requirements are divided into two broad categories: data and documentation. Data requirements include both CQC (data collected to verify ET Cover construction meets CMIP construction and design specifications) and CQA (data collected to verify the CQC data, if required). Both data and documentation requirements are more specifically defined in the NMED-approved CMIP (SNL/NM November 2005) and in Section 2.2, which also provides cross-walk tables mapping the locations where each requirement is addressed in the MWL Alternative Cover CQA Report (Appendix A).

### **2.2 Data and Documentation Requirements**

As part of the MWL Subgrade Construction and ET Cover deployment, CQC data were collected to verify that construction and design specifications provided in the CMIP (SNL/NM November 2005) were met. CQA documentation was collected to establish and verify construction methods and processes, as well as CQC and CQA data collection procedures and field and laboratory testing methods. All data and documentation requirements are defined in the Construction Specifications in Appendix A and CQA Plan in Appendix B of the CMIP (SNL/NM November 2005).

During the 2006 Subgrade Construction phase, the CQA Team was responsible for all CQC data and CQA documentation requirements. CQA Team personnel either performed or coordinated all CQC laboratory sampling and testing, field testing, and land surveying. They also provided oversight and documentation of all construction activities and prepared a Draft

Table 2-1  
MWL CMI Report Requirements Cross-Walk Table

Requirement	Comment/Location in CQA Report Appendix A
<b>CMIP Appendix B, Construction Quality Assurance Plan (SNL/NM November 2005)</b>	
Quality control data generated by the construction contractor	Described in Sections 2.4, 2.5, 2.7, and 4.3–4.5; data presented in Tables 5–10, 12, 13, and Attachment 7
Quality assurance data generated by the CQA contractor	Described in Sections 2.5, 2.6, 2.7, and 4.1–4.5; see below for information regarding specific CQA documentation and data
Daily summary reports	Section 4.1 and Attachment 3
Inspection checklists	Section 4.2 and Attachments 4–6
Nonconformance and corrective action reports	There were no nonconformances – all design changes are documented in Chapter 7.0 and Table 14
Field test results (in-place density and moisture tests)	Section 4.3.2 and Table 11 and Attachment 7
Laboratory test results (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity)	Section 4.3.1 and Tables 4–8, and Attachment 7 (CQC data collected and/or overseen by CQA Contractor)
Photographs and photograph logbook	Section 4.5; Photographic logs included in tabbed section at end of report
As-built drawings	Section 4.4; As-built drawings included in tabbed section at end of report
Internal CQA memoranda or reports with data interpretation or analysis	Chapter 3.0; Quality Resolution Meeting minutes in Attachment 1; data submittals and Cover Layer Approval Forms in Attachment 2
Design changes	Chapter 7.0, Table 14
<b>SNL/NM Part B Permit, Section V, Corrective Measures for the Mixed Waste Landfill</b>	
A summary of the work completed	Chapter 5.0
A statement signed by a registered professional engineer, that the remedy has been completed in full satisfaction of the specifications in the CMIP	Chapter 9.0
As-built drawings and specifications signed and stamped by a registered professional engineer	As-built drawings included in tabbed sections at end of report
Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report	Chapter 4.0, Tables 4–12, and Attachment 7
A certification, signed by a responsible Permittee official stating: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations"	Included as part of formal submittal package to NMED
<b>SNL/NM Compliance Order On Consent, Section VII (NMED April 2004)</b>	
Items 1, 2, 3, 4, and 6 are identical to requirements of the Part B Permit presented above.	
5. Copies of all waste disposal records, if not already submitted in a progress report	The only waste disposal records associated with cover construction were presented in the MWL Quarterly Progress Report, May–July, 2009 (SNL/NM September 2009)

CMI Corrective Measures Implementation  
 CMIP Corrective Measures Implementation Plan  
 CQA Construction Quality Assurance

MWL Mixed Waste Landfill  
 NMED New Mexico Environment Department  
 SNL/NM Sandia National Laboratories/New Mexico

CQA Subgrade Report (MKM August 2007) according to the requirements of the CQA Plan presented in Appendix B of the CMIP (SNL/NM November 2005) to document the effort.

For the 2009 ET Cover Construction phase, the Construction Team was responsible for all required CQC laboratory sampling and field testing, as well as land surveying. Independent CQA field testing and surveying were performed under the direction of the CQA Team to verify CQC results. CQA field testing was performed at approximately 50 percent of the locations tested by the Construction Team. Independent CQA surveys were conducted on the surface of each ET Cover layer (Biointrusion, Native Soil, and Topsoil Layers). CQA Team personnel also conducted oversight of all construction activities, including CQC laboratory sampling, field testing, and surveying, and were responsible for all project documentation, including preparation of the MWL Alternative Cover CQA Report (Appendix A). Detailed information for data and documentation requirements are provided in the following sections.

### 2.2.1 Data Requirements

Data requirements defined in the CMIP include laboratory testing, field testing, and surveying results. Laboratory and field testing were performed to verify that the materials used met specifications and that the existing surface (pre-Subgrade Construction MWL site surface), Subgrade, and ET Cover layers met the construction and design specifications (i.e., compaction, thickness, and slope) provided in the CMIP (SNL/NM November 2005). Laboratory testing included Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity analyses of fill material soil samples. Field testing consisted of in-place density and moisture testing of the fill material after installation and compaction. The frequency and methods for laboratory and field testing are addressed in the CMIP Construction Specifications, Appendix A, Specification 02200 (*Earthwork*), Table 3.1 (SNL/NM November 2005). Land surveys were performed to guide and control the construction process and to verify that the Subgrade and ET Cover layers met CMIP design specifications (i.e., thickness and slope specifications). Surveying specifications are addressed in the CMIP Construction Specifications, Appendix A, Specification 02210 (*Grades, Lines, and Levels*) and in the CMIP design drawings (SNL/NM November 2005).

Table 2-2 lists the data requirements and provides specific information regarding where these are addressed in the MWL Alternative Cover CQA Report (Appendix A). Both CQC and CQA data are delineated in the center columns, which provide references to sections of the report, tables, tabbed sections at the end of the report, and attachments that specifically address each data requirement. Additional information is provided in the comment column on the far right-hand side of the table.

### 2.2.2 Documentation Requirements

Documentation requirements defined in the CMIP include daily reports of construction activities; equipment used; materials receiving, construction, and testing/inspection checklists/forms; backup laboratory documentation for laboratory and field testing; as-built drawings; and photographic records (SNL/NM November 2005). In addition, for the 2009 ET Cover Construction phase, all laboratory and field testing CQC data were approved by the CQA Engineer through a formal submittal process, and each ET Cover layer was approved through Quality Resolution Meetings documented on Cover Layer Approval Forms (documentation was

Table 2-2  
MWL CMI Report Requirements – Data Requirements Summary and Cross-Walk

Data Requirement	Location in the MWL Alternative Cover CQA Report (Appendix A)		Comments
	CQA Data	CQC Data	
Laboratory Testing Data Standard Proctor (ASTM D698)	NA	Described in Section 4.3.1 Results in Tables 4–5	For 2006 Subgrade Construction phase, all CQC laboratory testing was performed by the CQA Team. For 2009 ET Cover Construction phase, all laboratory testing was performed by the Construction Team, with oversight by the CQA Team.
Laboratory Testing Data Gradation (ASTM C136) and Classification (ASTM D2487 and D4318)	NA	Described in Section 4.3.1 Results in Table 4 (4 <sup>th</sup> column), Tables 6–7, and Attachment 7	For 2006 Subgrade Construction phase, all CQC laboratory testing was performed by the CQA Team. For 2009 ET Cover Construction phase, all laboratory testing was performed by the Construction Team with oversight by the CQA Team.
Laboratory Testing Data Saturated Hydraulic Conductivity (ASTM D5856-95 [2007])	NA	Described in Section 4.3.1 Results in Table 8	Saturated Hydraulic Conductivity testing was only required for the Native Soil Layer. CQC testing was performed by the Construction Team with oversight by the CQA Team.
Field Testing Data In-place density and moisture (ASTM D2922 and D3017)	CQA field testing for 2009 Subgrade surface and Native Soil Layer only  Described in Section 4.3.2 Results in Table 11	Described in Section 4.3.2 Results in Tables 9–10	For 2006 Subgrade Construction phase, all CQC field testing was performed by the CQA Team. For 2009 ET Cover Construction phase, field testing was performed by the Construction Team and the CQA Team. CQA testing was performed at approximately 50% of the locations tested by the Construction Team.
Land Survey Data	Described in Sections 2.5 and 4.4 Only 2009 CQA verification surveys considered CQA data – results in QA Verification Plates in tabbed section at end of report	Described in Sections 2.5 and 4.4 2006 results in Subgrade As-Built Drawing 2009 results in Table 12 and 2009 As-Built Drawings All As-Built Drawings in tabbed section at end of report	For 2006 Subgrade Construction phase, all surveying was for CQC, performed by CQA Team, and documented in the 2006 Subgrade As-Built Drawing. For 2009 ET Cover Construction phase, the Construction Team performed CQC surveying and the CQA Team performed CQA verification surveys on the surface of each cover layer to confirm and support the CQC surveys. CQA surveys are documented in QA Verification Plates in tabbed section at end of report.

ASTM American Society for Testing and Materials (ASTM International)  
 CMI Corrective Measures Implementation  
 CQA Construction Quality Assurance  
 CQC Construction Quality Control

ET Evapotranspirative  
 MWL Mixed Waste Landfill  
 NA Not applicable  
 QA Quality assurance

prepared for both the Quality Resolution Meetings and the Cover Layer Approval, the latter on project-specific approval forms).

Table 2-3 lists the documentation requirements and provides specific information regarding where they are addressed in the MWL Alternative Cover CQA Report (Appendix A). Documentation for CQC and CQA are delineated in the center columns, which provide references to sections of the report, tables, tabbed sections at the end of the report, and attachments that specifically address each documentation requirement. Additional information is provided in the comment column on the far right-hand side of the table.

### **2.3 Regulatory Oversight Quarterly Reporting**

NMED personnel visited the MWL ET Cover construction site on three occasions during ET Cover deployment in 2009. On June 26, 2009, NMED representatives visited the site and received a briefing on cover activities completed to date. On July 8, 2009, William Moats and Bill McDonald of the NMED conducted a site inspection of both the ET Cover and the MWL Borrow Pit Area operations. During this NMED inspection, a review of laboratory and field-testing data was conducted, as well as a complete walk-down of ongoing site activities at the MWL (Native Soil Layer installation) and Borrow Pit (soil excavation, screening, stockpiling, loading, hauling, and Pug Mill operations to blend topsoil fill with 3/8-inch gravel). On August 6, 2009, NMED personnel also visited the MWL ET Cover construction site to oversee the installation of the two soil-vapor monitoring wells.

In accordance with the SNL/NM RCRA Permit and Compliance Order on Consent requirements, quarterly progress reports were submitted to the NMED during the construction period (e.g., SNL/NM September 2009). Periodic updates, including photographs of construction activities, were also provided to the NMED during the construction period.

### **2.4 Cover Deployment Health and Safety Program**

The MWL ET Cover was constructed without a single loss-time injury or accident resulting in property damage. There were two minor incidents during June 2009 that involved small amounts of spilled diesel fuel or hydraulic oil. In both cases the spill occurred on the site perimeter (i.e., no spills occurred on the ET Cover or side slopes) and involved very small quantities of material (less than 1 quart of diesel fuel and 2 to 3 gallons of hydraulic oil). Site personnel immediately recognized the problem, took corrective action to stop the spill, and then cleaned up the affected area. All contaminated soil related to the spills was placed into two 55-gallon drums for disposal (one drum for each spill). One plastic bag of absorbent materials was also generated as part of the hydraulic oil spill on June 30, 2009. All resulting waste was New Mexico Special Waste and disposed of through the SNL/NM Hazardous Waste Management Facility. For each minor incident, Incident Reports were completed, and final waste disposition documentation was provided to the NMED as required in the MWL Cover Construction Quarterly Progress Report, May–July 2009 (SNL/NM September 2009).

Table 2-3  
MWL CMI Report Requirements – Documentation Requirements Summary and Cross-Walk

Documentation Requirement	Location in the MWL Alternative Cover CQA Report (Appendix A)		Comments
	CQA Data	CQC Data	
Daily reports of construction activities	Described in Section 4.1 Reports in Attachment 3	NA	Daily Reports were the responsibility of the CQA Team. For 2009 ET Cover Construction phase, daily reports were completed by the Construction Team but not included in the CQA Report.
Documentation of equipment used	Described in Chapter 5.0, Table 13, and Daily Reports See comments for additional information	NA	Documentation of equipment used for the 2006 Subgrade Construction phase is documented in Daily Reports (Attachment 3) and Section 5.2.1. For 2009 ET Cover Construction phase, equipment used is documented in Daily Reports and Table 13, and described in Sections 5.2.2, 5.3.2, 5.3.3, 5.4, 5.5, and 5.6.
Inspection checklists/forms <sup>1</sup>	Described in Section 4.2 Forms in Attachments 4-6	NA	Receiving, Construction, and Testing Inspection Forms and related documentation were completed by the CQA Team.
Supporting documentation for laboratory and field testing <sup>1</sup>	Described in Section 4.3 Supporting documentation in Attachment 7	Described in Section 4.3 Supporting documentation in Attachment 7	Supporting documentation for all 2006 Subgrade and 2009 ET Cover laboratory and field testing is included in Attachment 7 and represents CQA documentation. See Table 2-2 for additional information on CQA and CQC laboratory and field testing.
As-Built Drawings	Described in Sections 2.5 and 4.4	Described in Section 2.5 and 4.4 Results in Table 12 and 2006 Subgrade As-Built Drawing and 2009 As-Built Drawings in tabbed section at end of report	For 2006 Subgrade Construction phase, all surveying was for CQC and documented in the 2006 Subgrade As-Built Drawing. For 2009 ET Cover Construction phase, the Construction Team performed all required field control and final surveying and prepared the final as-built drawings. The 2009 as-built drawings are complete, final drawings documenting the MWL ET Cover. See Table 2-2, "Land Survey Data," for more information.
Photographic records	Described in Section 4.5	NA	Photographic Logs for both 2006 and 2009 phases included in a tabbed section at end of the CQA Report.
CQA Engineer Approval of all Cover Layers, Design Changes, and Final Construction	Described in Sections 3.4, Chapters 7 and 9, and Tables 3 and 14	NA	Table 3 documents approval of all Cover Layers. Chapter 7.0 and Table 14 document all nonconformances and design changes. Attachment 2 provides approval documentation. MWL ET Cover construction is certified by a New Mexico-registered Professional Engineer in Chapter 9.0.

<sup>1</sup> All construction materials and the completed Subgrade and ET Cover Layers were approved by the CQA Engineer as documented in Section 3.4, Chapter 7.0, and Table 3; with supporting documentation in Attachments 1, 2, and 7.

CMI Corrective Measures Implementation  
CQA Construction Quality Assurance  
CQC Construction Quality Control  
ET Evaporative  
MWL Mixed Waste Landfill  
NA Not applicable

### 3.0 CONCLUSIONS

This CMI Report for the MWL meets all requirements stipulated in the NMED Final Order for the MWL (NMED May 2005); the CMIP (SNL/NM November 2005); the SNL/NM RCRA Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED April 2004); and the NMED conditional approval for the MWL CMIP (Bearzi December 2008). All required CQC and CQA data and documentation have been included in the MWL Alternative Cover CQA Report, incorporated as Appendix A of this CMI Report, to provide a comprehensive, integrated report for the deployment of the MWL ET Cover. The information contained in the MWL Alternative Cover CQA Report is certified by a New Mexico-registered Professional Engineer and verifies that the MWL existing surface, Subgrade, and ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) were prepared and installed in a manner that meets the CMIP construction and design specifications.

Longer-term aspects of site revegetation, monitoring, maintenance, and institutional controls will be addressed in a revised MWL Long-Term Monitoring and Maintenance Plan (LTMMP) that will be prepared and submitted to the NMED within 180 days of approval of this CMI Report. The MWL LTMMP that the DOE and Sandia submitted to the NMED in September 2007 (SNL/NM September 2007) will be revised to incorporate changes requested by the NMED as part of the CMIP NOD process (Bearzi November 2006 and October 2008).

## 4.0 REFERENCES

Bearzi J.P. (New Mexico Environment Department), September 2006. Letter to P. Wagner (U.S. Department of Energy) and P. Davies (Sandia Corporation), "Fence Removal and Subgrade Preparation, Sandia National Laboratories EPA ID #NM5890110518." September 18, 2006.

Bearzi J.P. (New Mexico Environment Department), November 2006. Letter to P. Wagner (U.S. Department of Energy) and L. Shepherd (Sandia Corporation), "Notice of Disapproval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, and Requirement for Soil-Vapor Sampling and Analysis Plan, Sandia National Laboratories EPA ID NM5890110518, HWB-SNL-05-025." November 20, 2006

Bearzi J.P. (New Mexico Environment Department), October 2008. Letter to P. Wagner (U.S. Department of Energy) and F. Nimick (Sandia Corporation), "Notice of Disapproval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, Sandia National Laboratories NM5890110518, SNL-05-025." October 10, 2008.

Bearzi, J.P. (New Mexico Environment Department), December 2008. Letter to K. Davis (U.S. Department of Energy) and F. Nimick (Sandia Corporation), "Conditional Approval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, Sandia National Laboratories NM5890110518, SNL-05-025." December 22, 2008.

Davis, K. (U.S. Department of Energy), November 2008. Letter to J. Bearzi (New Mexico Environment Department), submitting responses to the New Mexico Environment Department Notice of Disapproval on the Mixed Waste Landfill Corrective Measures Implementation Plan dated October 10, 2008. November 26, 2008.

Davis, K. (U.S. Department of Energy), February 2009. Letter to J. Bearzi (New Mexico Environment Department), submitting requested changes in the form of replacement pages in response to the Mixed Waste Landfill Conditional Approval letter from the New Mexico Environment Department dated December 22, 2008. February 12, 2009.

Davis, K. (U.S. Department of Energy), April 2009. Letter to J. Bearzi (New Mexico Environment Department), notifying the New Mexico Environment Department of the start of Mixed Waste Landfill Evapotranspirative Cover construction fieldwork. April 10, 2009.

MKM Engineers, Inc. (MKM), August 2007. "Mixed Waste Landfill Alternative Cover Construction, Subgrade, Draft Quality Assurance Report," prepared for Sandia National Laboratories by MKM Engineers, Inc. under subcontract to URS Group, Inc., Albuquerque, New Mexico.

New Mexico Environment Department (NMED) April 2004, "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 24, 2004.

New Mexico Environment Department (NMED), May 2005. "Final Order, State of New Mexico Before the Secretary of the Environment in the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill, Sandia National Laboratories, Bernalillo County, New Mexico." EPA ID #5890110518," May 26, 2005.

Sandia National Laboratories/New Mexico (SNL/NM), May 2003. "Mixed Waste Landfill Corrective Measures Study," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico, May 21, 2003.

Sandia National Laboratories/New Mexico (SNL/NM), November 2005. "Mixed Waste Landfill Corrective Measures Implementation Plan," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 2007. "Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 2009. "Mixed Waste Landfill Quarterly Progress Report, Evapotranspirative Cover Construction Project, May–July 2009," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Wagner, P. (U.S. Department of Energy), December 2006. Letter to J. Bearzi (New Mexico Environment Department), submitting the first response to the New Mexico Environment Department Notice of Disapproval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, and Requirement for Soil-Vapor Sampling and Analysis Plan, Sandia National Laboratories EPA ID NM5890110518, HWB-SNL-05-025 and the requested Soil Vapor Sampling and Analysis Plan. December 21, 2006.

Wagner, P. (U.S. Department of Energy), January 2007. Letter to J. Bearzi (New Mexico Environment Department), submitting the second response to the New Mexico Environment Department Notice of Disapproval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, and Requirement for Soil-Vapor Sampling and Analysis Plan, Sandia National Laboratories EPA ID NM5890110518, HWB-SNL-05-025 and additional information on the monitoring trigger evaluation process. January 19, 2007.

## **APPENDIX A**

### **Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report January 2010 Revision 1**

#### **Volume 1 Main Text and Tabbed Sections**



# Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report

Submitted to



**Sandia National Laboratories**

**P.O. Box 5800**

**Albuquerque, NM 87185**



**January 2010**

**Revision 1**

Submitted by

**URS**

**URS Group, Inc.**

One Park Square

6501 Americas Parkway NE, Suite 900

Albuquerque, NM 87110

This page left intentionally blank.

**MIXED WASTE LANDFILL  
ALTERNATIVE COVER  
CONSTRUCTION QUALITY ASSURANCE REPORT**

**JANUARY 2010  
Revision 1**

This page left intentionally blank.

## **Table of Contents**

---

List of Tables .....	8
List of Figures .....	9
List of As-Built Drawings.....	10
List of Quality Assurance Verification Survey Plates .....	11
List of Photographic Logs.....	11
List of Attachments.....	12
List of Abbreviations/Acronyms.....	14
Executive Summary .....	15
1.0 Introduction.....	19
1.1 Subgrade and ET Cover Construction Background.....	21
1.2 Purpose and Scope .....	22
1.3 2006 and 2009 CQA Teams and CQA Report Progression.....	22
2.0 Responsibility, Authority, and Qualifications .....	25
2.1 Review/Permitting Agency.....	26
2.2 U.S. Department of Energy (Owner) .....	26
2.3 Sandia Corporation (Designer and Operator) .....	26
2.4 Construction Contractor Team.....	26
2.5 Surveying Contractor .....	26
2.6 CQA Contractor .....	27
2.6.1 CQA Inspection Personnel.....	28
2.6.2 CQA Certifying Engineer .....	28
2.7 Testing Laboratory.....	28
3.0 Project Communications.....	31
3.1 Preconstruction Meeting.....	31
3.2 Progress Meetings.....	32
3.3 Quality Resolution Meetings .....	32
3.4 Approvals and Submittals.....	33
4.0 Observations, Inspections, Tests and Surveys .....	35
4.1 Daily Quality Control Reports .....	35
4.2 Inspection Forms.....	36
4.2.1 Receiving Inspection Forms .....	36
4.2.2 Construction Inspection Forms .....	37
4.2.3 Testing Inspection Forms.....	37

---

4.3	Laboratory and Field Testing.....	37
4.3.1	Laboratory Testing.....	38
4.3.2	Field Testing .....	40
4.3.2.1	2006 Subgrade Construction Phase .....	40
4.3.2.2	2009 Evapotranspirative Cover Construction Phase.....	42
4.4	Surveys and As-Built Drawings.....	43
4.5	Photographic Reporting .....	45
5.0	Earthwork.....	47
5.1	Existing Mixed Waste Landfill Surface.....	49
5.1.1	Existing Surface Laboratory and Field Testing .....	49
5.1.2	Existing Surface Survey.....	50
5.2	Subgrade Construction.....	50
5.2.1	2006 Subgrade Construction.....	50
5.2.1.1	2006 Laboratory and Field Testing.....	52
5.2.1.2	2006 Survey Verification.....	52
5.2.1.3	2006 Subgrade Layer Protection.....	52
5.2.1.4	2006 Subgrade Approval .....	53
5.2.2	2009 Subgrade Preparation.....	53
5.2.2.1	2009 Laboratory and Field Testing.....	54
5.2.2.2	2009 Survey Verification.....	54
5.3	Biointrusion Layer .....	54
5.3.1	Biointrusion Layer Construction Field Tests.....	54
5.3.1.1	Biointrusion Test Area I.....	55
5.3.1.2	Biointrusion Test Area II .....	55
5.3.2	Biointrusion Layer Construction.....	56
5.3.3	Void Space Filling and Thin Soil Layer .....	57
5.3.4	Laboratory and Field Testing, Survey Verification, and Approval .....	57
5.4	Native Soil Layer .....	59
5.4.1	Laboratory and Field Testing.....	61
5.4.2	Survey Verification and Approval.....	61
5.5	Topsoil Layer .....	62
5.5.1	Laboratory and Field Testing.....	64
5.5.2	Survey Verification and Approval.....	64
5.6	Revegetation Activities and Administrative Security Fence Installation .....	64

6.0	Monitoring Well (MWL-MW4) Extension .....	67
7.0	Cover Layer Approvals, Nonconformances, and Design Changes.....	69
8.0	Conclusions.....	73
9.0	Engineering Certification.....	75
10.0	References.....	77

## **Tabbed Sections at the end of Appendix A – Volume 1**

### ***List of Tables***

---

<b><i>Table</i></b>	<b><i>Title</i></b>
1	Summary of Mixed Waste Landfill Subgrade and ET Cover Construction Activities
2	Summary of CQA Personnel Qualifications, Mixed Waste Landfill ET Cover Construction Project
3	Mixed Waste Landfill 2009 ET Cover Construction Quality Resolution Meetings and Cover Layer Approval
4	Mixed Waste Landfill 2006 Subgrade Construction Standard Proctor CQC Laboratory Results
5	Mixed Waste Landfill 2009 ET Cover Construction Standard Proctor CQC Laboratory Results
6	Mixed Waste Landfill 2009 ET Cover Construction Native Soil Layer Gradation and Classification CQC Laboratory Results
7	Mixed Waste Landfill 2009 ET Cover Construction Topsoil Gradation and Classification CQC Laboratory Results
8	Mixed Waste Landfill 2009 ET Cover Construction Saturated Hydraulic Conductivity CQC Laboratory Results
9	Mixed Waste Landfill 2006 Subgrade Construction In-Place Density and Moisture Content CQC Field Results
10	Mixed Waste Landfill 2009 ET Cover Construction In-Place Density and Moisture Content CQC Field Results
11	Mixed Waste Landfill 2009 ET Cover Construction In-Place Density and Moisture Content CQA Field Results
12	Mixed Waste Landfill 2009 ET Cover Construction CQC Land Survey Elevation Data
13	Mixed Waste Landfill 2009 ET Cover Construction Equipment Summary
14	Mixed Waste Landfill Subgrade and ET Cover Design Change Summary
15	Mixed Waste Landfill Final In-Place Subgrade and ET Cover Layer Soil and Rock Volume Estimates

## **List of Figures**

---

<b>Figure</b>	<b>Title</b>
1	Location of Kirtland Air Force Base, Sandia National Laboratories, New Mexico and the Mixed Waste Landfill
2	Location of Technical Areas 3 & 5 and the Mixed Waste Landfill
3	Location of the Mixed Waste Landfill, Borrow Pit, Bulk Waste Staging Area, and Haul Routes
4	Schematic Diagram of the Mixed Waste Landfill Alternative Evapotranspirative Cover
5	Mixed Waste Landfill 2006 Existing Surface Map
6	Mixed Waste Landfill Subgrade Lift 1 Map
7	Mixed Waste Landfill Subgrade Lift 2 Map
8	Mixed Waste Landfill Subgrade Lift 3 Map
9	Mixed Waste Landfill Subgrade Lift 4 Map
10	Mixed Waste Landfill Subgrade Lift 5 Map
11	Mixed Waste Landfill Subgrade Lift 6 Map
12	Mixed Waste Landfill Subgrade Lift 7 Map
13	Mixed Waste Landfill Subgrade Lift 8 Map
14	Mixed Waste Landfill Subgrade Lift 9 Map
15	Mixed Waste Landfill Subgrade Lift 10 Map
16	Mixed Waste Landfill Subgrade Lift 11 Map
17	Mixed Waste Landfill Subgrade Lift 12 Map
18	Mixed Waste Landfill Survey Verification Grid Points and Field Testing Grid Blocks
19	Mixed Waste Landfill Cover Grid Blocks and Locations of Native Soil Layer Wedge Lifts 1 & 2
20	Graphical Representation of all MWL Alternative Cover Standard Proctor Results
21	Mixed Waste Landfill Moisture/Density Test Locations, 2009 Subgrade Surface
22	Mixed Waste Landfill Moisture/Density Test Locations, Side Slope Lifts

**List of Figures (cont'd.)**

---

<b>Figure</b>	<b>Title</b>
23	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Wedge Lifts 1 & 2
24	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 3
25	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 4
26	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 5
27	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 6
28	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 7
29	Mixed Waste Landfill Moisture/Density Test Locations, Native Soil Layer Lift 8

**List of As-Built Drawings**

---

**2006 Subgrade As-Built Drawing (11 x 17 Drawing)**

<b>Drawing No.</b>	<b>Title</b>
1	Mixed Waste Landfill Finished Subgrade Survey

**2009 Alternative Cover As-Built Drawings (11 x 17 Figures)**

<b>Figure No.</b>	<b>Title</b>
1	Mixed Waste Landfill Alternative Evapotranspirative Cover Title Sheet
2	Mixed Waste Landfill Alternative Evapotranspirative Cover Site Plan
3	Mixed Waste Landfill Alternative Evapotranspirative Cover Sections
4	Mixed Waste Landfill Alternative Evapotranspirative Cover Details

**List of Quality Assurance Verification Survey Plates**

---

<b>Plate No. (D-Size Plates)</b>	<b>Title</b>
1	Mixed Waste Landfill Biointrusion Layer QA Survey
2	Mixed Waste Landfill Native Soil Layer QA Survey
3	Mixed Waste Landfill Topsoil Layer QA Survey

**List of Photographic Logs**

---

<b>Log No.</b>	<b>Title</b>
1	Mixed Waste Landfill 2006 Subgrade Construction Photographic Log
2	Mixed Waste Landfill 2009 Evapotranspirative Cover Construction Photographic Log

*End of Appendix A – Volume 1*

## Appendix A – MWL Alternative Cover CQA Report – Volume 2

Separately bound hard copies of the attachments in Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico); the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico); and the SNL/NM Customer Funded Records Center (formerly known as the ES&H and Security Records Center).

### ***List of Attachments***

---

*(provided electronically on a CD at the end of the report)*

<b>Attachment</b>	<b>Title</b>
1	Record of Meetings and Approvals 2006 Meetings 2009 Meetings
2	CQA Submittals and Approvals 2009 QA Submittal Cover Pages 2009 Cover Layer Approval Forms
3	Daily Quality Control Reports 2006 Daily Quality Control Reports 2009 Daily Quality Control Reports
4	Receiving Inspection Forms and Documentation 2005 Biointrusion Rock 2009 Biointrusion Rock 2009 Aggregate 2009 Seed and Mulch 2009 Seed Bag Labels
5	Construction Inspection Forms 2006 Construction Inspection Forms 2009 Construction Inspection Forms
6	Testing Inspection Forms 2006 Testing Inspection Forms 2009 Testing Inspection Forms

## ***List of Attachments (cont'd.)***

---

<b><i>Attachment</i></b>	<b><i>Title</i></b>
7	Laboratory and Field Test Results and Supporting Data 2006 Standard Proctor, Gradation, and Classification Tests 2006 Density and Moisture Tests 2009 Standard Proctor, Gradation, and Classification Tests 2009 Density and Moisture Tests 2009 Saturated Hydraulic Conductivity Tests
8	Summary Report for the Extension of Monitoring Well MWL-MW4 at the Mixed Waste Landfill

*End of Appendix A – MWL Alternative Cover CQA Report – Volume 2*

## ***List of Abbreviations/Acronyms***

---

AMEC	AMEC Earth and Environmental, Inc.
ASTM	American Society for Testing and Materials (ASTM International)
CD	compact disc
CMI	Corrective Measures Implementation
CMIP	Corrective Measures Implementation Plan
cm/s	centimeter(s) per second
CQA	Construction Quality Assurance
CQC	Construction Quality Control
cy	cubic yard(s)
DOE	U.S. Department of Energy
EDi	Environmental Dimensions, Inc.
EPA	U.S. Environmental Protection Agency
ES&H	Environment, Safety, and Health
ET	Evapotranspirative
IR	Ingersoll-Rand
JD	John Deere
KAFB	Kirtland Air Force Base
LTMMP	Long-Term Monitoring and Maintenance Plan
MKM	MKM Engineers, Inc.
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SCR	Sandia Construction Representative
Shaw	Shaw Environmental, Inc.
SNL/NM	Sandia National Laboratories/New Mexico
SWPPP	Storm Water Pollution Prevention Plan
TA	Technical Area
URS	URS Group, Inc.

## ***Executive Summary***

---

*This document represents a revision to the January 2010 Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report in response to the New Mexico Environment Department Notice of Disapproval dated May 20, 2011.*

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base (KAFB), immediately south of the city of Albuquerque in Bernalillo County, New Mexico. SNL/NM is owned by the U.S. Department of Energy (DOE) and managed and operated by Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation. Sandia performs research and development in support of various energy, weapons, and national security programs. Sandia also performs work for the U.S. Department of Defense, the U.S. Nuclear Regulatory Commission, and other government agencies.

The Mixed Waste Landfill (MWL) at SNL/NM is designated as an Underground Radioactive Materials Area under DOE requirements and a Hazardous and Solid Waste Amendments Solid Waste Management Unit subject to New Mexico Environment Department (NMED) corrective action regulations as delegated by the U.S. Environmental Protection Agency (EPA). The NMED is authorized by the EPA to implement and enforce the corrective action requirements for the MWL. The MWL is located within the boundaries of KAFB on federal land controlled by the DOE. The MWL consists of two distinct disposal areas; the classified area in the northeast portion occupies 0.6 acres and the unclassified area occupies 2.0 acres. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (at the time of disposal) were disposed of in the MWL from March 1959 through December 1988.

The MWL alternative evapotranspirative (ET) cover (hereafter referred to as the ET Cover) was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil (Figure ES-1). The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The overall footprint of the ET Cover is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards (cy) of soil fill and 6,800 cy of rock (in-place, compacted volumes) that meet the specifications provided in the MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM, November 2005) based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor.

This MWL Alternative Cover CQA Report documents the implementation of the MWL CMIP (SNL/NM, November 2005) that was conditionally approved by the NMED (Bearzi, December 2008) and addresses all requirements for the MWL Corrective Measures Implementation Report as defined in the NMED Final Order for the MWL (NMED, May 2005); the CMIP (SNL/NM, November 2005); the SNL/NM Resource Conservation and Recovery Act Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED, April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi, December 2008). The CMIP contains the Construction Specifications (Appendix A) and CQA Plan (Appendix B) that define the construction, design, and quality assurance requirements for construction of the MWL Alternative Cover (i.e., MWL ET Cover).

Deployment of the MWL ET Cover was conducted in two main construction phases, the 2006 Subgrade Construction and 2009 ET Cover Construction. The 2006 Subgrade Construction phase began on October 2, 2006, following the NMED approval received in September 2006 (Bearzi, September 2006), and was completed on April 11, 2007. This phase involved MWL Borrow Pit activities to generate soil fill material for cover construction, preparation of the existing disposal area surface, construction of the Subgrade, and installation of erosion control measures to protect the Subgrade surface while awaiting final NMED approval of the CMIP. The 2009 ET Cover Construction phase was performed from May 20 through September 3, 2009, and involved preparation of the Subgrade surface, construction of the ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) and site drainage features, installation of the administrative security fence, and site revegetation activities. Minor variances in construction and/or design specifications that did not adversely affect the quality of the cover were documented as nonconformances or design changes and approved by the CQA Engineer. Overall, the final MWL ET Cover as constructed provides a thicker, more protective ET Cover relative to the CMIP minimum design specifications. The completed ET Cover is shown schematically in Figure ES-1.

Third-party CQA services were provided by MKM Engineers, Inc. during the 2006 Subgrade Construction phase (under subcontract to URS Group, Inc. [URS]), and by URS during the 2009 ET Cover Construction phase. This report and the attachments provide the construction quality control and CQA data and documentation required to verify that the MWL ET Cover meets the construction and design specifications of the NMED-approved CMIP (SNL/NM, November 2005). All aspects of the MWL ET Cover deployment are addressed in this stand-alone report and have been certified by a New Mexico-registered Professional Engineer.

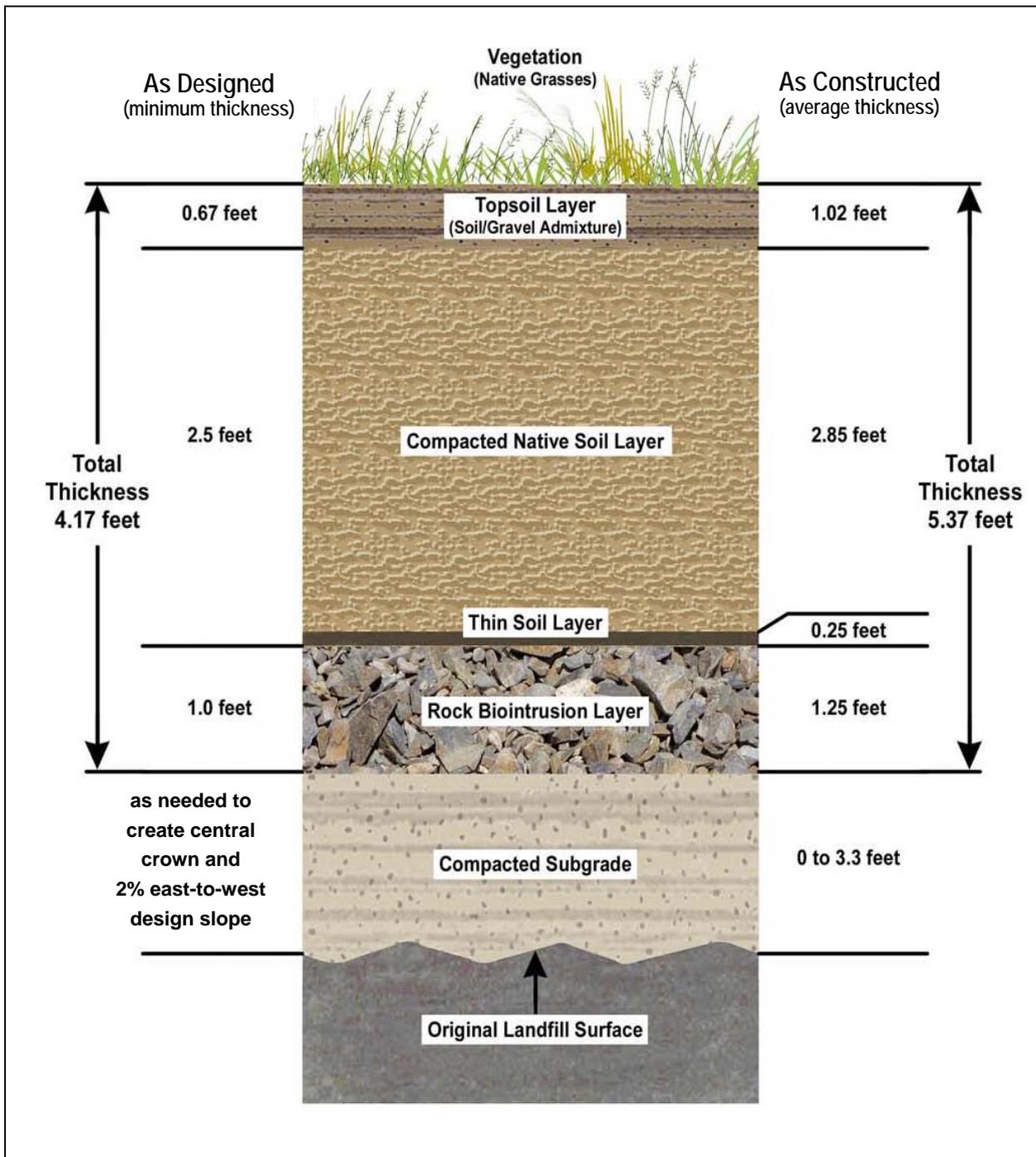


Figure ES-1  
Schematic Profile of the Mixed Waste Landfill Alternative Evapotranspirative Cover

This page left intentionally blank.

## **1.0 Introduction**

---

The Mixed Waste Landfill (MWL) at Sandia National Laboratories/New Mexico (SNL/NM) is designated as an Underground Radioactive Materials Area under U.S. Department of Energy (DOE) requirements and a Hazardous and Solid Waste Amendments Solid Waste Management Unit subject to New Mexico Environment Department (NMED) corrective action regulations as delegated by the U.S. Environmental Protection Agency (EPA). The NMED is authorized by the EPA to implement and enforce the corrective action requirements for the MWL. The MWL is located approximately 4 miles south of SNL/NM central facilities and 5 miles southeast of Albuquerque International Sunport within Technical Area (TA)-3. SNL/NM facilities and TA-1 through TA-5 are located within the boundaries of Kirtland Air Force Base (KAFB) on federal land controlled by the DOE. The location of KAFB, TA-3, TA-5, and the MWL are shown in Figures 1 and 2.

The MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM, November 2005) was submitted to the NMED in November 2005 and incorporates the remedy selected by the Secretary of the NMED on May 26, 2005 (NMED, May 2005). It was conditionally approved by the NMED in December 2008 (Bearzi, December 2008), and conditions related to construction of the remedy were incorporated into the CMIP through replacement pages submitted to the NMED (Davis, February 2009). The MWL CMIP details the deployment of the selected remedy, which is the MWL Alternative Evapotranspirative (ET) Cover with a biointrusion barrier (hereafter referred to as the ET Cover). The MWL ET Cover construction specifications are provided in Appendix A of the CMIP, and the Construction Quality Assurance (CQA) Plan is presented in Appendix B (SNL/NM, November 2005).

The MWL ET Cover was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil. The Subgrade varies in thickness from 0 to 3.3 feet and is the base layer that established the broad, central crown and 2-percent east-to-west surface design slope. The combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet, and the overall cover footprint is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards (cy) of soil fill and 6,800 cy of rock (in-place, compacted volumes) that meet CMIP specifications (SNL/NM, November 2005) based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections.

All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party CQA contractor.

Deployment of the MWL ET Cover is detailed in this MWL Alternative Cover CQA Report (Volumes 1 and 2), which incorporates all construction quality control (CQC) and CQA data and documentation requirements for the MWL Corrective Measures Implementation (CMI) Report as defined in the NMED Final Order for the MWL (NMED, May 2005); the CMIP (SNL/NM, November 2005); the SNL/NM Resource Conservation and Recovery Act (RCRA) Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED, April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi, December 2008).

Volume 1 includes the main text (Chapters 1.0 through 10.0) and tabbed sections located at the end of this report. Chapter 1.0 provides background information and the purpose and scope of this report. Chapter 2.0 presents the roles and responsibilities of the organizations, contractor teams, and key personnel. Chapter 3.0 presents project communications, the construction approval process, and related CQA documentation. The CQC and CQA programs that were implemented to test, control, and verify construction of the ET Cover according to the specifications and design drawings in the CMIP are presented in Chapter 4.0, along with the associated CQC and CQA data. Chapter 5.0 provides a detailed summary of the 2006 Subgrade and 2009 ET Cover Construction earthwork. Chapter 6.0 discusses the extension of groundwater monitoring well MWL-MW4 and the installation of two required soil-vapor monitoring wells; these tasks were completed in 2009 during installation of the ET Cover. Chapter 7.0 summarizes nonconformances and design changes (i.e., minor variances in construction and/or design specifications that do not affect the quality of the cover) to the CMIP specifications and design drawings. Chapters 8.0 and 9.0 provide the conclusions and CQA Engineering Certification of ET Cover construction, respectively. Report references are provided in Chapter 10.0. Tabbed sections at the end of Volume 1 include all tables, figures, as-built drawings, quality assurance (QA) verification survey plates, and photographic logs. Volume 2 contains Attachments 1 through 8 that include supporting CQC and CQA documentation. Volume 2 is provided in electronic format (PDF files) on a compact disc (CD) at the end of this report. Separately bound hard copies of the attachments in Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico), the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico), and the SNL/NM Customer Funded Records Center (formerly known as the ES&H [Environment, Safety, and Health] and Security Records Center).

### **1.1 Subgrade and ET Cover Construction Background**

The MWL consists of two distinct disposal areas that include the classified area (northeast portion of the MWL occupying 0.6 acres) and the unclassified area (occupying 2.0 acres). The waste was buried in pits and trenches that were backfilled with the excavated soil and capped with more soil at the completion of operation. This capped condition was the existing surface prior to the 2006 Subgrade Construction phase. A complete summary of all MWL construction preparation, 2006 Subgrade, and 2009 ET Cover Construction activities is provided in Table 1 and in the following discussion.

Prior to the 2006 Subgrade Construction phase, rock needed to construct the Biointrusion Layer was selected in consultation with NMED representatives and delivered to the Bulk Waste Staging Area located near the MWL Borrow Pit from October 4 through November 14, 2005. In addition, from June 14 to July 17, 2006, surface water and site controls were implemented at the MWL Borrow Pit (hereafter referred to as the Borrow Pit), and soil fill material needed for construction of the Subgrade and ET Cover layers was excavated, screened to 2-inch minus, and stockpiled following the specifications in the CMIP (SNL/NM, November 2005). Screened soil fill was hauled and stockpiled at the MWL for the Subgrade Construction phase from July 31 through November 5, 2006. The location of the Bulk Waste Staging Area, Borrow Pit, and the haul routes used to transport materials to the MWL site are shown in Figure 3.

In September 2006, the NMED approved the portions of the CMIP that addressed removal of the administrative security fence and subgrade construction (i.e., ET Cover preparation work) (Bearzi, September 2006). Subgrade construction was performed from October 2 through December 21, 2006, and consisted of clearing and grubbing, grading, and compacting the existing surface followed by placement and compaction of subgrade soil lifts to establish a surface over the MWL that mirrored the final CMIP design surface (i.e., a broad, central crown or high area with a 2-percent east-to-west slope across most of the disposal area). Subgrade construction was completed on April 11, 2007, after finishing installation of erosion control matting (i.e., straw blankets) on the completed Subgrade surface and verifying that the completed drainage swale on the east side of the Subgrade diverted run-on surface water around the perimeter as intended.

After receiving conditional approval of the CMIP from the NMED in December 2008 (Bearzi, December 2008), the MWL ET Cover Construction contracting process was initiated by Sandia Corporation (Sandia) and completed in March 2009. The Environmental Dimensions, Inc. (EDi) Team was selected as the Construction Contractor for the MWL ET Cover and URS Group, Inc. (URS) was selected to perform independent third party CQA under a separate contract. The

NMED was notified of the start of ET Cover Construction fieldwork on April 10, 2009 (Davis, April 2009). The EDi Construction Team and the URS CQA Team mobilized to the field to begin initial site activities in mid-May 2009 after an updated Health and Safety Plan was completed and approved by Sandia. A schematic profile of the completed MWL Subgrade and ET Cover layers is shown in Figure 4.

## **1.2 Purpose and Scope**

The purpose of this report is to provide the required data and documentation that demonstrates the deployment of the MWL ET Cover was performed in accordance with the CMIP (SNL/NM, November 2005) requirements, specifications, and design drawings. This report presents details of construction activities as well as CQA activities associated with the 2006 Subgrade Construction phase (October through December 2006) and the 2009 ET Cover Construction phase (May through September 2009).

The scope includes all required CQC and CQA data and documentation to provide a comprehensive, integrated report that addresses all requirements for the MWL CMI Report as defined in the NMED Final Order for the MWL (NMED, May 2005); the CMIP (SNL/NM, November 2005); the SNL/NM RCRA Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED, April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi, December 2008). All required Subgrade and ET Cover Construction deployment data and documentation are presented in Volume 1 of this MWL Alternative Cover CQA Report, including all laboratory and field test results, QA verification survey results, as-built drawings, and photographic logs provided in tabbed sections at the end of this report. Volume 2 of this report contains supporting CQC and CQA documentation in Attachments 1 through 8 and is provided in electronic format on a CD in a tabbed section at the end of this report.

## **1.3 2006 and 2009 CQA Teams and CQA Report Progression**

Third-party CQA services were provided by MKM Engineers, Inc. (MKM), under subcontract to URS for the 2006 Subgrade Construction phase, and by URS for the 2009 ET Cover Construction phase. The CQA personnel were responsible for the following activities:

- Ensuring the design drawings and specifications were followed during the construction effort
- Inspecting and observing material preparation and placement
- Accepting materials used in the construction process
- Verifying testing in the field and laboratory

- Maintaining team communication of construction sequence, progress, and changes
- Documenting any nonconformances affecting cover quality in a Corrective Action Report and verifying implementation of corrective action(s)
- Evaluating and approving design changes (i.e., minor variances in construction and/or design specifications that do not affect the quality of the cover)
- Preparing and maintaining documentation related to achieving performance requirements
- Preparing the final CQA Report

For the 2006 Subgrade Construction only, the CQA Engineer was responsible for the preparation of an independent CQA Plan (SNL/NM, May 2006) that incorporated the CMIP construction and design specifications and requirements for the MWL Subgrade, essentially duplicating and building upon the CQA Plan included as Appendix B in the CMIP (SNL/NM, November 2005). The CQA Plan was based upon guidance from the EPA, NMED, and CMIP. The CMIP CQA Plan was used for the 2009 ET Cover Construction phase.

Following the NMED approval received in September 2006 (Bearzi, September 2006), the 2006 Subgrade Construction phase began on October 2, 2006, and was completed on April 11, 2007. This phase involved the generation of soil fill material, preparation of the existing surface, construction of the Subgrade, and installation of the east-side drainage swale and erosion control matting on the Subgrade surface. At that time, the DOE and Sandia were awaiting final NMED approval of the CMIP and ET Cover design. Construction of the ET cover did not proceed because final CMIP approval was not received from the NMED until December 2008.

The MWL Alternative Cover Subgrade CQA Report (MKM, August 2007) was prepared as a draft and included the documentation required by the CQA Plan (SNL/NM, May 2006) and CMIP (SNL/NM, November 2005) and the certification by the MKM CQA Engineer that the Subgrade construction conformed to the CMIP specifications and design drawings. The draft Subgrade CQA Report was completed in August 2007 (MKM, August 2007) and has been revised to incorporate the 2009 ET Cover Construction activities conducted from May 20 through September 3, 2009. This MWL Alternative Cover CQA Report, Volumes 1 and 2, represents the final CQA report for all MWL ET Cover construction activities, which are summarized in Table 1.

This page left intentionally blank.

## **2.0 Responsibility, Authority, and Qualifications**

---

The principal organizations involved in construction of the Subgrade and ET Cover are listed below, along with the Construction and CQA Teams for both the 2006 Subgrade and 2009 ET Cover Construction phases of the project. Information concerning their roles and responsibilities is presented in Sections 2.1 through 2.7.

### **Principal Organizations**

- NMED – Lead Regulatory Agency
- DOE – Owner
- Sandia – Designer and Operator, Construction Oversight

### **2006 Subgrade Construction and CQA Contractors**

- Shaw Environmental, Inc. (Shaw)/GRAM, Inc. – Construction Team
- MKM – CQA Contractor
  - URS – Field Surveyor
  - AMEC Earth & Environmental, Inc. (AMEC) – Testing Laboratory

### **2009 ET Cover Construction and CQA Contractors**

- EDi – Construction Team, Prime Construction Contractor (hereafter referred to as the EDi Team or Construction Team) – The main EDi Team subcontractors and their roles are listed as follows:
  - North Wind, Inc – Heavy Equipment, Soil Moving and Placement
  - AMEC – Project CQC and Testing Laboratory
  - Albuquerque Surveying – CQC Field Surveyor
  - Pioneer Industries – Pug Mill Equipment and Operations
  - Lee Landscapes – Revegetation
  - ACME Fencing Company, Inc. – Administrative Fence Installation
- URS – CQA Contractor
  - AMEC – Testing Laboratory
  - URS – CQA Field Surveyor

The responsibilities of the principal organizations, Construction Teams, and CQA Teams and team members are summarized in the following sections.

## **2.1 Review/Permitting Agency**

The NMED is the Administrative Authority overseeing corrective action at the MWL. The NMED is responsible for reviewing and approving this MWL Alternative Cover CQA Report as part of the MWL CMI Report.

## **2.2 U.S. Department of Energy (Owner)**

The DOE has the authority to accept or reject the construction of the MWL cover. Based upon DOE oversight during the two construction phases and review of this report, the DOE accepts the construction of the MWL ET Cover.

## **2.3 Sandia Corporation (Designer and Operator)**

Sandia Environmental Restoration Project Staff designed the MWL ET Cover that fulfills the closure needs of the Owner and the regulatory requirements of the NMED, as confirmed by the NMED conditional approval of the CMIP. Sandia has the responsibility and authority for implementation of the CMIP (SNL/NM, November 2005), oversight of construction, and review of related documentation. The Sandia Construction Representative (SCR) has the responsibility and authority for all project-related contracting and formal approval of all aspects of Subgrade and ET Cover Construction phases, including modifications to the construction specifications and design drawings and corrective actions (if needed) for any deviations from the design. The DOE and Sandia are responsible for the long-term monitoring and maintenance of the site, which will be formalized and documented in the MWL Long-Term Monitoring and Maintenance Plan (LTMMP). The LTMMP will be prepared and submitted to the NMED for approval within 180 days after approval of the MWL CMI Report, which includes this MWL Alternative Cover CQA Report as Appendix A.

## **2.4 Construction Contractor Team**

The Construction Team was responsible for Subgrade preparation and construction (Shaw/GRAM, Inc.) and ET Cover construction (EDi Team) in accordance with the construction specifications, design drawings, and CQA Plan (SNL/NM, November 2005–Appendix B). For the 2006 Subgrade Construction phase, all CQC laboratory testing, field testing, and surveying were performed by the CQA Team. For the 2009 ET Cover Construction phase, the EDi Team performed all CQC laboratory testing, field testing, and surveying.

## **2.5 Surveying Contractor**

The Surveying Contractor was responsible for performing land surveys to guide, control, and verify the Subgrade and ET Cover Construction process, as well as providing the survey data

used to prepare the Subgrade and ET Cover as-built drawings. For the 2006 Subgrade Construction phase, one Surveying Contractor was part of the CQA Team and responsible for all land surveying and preparation of the as-built drawing. For the 2009 ET Cover Construction phase, both a CQC (Albuquerque Surveying – part of the EDi Team) and a CQA (URS – part of the CQA Team) Surveying Contractor participated in the project. The EDi Team surveyor was responsible for all surveying performed to guide, control, and verify the construction process, as well as all final Subgrade and ET Cover layer surface surveys used to prepare the 2009 as-built drawings. The CQA Team surveyor performed QA verification surveys on the surface of each ET Cover layer (Biointrusion, Native Soil, and Topsoil Layers) to validate the more extensive CQC survey data. Additional information on surveying is provided in Section 4.4.

## **2.6 CQA Contractor**

The responsibility of the CQA personnel was to perform the activities specified in the CQA Plan (SNL/NM, November 2005–Appendix B), consisting of oversight, inspection, sampling/testing, and documentation. The CQA personnel roles and responsibilities were generally the same for both the 2006 and 2009 construction phases. However, some differences reflect a more robust CQC and CQA program for the 2009 ET Cover Construction phase (i.e., construction of the Biointrusion, Native Soil, and Topsoil Layers).

During the 2006 Subgrade Construction phase, the CQA Team was responsible for all CQC laboratory testing (i.e., Standard Proctor, Gradation, and Classification soil data), field testing (i.e., in-place density and moisture testing), as well as associated oversight of the testing laboratory.

During the 2009 ET Cover Construction phase, the CQA Team was responsible for oversight and approval of the CQC laboratory testing (i.e., Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity) performed by the EDi Team, as well as performing independent CQA in-place field density and moisture tests to confirm the CQC testing (minimum 5 percent frequency) specified in the CQA Plan (SNL/NM, November 2005–Appendix B). A similar approach was implemented for surveying, as explained in Section 2.5. This approach provided additional CQA data and documentation that supported and verified the ET Cover Construction phase CQC results.

Table 2 presents the CQA personnel and summarizes their qualifications and their responsibilities are presented in the following sections.

### **2.6.1 CQA Inspection Personnel**

The CQA inspectors were responsible for daily independent oversight and inspection of the work in progress to assess compliance with design criteria and to attend progress meetings. They were on site daily, attended daily tailgate safety and project meetings, and worked closely with Sandia Oversight personnel and the Construction Contractor as part of an integrated team approach. Their work was documented through Daily Quality Control (QC) Reports supplemented with inspection forms/checklists, testing forms, photographs, and other supporting documentation. The Daily QC Reports and inspection forms are discussed in Sections 4.1 and 4.2, and photographic documentation is discussed in Section 4.5.

### **2.6.2 CQA Certifying Engineer**

The CQA Certifying Engineer also served as the CQA Engineer. The CQA Engineer reviewed the CQA inspectors' documentation for clarity and completeness and observed the field-testing procedures. He met with the inspectors, the SCR, Sandia Oversight personnel, and the Construction Team to discuss progress, testing and survey results, technical issues, and any deviations from specifications and/or design drawings (i.e., design changes). In conjunction with the SCR, the CQA Certifying Engineer was responsible for final approval of all construction work for the Subgrade, each ET Cover layer, and the completed ET Cover. He was also responsible for CQA documentation until it was submitted to Sandia. A certifying statement and Professional Engineer Seal are provided in Chapter 9.0 of this report for both the Subgrade and overall ET Cover construction.

### **2.7 Testing Laboratory**

The testing laboratory was responsible for its own QC Plan and the assurance that the tests were performed in accordance with the applicable American Society for Testing and Materials (ASTM International) (ASTM) standards and chain-of-custody requirements for the samples. The testing laboratory was also responsible for maintaining equipment calibration and operating information to ensure all results are defensible. The laboratory and field testing performed to verify MWL Subgrade and ET Cover construction are discussed in Section 4.3. The results are summarized in the referenced tables, and supporting laboratory and field documentation are provided in attachments to this report.

For the 2006 Subgrade Construction phase, there was only one CQC laboratory and field-testing program, performed by the CQA Team, that utilized one testing laboratory. The 2009 ET Cover Construction phase also used one testing laboratory but had two independent field-testing programs that included a CQC (Construction Team) and CQA (CQA Team) testing program.

Although only one testing laboratory was used, the laboratory set up internal procedures to ensure that the CQC and CQA results were independent. This approach was implemented by using separate personnel and different equipment to perform the CQC and CQA field tests. Internal processing and reporting of the field measurement data were also performed separately to create a “firewall” between the CQC and CQA testing programs.

This page left intentionally blank.

### **3.0 Project Communications**

---

Project communication was an important component of ET Cover construction and was facilitated through a team approach. Project communications were maintained with the entire project team on a daily basis. Field operations were centralized in one field office trailer used by Sandia Oversight, CQA Team, and Construction Team personnel. Meetings were held at the start of every workday and throughout the project to ensure effective communication, coordination of activities, and safe implementation of all construction tasks. These meetings addressed plans, progress, specific construction issues, and CQC and CQA data related to ET Cover layer approval as described in the following sections. The daily reports prepared by the CQA Team document these meetings, team interactions, and the overall team approach. Notes and agendas from preconstruction, weekly progress (2006 Subgrade Construction phase), and quality resolution meetings (2009 ET Cover Construction phase) were documented on project forms and/or in daily reports and project log books.

#### **3.1 Preconstruction Meeting**

The Preconstruction Meeting for the 2006 Subgrade Construction phase was held on June 5, 2006, with representatives from Sandia, the Construction Team, and the CQA Team present. A record of this meeting is included in Attachment 1. The following major items were reviewed:

- Project organization and responsibilities
- Design drawings
- Soil testing requirements and specifications
- Fugitive emissions permit and excavation permit
- Construction plan and schedule
- Health and safety requirements
- CQA Plan review

The 2009 ET Cover Construction phase of the project included three Preconstruction Meetings conducted on April 30 (Project Kickoff), May 6 (Project Readiness Review), and May 19, 2009 (Project Operational Readiness). Records of these meetings are included in Attachment 1. The first meeting included Sandia Project Staff, SNL/NM ES&H personnel, the SCR, and project personnel as well as representatives from the CQA and Construction Teams. Topics addressed at this meeting consisted of the team approach, roles and responsibilities, permitting and mobilization requirements, construction scope, and technical approach for the Biointrusion Layer void space filling. Biointrusion Layer void space filling was not addressed in the CMIP (SNL/NM, November 2005). The second meeting, held on May 6, 2009, involved all key project

personnel, including SNL/NM ES&H representatives, and addressed a complete Readiness Review agenda for project mobilization and fieldwork startup, including the recently approved Project Health and Safety Plan and associated requirements. The third meeting was attended by Construction Team and Sandia Oversight personnel and addressed the completion of all project-required training, documentation, and mobilization tasks (i.e., Operational Readiness for the start of construction). The 2009 ET Cover Construction activities started on May 20, 2009, after completion of the Project Operational Readiness meeting on May 19, 2009.

### **3.2 Progress Meetings**

Weekly Construction Progress Meetings were held to discuss progress, plans, safety, and Subgrade construction issues during the 2006 Subgrade Construction phase. Any issues were resolved at the meeting and/or assigned actions. The agendas for these meetings are part of the CQA project record maintained in the SNL/NM Customer Funded Records Center.

As part of the 2009 ET Cover Construction phase, progress was discussed every day during the morning Daily Tailgate Meetings. The Daily Tailgate Meetings were documented by the Construction Team on a standard form that included a sign-in sheet listing all personnel working on the site. These forms are maintained in the Customer Funded Records Center along with other supporting project documentation.

### **3.3 Quality Resolution Meetings**

During the 2006 Subgrade Construction phase, QC issues were discussed with the SCR and Sandia Oversight personnel, the Construction Team Supervisor, and CQA Team personnel. The discussions and resolutions typically occurred in the field. If a meeting were required, the CQA Engineer initiated the meeting, invited the attendees, and documented the meeting.

Documentation of the meetings and issue resolution are provided in Attachment 1 and in the daily reports and/or CQA personnel logbooks.

During the 2009 ET Cover Construction phase, Quality Resolution Meetings were held and documented for the following two main reasons:

- To evaluate data, discuss and resolve issues, and obtain CQA Engineer and SCR approval of each ET Cover Layer
- To evaluate, resolve, and obtain CQA Engineer and SCR approval of specific QC issues, including technical issues and design changes to the CMIP specifications and/or design drawings

The 2009 Quality Resolution Meetings were held in the field office trailer and attended by the SCR and Sandia Oversight, CQA Team, and Construction Team representatives. These meetings are summarized in Table 3 and documented in Attachment 1. Additional discussion of these meetings is provided in Section 3.4 and Chapter 7.0.

### **3.4 Approvals and Submittals**

The CQA Engineer approval of the 2006 Subgrade Construction phase activities is documented in Chapter 9.0 (*Engineering Certification*). For the 2009 ET Cover Construction phase, all field and laboratory test results were conveyed to the CQA Engineer for approval in the form of Submittals. Throughout the project, 42 Submittals were generated. The Submittal cover pages are included in Attachment 2. Individual test results are presented in Section 4.3 and have been removed from the Submittals and organized into a separate attachment by the type of test for ease of access and review (see Sections 4.3.1 and 4.3.2 for more information).

Each ET Cover layer constructed in 2009 was approved by the CQA Engineer through Quality Resolution Meetings prior to the construction of the next cover layer as required by the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005). This process allowed the construction of the subsequent ET Cover layer to proceed with minimal delay. In addition, construction was often approved in phases for some layers to allow construction to proceed on the next layer in one area while final verification and/or adjustments were implemented and confirmed in another area. An example of this phased approach is documented in Table 3 for approval of the Biointrusion Layer, which was approved in three phases or areas (i.e., south, northwest, and northeast portions of the MWL). This allowed installation of the thin soil layer to proceed while the Biointrusion Layer was being completed.

Table 3 provides a detailed chronological summary of the Quality Resolution Meetings and Cover Layer Approval. Cover layer approval involved the approval of associated laboratory and field-testing data (preliminary laboratory testing and in-place field density and moisture results) and final CQC and CQA verification survey data (layer thickness and slope information). The Quality Resolution Meetings are documented in Attachment 1, and approval forms for each cover layer are provided in Attachment 2. Approval of the Native Soil Layer laboratory and field-testing data through the formal Submittal process occurred after Native Soil Layer approval due to the time lag between receipt of preliminary and final laboratory results. However, all preliminary results were confirmed by final laboratory results. Both CQC and CQA surveying activities are discussed in more detail in Section 4.4.

This page left intentionally blank.

## **4.0 Observations, Inspections, Tests and Surveys**

---

The CQC and CQA observations, inspections, testing (laboratory and field), surveying, and photographic reporting performed to control, verify, and document that the materials and earthwork for the MWL Subgrade and ET Cover Construction phases conformed to the CMIP construction and design specifications are presented in this chapter. This documentation supports the detailed summary of the Subgrade and ET Cover Construction phases presented in Chapter 5.0 and forms the basis for the ET Cover layer approval (Section 3.4) and the engineering certification for the Subgrade and ET Cover Construction phases (Chapter 9.0). All required CQC and CQA documentation is included in the tables, figures, as-built drawings, QA verification survey plates, photographic record, and Attachments 1 through 8 of this report. Additional supporting documentation is retained in the SNL/NM Customer Funded Records Center. The CQA documentation of project meetings and 2009 CQC data submittals and CQA cover layer approval documentation are presented in Chapter 3.0.

Daily QC reporting and inspection forms are discussed in Sections 4.1 and 4.2, respectively. The CQC data (collected to verify that ET Cover construction meets CMIP construction and design specifications), CQA data (collected to verify the CQC data), and associated documentation are presented in Section 4.3. Data and documentation associated with CQC and CQA surveying are discussed in Section 4.4, and photographic reporting is presented in Section 4.5.

In general, CQC and CQA data and documentation can be collected by either the Construction Team or the CQA Team or a combination of both. However, for the MWL Subgrade and ET Cover deployment, CQA data and documentation were exclusively the responsibility of the independent third party CQA Team.

### **4.1 Daily Quality Control Reports**

The CQA Inspectors prepared the Daily QC Reports consistent with the information requirements itemized in the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005). The CQA Engineer reviewed and approved the reports on a regular basis. Each report provided the date, summary of weather conditions, location of construction activities, list of on-site personnel, summary of meetings and attendees, description of materials/equipment used, references to testing or sampling performed, and inspection forms completed. For the 2009 ET Cover Construction phase, some of this information was addressed through cross-referencing other project documentation, such as Daily Tailgate Meeting Forms for on-site personnel. Other information, such as field maps of in-place density and moisture test locations, are not included because the information is superseded by maps provided in this report. The Daily QC Reports

for the 2006 Subgrade and 2009 ET Cover Construction phases are included in Attachment 3. The Construction Team also completed daily reports during the 2009 ET Cover Construction phase, which are maintained in the SNL/NM Customer Funded Records Center.

## **4.2 Inspection Forms**

All CQA inspection forms are provided in the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005) and were developed to include checklists to ensure consistent documentation for all ET Cover construction activities. The testing inspection forms documented the inspections performed by the CQA Inspectors for the samples collected and tests performed by the testing laboratory. Each form was signed by the CQA Inspector, reviewed and signed by the CQA Engineer, and contained the following information.

- Date and time of each inspection
- Location
- Weather conditions
- Type of inspection
- Procedure used for testing
- Test data
- Results of the activity
- Personnel involved in the inspection and sampling activities
- Signature of the inspector indicating approval

The inspection forms discussed in Sections 4.2.1 through 4.2.3 were completed as applicable during construction of the Subgrade and ET Cover to document daily activities and supplement the Daily QC Reports.

### **4.2.1 Receiving Inspection Forms**

No Receiving Inspection Forms were used during the 2006 Subgrade Construction phase as no materials were received from outside vendors during this phase of the project. Approximately 8,100 tons (6,000 cy) of angular crushed rock for the Biointrusion Layer were delivered to SNL/NM from October 4 through November 4, 2005, and stockpiled in the TA-3 Bulk Waste Staging Area (Figure 3) by the 2006 Subgrade Construction Team. Approximately 1,100 tons (800 cy) of additional biointrusion rock from the same source were delivered directly to the MWL site from June 8 through June 12, 2009, to complete construction of the Biointrusion Layer in the northeast, classified disposal area of the MWL. Approximately 2,400 tons of aggregate (3/8-inch crushed gravel) were delivered to the Borrow Pit (Figure 3) from June 29

through July 22, 2009, to be admixed with the topsoil fill using the Pug Mill in accordance with the specifications in the CMIP (SNL/NM, November 2005). Delivery ticket information for the biointrusion rock and aggregate is summarized in tables provided in Attachment 4. A Receiving Inspection Form for the seed and copies of the seed bag labels are also included in Attachment 4. The CQA Engineer's approval of the biointrusion rock and 3/8-inch crushed gravel is documented in Table 3 and Attachment 2.

#### **4.2.2 Construction Inspection Forms**

Construction Inspection Forms were completed during daily field inspection activities as required by the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005). The appropriate forms were used for the inspection of the existing surface and perimeter area, the Subgrade, and the erosion control matting installation activities completed as part of the 2006 Subgrade Construction phase. Similar project-specific forms were completed in 2009 for the Subgrade surface (the "existing surface form" was used for the 2009 Subgrade surface inspection), Biointrusion Layer, Native Soil Layer, Topsoil Layer, and Reclamation Seeding and Mulching. The activities for each of the construction tasks were determined to be acceptable based upon the inspections conducted during the activities. The Construction Inspection Forms are presented in Attachment 5.

#### **4.2.3 Testing Inspection Forms**

Testing Inspection Forms were completed during in-place density and moisture testing of the compacted existing disposal area surface and Subgrade and for the laboratory analyses of the Subgrade soil fill during the 2006 Subgrade Construction phase. All of this testing was performed by the CQA Team. The 2009 ET Cover Construction phase included both CQC and CQA in-place field density and moisture testing (i.e., field testing). Testing Inspection Forms were completed for the in-place density and moisture tests performed by the CQA Team (i.e., CQA field tests). All CQC laboratory and field tests conducted by the Construction Team were submitted to the CQA Engineer for approval (Section 3.4). All 2006 and 2009 Testing Inspection Forms are presented in Attachment 6.

### **4.3 Laboratory and Field Testing**

Laboratory and field testing were performed throughout construction to verify that the materials used met specifications and that the existing surface, Subgrade, and installed ET Cover layers met the construction and design specifications in the CMIP (SNL/NM, November 2005). Stockpiled fill material was sampled and analyzed in the laboratory to document that the fill materials used met gradation and classification specifications and to develop Proctors for field

testing. Field testing included in-place density and moisture content measurements of the compacted soil layers. Native Soil Layer fill material was also sampled and tested for saturated hydraulic conductivity. The frequency of all required testing was performed in accordance with the construction specification (Section 02200) in Table 3.1 of the CMIP (SNL/NM, November 2005–Appendix A).

The CQC data are the laboratory and field-testing results that are used to verify the materials meet specifications. The CQA data is generally used to spot-check and verify the CQC data.

For the 2006 Subgrade Construction phase, all CQC laboratory and field testing was performed and documented by the CQA Team. For the 2009 ET Cover Construction phase a more robust program was implemented. The Construction Team was responsible for all CQC laboratory and field testing, and the CQA Team performed oversight and CQA verification field testing to supplement and confirm the CQC data generated by the Construction Team.

Consistent with this approach, all 2006 Subgrade Construction phase laboratory and field-testing data are considered CQC data. All 2009 ET Cover Construction phase laboratory and field-testing results generated by the Construction Team are CQC data that were reviewed and approved by the CQA Engineer through Submittals, Quality Resolution Meetings, and Cover Layer Approval Forms (Section 3.4 and Attachments 1 and 2). The CQA field-testing data were collected at a frequency greater than 5 percent, as stipulated by the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005) to confirm the CQC results (typically 50 percent). The following sections present the laboratory and field-testing activities that were performed to verify that each phase of Subgrade and ET Cover Construction met the CMIP construction and design specifications.

#### **4.3.1 Laboratory Testing**

The laboratory testing of soil fill material was performed according to the following methods:

- Standard Proctor, ASTM Method D698-07 (ASTM, 2007a)
- Gradation, ASTM Method C136-06 (ASTM, 2006a)
- Classification, ASTM Methods D2487 (ASTM, 2006b) and D4318 (ASTM, 2005)
- Saturated hydraulic conductivity, ASTM Method D5856-95 (ASTM, 2007b)

**Standard Proctor (ASTM Method D698)**

At the start of the 2006 Subgrade Construction phase, one composite sample of the existing surface was collected to support field density and moisture testing of the existing MWL surface (MWL-ES-001). Three additional Proctor samples (MWL-ES-002 through MWL-ES-004) were collected from different areas of the existing surface within the disposal area boundary to compare with the original sample. There were no significant differences in the Proctor results.

Standard Proctor (ASTM Method D698) soil sampling of Subgrade and Native Soil fill material was conducted at a frequency of 1 sample per 500 cy (loose) as specified in the CMIP (SNL/NM, November 2005). Four samples were also collected from the topsoil material to support moisture and density testing of the Topsoil Layer after installation, which was not required by the CMIP.

Standard Proctor results are summarized for the existing MWL surface and Subgrade in Table 4, and for the Native Soil Layer and Topsoil Layer in Table 5. Complete Standard Proctor laboratory testing supporting documentation is included in Attachment 7.

**Gradation (ASTM Method C136) and Classification (ASTM Methods D2487 and D4318)**

Gradation (ASTM Method C136) and Classification (ASTM Methods D2487 and D4318) soil testing was performed on all Subgrade, Native Soil Layer, and Topsoil Layer fill material at a frequency of 1 sample per 500 cy (loose) as specified in the CMIP (SNL/NM, November 2005). Gradation and Classification results for all samples are included on laboratory testing forms provided in Attachment 7 and summarized in Tables 4 and 5 for the 2006 Subgrade and 2009 ET Cover Construction phases, respectively. Native Soil Layer and Topsoil Layer results are summarized in Tables 6 and 7, respectively. Complete laboratory results are included in Attachment 7 on the same cover sheet that presents the Standard Proctor results, with the exception of the topsoil fill samples that were analyzed for only Gradation and Classification; separate forms are provided for these sample results in Attachment 7. All Gradation and Classification results met the associated specifications (Tables 4 through 7).

**Saturated Hydraulic Conductivity (ASTM Method D5856-95 [2007])**

Saturated hydraulic conductivity (ASTM Method D5856-95 [2007]) testing was conducted on all of the Native Soil Layer lifts at a frequency of 1 sample per acre per lift as specified in the CMIP (SNL/NM, November 2005). Samples of the soil fill used to construct each Native Soil Layer lift were collected, compacted in a mold at the testing laboratory, and then tested for saturated hydraulic conductivity following ASTM Method D5856 procedures (ASTM, 2007b). The CMIP

specification (Section 02200 in Appendix A) referenced a target maximum value of  $4.6 \times 10^{-4}$  centimeters per second (cm/s) with an acceptable failure rate of 5 percent. A total of 20 saturated hydraulic conductivity sampling results were collected from the eight Native Soil Layer lifts. The results are summarized in Table 8, and complete laboratory results are provided in Attachment 7. Most results are less than the target value (i.e., met specifications); however, four samples (20 percent) did not pass initially. These samples were recompacted to a density of approximately 95 percent to reflect actual field compaction results and retested. The results for the recompacted samples, which are more representative of the in-place compacted lift as determined by in-place density and moisture testing, met specifications (i.e., are less than the target value). The passing samples have an average of  $1.62 \times 10^{-4}$  cm/s and a geometric mean of  $4.72 \times 10^{-5}$  cm/s. The average compaction of all 20 samples is 90.2 percent, with a range of 81.2 to 95.3 percent.

### **4.3.2 Field Testing**

The CMIP (SNL/NM, November 2005) required in-place density and moisture testing by nuclear methods according to ASTM Methods D2922 (“Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods”) and D3017 (“Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods [Shallow Depth]”) using a Troxler™ Gauge at the rate of five tests per acre per lift for the Subgrade and Native Soil Layer. These ASTM methods were superseded in 2007 and combined into the new standard, ASTM D6938-08a (ASTM, 2008); however, the methods did not change. Field-testing results were used to demonstrate compliance with Section 02200 in Appendix A of the CMIP, which requires compaction of not less than 90 percent of the maximum dry density at +/- 2 percent of optimum moisture content, as determined by ASTM D698 (Standard Proctor testing) (ASTM, 2007a). Field density and moisture content of compacted soil were determined by comparing field measurements to a specified, representative Proctor that has a theoretical maximum dry density and optimum moisture content. Following standard construction industry practices, if any field-testing results indicated that compaction and/or moisture content specifications were not achieved, additional compaction and/or moisture conditioning of the soil material was performed until testing results met specifications. The 2006 Subgrade and 2009 ET Cover Construction field-testing programs are discussed in the following sections.

#### **4.3.2.1 2006 Subgrade Construction Phase**

Field density and moisture testing were performed on both the existing surface and each lift during the 2006 Subgrade Construction phase at the required frequency of five tests per acre per lift. The existing surface was graded and compacted with a vibratory roller and then field

density and moisture readings were obtained to verify compaction of not less than 90 percent of the maximum dry density. After discussions with the SCR and Sandia Oversight, Construction Team, and CQA Team personnel, this approach was approved by the CQA Engineer for verification of a stable surface, rather than counting the number of passes over an area using a roller with a ballasted weight of 25 tons, as stipulated in Section 02200 in Appendix A of the CMIP (SNL/NM, November 2005). Due to moisture being added to the surface rather than mixed into the soil prior to placement, the optimum moisture content goal of +/- 2 percent could not be attained using either compaction method. However, the field-testing results provided a more quantitative method and verified adequate compaction of the existing surface.

The spatial extent of most Subgrade Construction phase lifts was highly variable due to the uneven existing surface, so many of the lifts were significantly smaller than 1 acre. Therefore, the number of tests per lift was generally less than five. The field test locations were selected to be representative of each lift and were surveyed, recorded on an inspection checklist, and plotted on maps. The actual in-place density and moisture testing performed during Subgrade construction exceeded CMIP specifications of 5 CQC tests per acre per lift plus at least 5% additional confirmatory CQA tests. Based upon the aerial extent of the twelve Subgrade lifts, only 48 CQC and 3 CQA tests were required based upon the CMIP requirements (total of 51 tests). However, a total of 71 field tests were performed. Figures 5 through 17 show the locations of all existing surface and Subgrade field tests, Table 9 summarizes the results, and Attachment 7 provides the associated field and laboratory documentation. Testing inspection forms completed in the field are included in Attachment 6.

For the 2006 Subgrade Construction phase field-testing program, the native soil fill material was tracked as it was sampled, hauled, and placed. The associated Proctor result for every 500 cy was used to support the in-place density and moisture field tests of that 500 cy of fill material as it was placed and tested. The Subgrade lifts were relatively small making this approach feasible, although verifying the Proctor result characterizing each 500 cy of fill material that was placed, compacted, and tested was challenging. In one situation, this approach could not be followed due to laboratory reporting delays. The CQA Engineer approved proceeding with the previous Proctor results because the physical properties of the native soil fill were consistent. As more Standard Proctor results became available it was evident that the Borrow Pit fill material was relatively uniform in terms of its geotechnical characteristics, especially after screening and stockpiling.

#### **4.3.2.2 2009 Evapotranspirative Cover Construction Phase**

Field density and moisture testing were performed on the existing Subgrade surface and each lift of the Native Soil Layer during the 2009 ET Cover Construction phase at the required frequency of five tests per acre per lift. To ensure a representative spatial distribution of in-place density and moisture tests, the 2.6-acre cover surface was divided into thirteen 100-foot-square grid blocks (Figure 18). For each lift that extended over the entire cover surface, one in-place density and moisture test was conducted at a randomly selected location within each of the 13 grid blocks. For lifts that were spatially limited or of variable thickness (i.e., Native Soil Layer Wedge Lifts 1 and 2 and Lift 3, respectively), density and moisture tests were performed for each grid block where the compacted soil was thick enough for testing (i.e., nominally 4 inches). Figure 19 shows the extent of Native Soil Layer Wedge Lifts 1 and 2 with respect to the grid blocks. Lift 3 was placed across the entire cover surface, but the thickness of this lift was variable and not adequate for testing in some grid blocks (i.e., less than a nominal 4-inch thickness). All 13 grid blocks were tested for Lifts 4 through 8. Testing of the side slopes, which extended beyond the 2.6-acre cover surface, was conducted following the same procedure used for the Native Soil Layer lifts.

In-place density and moisture tests performed on the Subgrade in 2009 to confirm that it still met compaction specifications were compared with a Proctor sample from the soil excavated, screened, and stockpiled during the 2006 Subgrade Construction phase (MWL-SG-018, Table 4). This 2006 Proctor was selected by the CQA Engineer after review of the 30 results characterizing soil fill material excavated from the Borrow Pit in 2006 (Table 4). Initial tests indicated that the soil was similar to the selected 2006 Proctor and within an acceptable compaction and moisture range.

As shown in Tables 4 and 5 and Figure 20, the Standard Proctor results for all of the fill material sampled in 2006 and 2009 are generally consistent, with a relatively narrow range of maximum dry density and optimum moisture content. For this reason, the CQA Engineer approved the use of three representative Proctor results throughout the 2009 Subgrade and Native Soil Layer field-testing program, with one of the samples being the 2006 MWL-SG-018. This decision by the CQA Engineer was based on experience gained during 2006 Subgrade Construction phase, a review of all available data (2006 and incoming 2009 results), ongoing field-testing results, field Proctor compaction tests, and visual inspections of the fill material during placement and testing. The method used to change the Proctor used for in-place density and moisture testing is described as follows.

During placement of Native Soil Layer Wedge Lift 1, the soil appeared to contain higher amounts of clay and silt than the materials previously tested in 2006 based upon visual inspection. Moisture and density readings confirmed slight variations in soil composition and, as a result, the Proctor was revised to more accurately reflect density and moisture percentage of the fill material being used. The revised Proctor was determined by collecting a sample of soil from the area of Wedge Lift 1 where the change was noted. This soil was then compacted using a Proctor mold in the field in accordance with ASTM standards (ASTM, 2007b). The compacted sample provided a theoretical maximum wet density at current moisture levels. The theoretical maximum density and moisture was plotted on a graph with all available Proctor curves (i.e., Figure 20). The plotted point lined up on a Proctor curve that indicated which Proctor was most appropriate for that specific fill material.

The field-molded compactions were not used as a single point Proctor but were used to identify the most representative Proctor curve for the given soil from the already established data set. Because of the overall general consistency of the native soil fill material, most of which came from the same source (i.e., Borrow Pit), the Proctor result used for field testing changed only three times during the 2009 ET Cover Construction field activities.

The 2009 ET Cover Construction field-testing program included both CQC and CQA field testing. All CQC in-place moisture and density tests are summarized in Table 10. Approximately 50 percent of the CQC field tests were duplicated by independent CQA field tests performed under the direction of the CQA Contractor, although only a 5-percent testing frequency was specified in the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005; Section 2.6.2). CQA tests were typically performed within 3 feet of the CQC test location for the purpose of checking and confirming the CQC results. The CQA field test results are summarized in Table 11 and confirmed the CQC results. Complete testing reports are included in Attachment 7 for both the CQC and CQA field tests. Figures 21 through 29 illustrate the surveyed locations of each CQC and CQA field test. Topsoil Layer field testing was not required by the CMIP, but was conducted to support revegetation efforts. The results are included in Table 10; however, the locations were neither surveyed nor included in a figure.

#### **4.4 Surveys and As-Built Drawings**

Surveys were performed to guide, control, and verify the Subgrade and ET Cover Construction fieldwork. For the 2006 Subgrade Construction phase, one Surveying Contractor (URS) was integrated as part of the CQA Team and responsible for all CQC land surveying and preparation

of the final Subgrade Construction phase as-built drawing. The as-built drawing for the 2006 Subgrade (Drawing No. 1) is provided in a tabbed section at the end of this report.

For the 2009 ET Cover Construction phase, Albuquerque Surveying (part of the EDi Team) served as the CQC Surveying Contractor, and URS (part of the URS CQA Team) served as the CQA Surveying Contractor. CQC surveys were performed throughout the ET Cover Construction phase to support the following objectives:

- Check and control layer and lift thickness
- Install grade staking for the Native Soil and Topsoil Layer construction
- Record final elevations, surface slope, and side slopes of each lift and layer
- Record side slopes and drainage features around the perimeter of the cover
- Record the location of field density tests, fencing installation, and other miscellaneous site features

The CQC survey data were more extensive, performed for the purpose of documenting the entire ET Cover construction process, and were used as the basis for the ET Cover as-built drawings. Final CQC elevation surveys were conducted for each layer system to verify layer thickness and slope as required by Section 02210 in Appendix A of the CMIP (SNL/NM, November 2005) and for each lift of the Native Soil Layer. A 50-foot-spaced verification grid was established for collection of elevation measurements during the final CQC and CQA surveys. The verification grid map is illustrated in Figure 18 in relation to the grid blocks established for field density testing. The approximate limit of the 2-percent east-to-west cover surface design slope, the original disposal area boundary, and the 6 (horizontal) to 1 (vertical) side slopes surrounding the disposal area are also shown in Figure 18. The final CQC elevation survey data for each layer and the thin soil layer above the Biointrusion Layer are provided in Table 12. The final MWL surface and ET Cover cross-sections, which include the existing surface, Subgrade, drainage features, fencing installation, and other site features; are illustrated in the 2009 ET Cover As-Built Drawings (Figures No. 1 through 4) in a tabbed section at the end of this report.

All Construction Team CQC surveys were performed by Albuquerque Surveying and conducted using GPS [global positioning system]/RTK [real-time kinematic]-capable TOPCON GR-3 systems with GEODIMETER 600 SERIES Total Stations. Specifications for the survey equipment are on file in the SNL/NM Customer Funded Records Center. All elevation measurements were obtained as static measurements. Accuracy for static measurements is estimated at approximately  $\pm 3$  millimeters horizontal and  $\pm 5$  millimeters vertical.

The CQA surveys were more limited and performed on the surface of each ET Cover layer (Biointrusion, Native Soil, and Topsoil Layers). The purpose of the CQA surveys was to verify the precision and accuracy of the CQC survey results and confirm that the cover layers complied with the design specifications (i.e., thickness, surface slope, and side slope). The CQA verification surveys are documented in Plates No. 1 through 3 in a tabbed section at the end of this report. These plates provide all CQA survey information, including tabular data (elevation and layer thickness) and a QA verification survey grid map, and are certified by a New Mexico Professional Surveyor.

#### **4.5 Photographic Reporting**

A digital camera was used to compile comprehensive photographic logs of the 2006 Subgrade and 2009 ET Cover Construction phases. A man lift or scissors lift was maintained on site to facilitate aerial photographic documentation of the construction effort. Each photo was identified with the following information:

- The date, time, and location of the photograph
- The name of the photographer
- A brief description of the activity

The photographic logs for the 2006 Subgrade (Log No. 1) and 2009 ET Cover Construction (Log No. 2) phases represent CQA documentation and are presented in a tabbed section at the end of this report.

This page left intentionally blank.

## **5.0 Earthwork**

---

This chapter provides a detailed summary of all MWL construction preparation, 2006 Subgrade, and 2009 ET Cover Construction activities. The CQC and CQA programs implemented to control and verify the Subgrade and ET Cover earthwork are documented in Chapters 3.0 and 4.0 and only briefly summarized in this chapter. The information presented in Chapters 3.0 through 5.0 documents that the 2006 Subgrade and 2009 ET Cover Construction earthwork conforms to the specifications and requirements of the NMED-approved CMIP (SNL/NM, November 2005). Table 1 summarizes all activities related to both phases of the MWL ET Cover construction project.

Deployment of the MWL ET Cover was conducted in two main phases consisting of the 2006 Subgrade Construction phase and the 2009 ET Cover Construction phase. The main earthwork activities associated with the two phases of construction are summarized as follows:

### **2006 Subgrade Construction Phase Earthwork**

- Clearing, grubbing, grading, moisture-conditioning, compacting, and testing of the existing MWL surface and perimeter
- Placing, moisture-conditioning, compacting, and testing screened soil fill in lifts to create the Subgrade for the ET Cover layers with a central crown and 2-percent east-to-west design slope over the MWL disposal area
- Surveying to control and guide the construction process and verify final cover layer thickness and slope angles
- Constructing a partial drainage swale on the east side of the Subgrade
- Final surveying and installing erosion control matting to protect the Subgrade surface until ET Cover Construction was approved by the NMED

### **2009 ET Cover Construction Phase Earthwork**

- Clearing, moisture-conditioning, compacting, and testing of the 2009 Subgrade surface
- Placing and compacting the Biointrusion Layer
- Placing loose, dry soil in Biointrusion Layer voids and compacting a thin soil layer on the rock surface to create a relatively smooth surface upon which the Native Soil Layer was constructed
- Placing, moisture-conditioning, compacting, and testing screened soil fill in lifts to create the Native Soil Layer

- Placing and minimal compacting of the Topsoil Layer
- Surveying to control and guide the construction process and verify final cover layer thickness and slope angles
- Constructing the final drainage swale on the east perimeter of the ET Cover
- Performing revegetation activities (ripping, tilling, seeding, mulching, and crimping) for the Topsoil Layer

Equipment used during the 2006 Subgrade Construction phase and 2006 supporting activities at the Borrow Pit are summarized below and in Sections 5.1 and 5.2.1. Equipment used for the 2009 ET Cover Construction phase is summarized in Table 13, and 2009 supporting activities at the Borrow Pit are summarized below and in Sections 5.4 and 5.5. For all dust suppression and soil moisture-conditioning activities performed during both phases of construction, potable water without supplementary chemicals or additives from a local TA-3 source was used. The Borrow Pit, Bulk Waste Staging Area, and associated haul routes to the MWL are shown in Figure 3.

In preparation for 2006 Subgrade and 2009 ET Cover Construction phases, rock needed to construct the Biointrusion Layer was selected and delivered to the Bulk Waste Staging Area. Rock delivery occurred from October 4 through November 14, 2005. In addition, from June 14 through July 17, 2006, Storm Water Pollution Prevention Plan (SWPPP) surface water and site controls were implemented at the Borrow Pit in TA-3 (i.e., soil berm was installed around the perimeter of the site and a cobble drive-off pad for equipment was installed at the site entrance) and soil fill material needed for construction of the Subgrade and ET Cover layers was excavated, screened to 2-inch minus, and stockpiled following the specifications of Section 02200 in Appendix A of the CMIP (SNL/NM, November 2005). Screened soil fill was hauled and stockpiled at the MWL for the Subgrade Construction phase from July 31 through November 5, 2006. This preconstruction preparation work was completed by the same Construction Contractor Team that performed the 2006 Subgrade Construction.

To support the 2009 ET Cover construction phase, Borrow Pit Area activities were performed that included loading haul trucks with existing soil fill stockpiled at the Borrow Pit in 2006 and rock stockpiled at the nearby Bulk Waste Staging Area in 2005; soil sampling of fill material according to CMIP specifications; excavation, screening to 2-inch minus, stockpiling, and loading of additional native soil and topsoil material; screening and stockpiling berm material hauled to the Borrow Pit from the MWL for use as fill material; and Pug Mill setup, calibration, and operation to blend 3/8-inch gravel with the topsoil fill material.

## **5.1 Existing Mixed Waste Landfill Surface**

Preparation of the existing MWL surface was conducted as the first part of the 2006 Subgrade Construction phase. From October 2 through October 26, 2006, the security fence was removed and the MWL surface was cleared of vegetation. After clearing, the existing surface was graded, watered, compacted, and tested in preparation for the Subgrade Construction phase. As part of site preparation work, an area immediately south of the MWL was cleared and used as the staging area for the soil stockpile, the roll-off containers for waste and recyclable metal, the container for shredded vegetation, and equipment storage. The work area boundary was marked with a rope and signs to designate the radiation control area that was in effect for the 2006 Subgrade Construction phase. After completion of the Subgrade Construction phase, which involved placement of clean soil fill over the disposal area surface, the radiological posting of the MWL was changed to an Underground Radioactive Materials Area. This allowed the 2009 ET Cover Construction phase to proceed without formal radiological controls, although SNL/NM Radiological Control Technicians continued to be involved in the early construction phases to confirm clean operations.

Soil berms were constructed around the perimeter work area as a best management practice required by the project SWPPP for the control of storm water run-on and to control runoff from the site. The berms were inspected after each significant rainfall event (i.e., more than 0.5 inches) or semimonthly at a minimum, according to the project SWPPP requirements, and repairs were made as necessary. The existing administrative security fencing was removed and stockpiled on site for radiological clearance before disposal or recycling. The vegetation removed from the existing MWL surface and the perimeter area was shredded and containerized for future disposition. The material was sampled for radiological contamination, approved for reuse, and disposed of at the KAFB Landfill. Any material on the surface larger than 2 inches was removed and stockpiled. One remaining concrete pad pit cover was reduced to rubble in place and backfilled with stockpiled soil.

The existing surface was uneven due to the previously backfilled disposal trenches. The surface was graded, compacted with a vibratory roller, and water was added using a water truck to complete existing surface preparation activities.

### **5.1.1 Existing Surface Laboratory and Field Testing**

After the surface was graded and compacted, in-place field density and moisture testing were performed to verify compaction of not less than 90 percent of the maximum dry density. Standard Proctor soil testing to support the in-place density and moisture field testing was

performed and is discussed in Section 4.3.2. This approach was used for verification of a stable surface rather than counting the number of passes over the surface using a roller with a ballasted weight of 25 tons, as stipulated by Section 02200 in Appendix A of the CMIP (SNL/NM, November 2005). Due to moisture being added to the surface rather than mixed into the soil prior to placement, the optimum moisture content goal of +/- 2 percent could not be attained. This approach and the results verified adequate compaction of the existing surface, and both were approved by the CQA Engineer as a design change. Laboratory results are presented in Table 4 and field-testing results are presented in Table 9.

### **5.1.2 Existing Surface Survey**

A survey of the existing disposal area surface was performed on May 10, 2006, prior to construction activities. This survey was used to document the existing (preconstruction) MWL surface (i.e., construction starting datum) for as-built drawings, and documentation is maintained in the SNL/NM Customer Funded Records Center.

## **5.2 Subgrade Construction**

After receiving NMED approval (Bearzi September 2006), the Subgrade Construction phase began on October 2, 2006, and was completed on April 11, 2007. Because of the delay between completion of the Subgrade Construction phase in December 2006 and the start of the ET Cover Construction in May 2009, erosion control matting was installed over the Subgrade surface as a protective measure. This activity was completed on April 11, 2007. In addition, some final Subgrade activities were required as part of the ET Cover Construction phase in May 2009. The 2006 and 2009 Subgrade construction and preparation activities are discussed in the following sections.

### **5.2.1 2006 Subgrade Construction**

From June 14 through July 17, 2006, the soil fill material used for the Subgrade was excavated and screened to 2-inch minus according to the CMIP specifications (SNL/NM, November 2005). The soil fill material was loaded and hauled to the site from July 31 through November 5, 2006, where it was stockpiled for use in constructing the Subgrade lifts. The CQA Inspector performed visual inspections during placement of the soil at the MWL to ensure the absence of debris and material (primarily rocks) greater than 2 inches.

The following equipment was used for 2006 Subgrade Construction phase earthwork:

- Dump trucks to haul the soil (Volvo WG 64)
- Two front-end loaders to haul and spread the soil in lifts (John Deere 644G)
- An excavator at the soil stockpile to mix the soil with water before placing it on the MWL surface (John Deere 240)
- A grader (John Deere 670) to spread the soil to the required thickness (grader later replaced with a tracked bulldozer [John Deere 650G])
- One water truck (2,000 gallon Ford F650) to moisture-condition the soil and to control dust in the work area
- One vibratory roller for compacting the soil lifts (Ingersoll Rand SD 70D, 8 ton gross weight, maximum centrifugal force 32,100 pounds)
- A skid steer to spread the soil in tight areas and around groundwater monitoring well MWL-MW4 (Caterpillar 246B)

The Subgrade was installed on top of the prepared existing surface using approximately 11,000 cy (loose) of native soil fill placed in a total of 12 lifts. The subgrade soil was placed in 8-inch loose, 6-inch compacted lifts beginning with the topographically lowest areas. In general, the lower northern side of the MWL was augmented to match the higher southern grade. The goal of the Subgrade Construction phase was to establish a surface over the MWL that mirrored the final CMIP design surface of the ET Cover (i.e., a broad, central crown or high area with a 2-percent east-to-west slope across most of the MWL).

The initial seven lifts were spatially limited and largely placed to bring depressions across the site to a level grade. Lifts 8 through 12 were placed in increasingly larger areas across the MWL. A total of 12 lifts were applied, with the total depth varying from a few inches to 40 inches (approximately 3.3 feet) at the lowest spots. To guide and control lift thickness across the area, the surveyors installed grade stakes marked in 8-inch thickness levels for each lift. Each lift was compacted to meet the CMIP specification of compaction of not less than 90 percent of the maximum dry density at +/- 2 percent of optimum moisture content, as determined by ASTM D698 (Standard Proctor testing) (ASTM, 2007a). Compaction with the vibratory roller resulted in an approximate 6-inch lift. The in-place, compacted volume of the Subgrade is approximately 7,700 cy indicating a compaction factor of approximately 30 percent.

The quantity of soil was tracked by the volume per loader bucket and the number of loads per day. A total volume of soil was recorded for each lift and the locations of each laboratory and

field test were surveyed. The CQA Inspector oversaw the spreading and compaction of the soil and noted observations on the inspection forms. A loader moved the soil from the stockpile to the work area, and the grader or bulldozer leveled the soil to the lift mark on the survey stake. The vibratory roller made several passes over the work area to achieve the required compaction, which was verified through in-place field density and moisture testing.

#### **5.2.1.1 2006 Laboratory and Field Testing**

The laboratory and field-testing activities performed for the Subgrade Construction phase are discussed in Sections 4.3.1 and 4.3.2. The CQC results verified that the fill material and the constructed Subgrade met CMIP specifications and were approved by the CQA Engineer. Laboratory results are presented in Table 4 and field-testing results are presented in Table 9.

#### **5.2.1.2 2006 Survey Verification**

A final survey was performed in April 2007 to locate the corners of the Subgrade footprint, the final topographical slope, and the protective drainage swales on the southeast and northeast corners of the Subgrade perimeter. The final data is reflected in the as-built drawing provided in a tabbed section at the end of this report (2006 Subgrade As-Built Drawing No. 1).

#### **5.2.1.3 2006 Subgrade Layer Protection**

The construction delay resulting from not receiving NMED approval to proceed with the ET Cover Construction phase in late-2006/early-2007 resulted in the DOE/Sandia decision to protect the Subgrade surface from erosion as a best management practice. Sandia Oversight, Construction Team, and CQA Team personnel met to discuss the Subgrade protection alternatives, which included no action, a rock layer, and erosion control matting (i.e., straw blankets). The decision to install erosion control matting was based upon the capability of this alternative to accomplish the following objectives:

- Absorb the impact of raindrops and reduce soil loosening
- Minimize runoff and the resulting soil displacement and transport
- Absorb shear forces of overland flow
- Trap soil particles beneath straw blanket
- Reduce potential wind erosion

The CMIP design (SNL/NM, November 2005) requires an earthen swale along the eastern perimeter of the site to divert storm water run-on around the cover. The swale collects the water from the east and diverts it around the MWL to the north and south ends of the Subgrade, and then westward toward the surrounding landscape. A portion of the swale (i.e., partial drainage

swales on the east side of the Subgrade) was constructed in the locations specified in the CMIP design drawing to protect the Subgrade surface until construction of the ET Cover in 2009. The CQA Team inspected the installation of the erosion control matting and the eastern perimeter drainage swale on April 11, 2007. The matting was installed in accordance with the manufacturer's instructions. The mats were placed from west to east, and the ends and sides were anchored in an earthen trench to reduce the effects of the prevailing winds. The swale was constructed to collect water from the east of the site and direct it around the MWL with discharges to the west. The flow in the partial swale was observed to split directions from north and south approximately at the middle of the MWL. The inspection forms are provided in Attachment 5.

#### **5.2.1.4 2006 Subgrade Approval**

After completion of all construction activities, the CQA Team surveyor completed a final survey of the Subgrade surface and surrounding area in April 2007. The CQA Team documented the 2006 Subgrade Construction phase activities in a Draft Subgrade CQA Report (MKM, August 2007). Based upon a review of all construction data and documentation, the CQA Engineer approved and certified all aspects of the 2006 Subgrade Construction on August 31, 2007 (Chapter 9.0). The Draft Report was used as the starting point for this MWL Alternative Cover CQA Report.

#### **5.2.2 2009 Subgrade Preparation**

The 2009 ET Cover Construction phase began with preparation of the Subgrade surface on May 20, 2009. Mobilization activities conducted prior to the cover construction fieldwork included completing personnel training, mobilizing equipment and materials to the site, site grading and setting up temporary office/storage trailers and a water tower, rebuilding the drive-off pad and installing a silt fence as detailed in the SWPPP, and removing the existing perimeter security fence (installed after completion of the 2006 Subgrade Construction phase). Care was taken to minimize disturbance to the Subgrade surface; some of the erosion control matting remaining from 2006 and vegetation were removed by hand. Specific areas of the surface (including all of the side slopes and areas within the MWL footprint only where needed) were "back-dragged" with a John Deere (JD) 644 wheel loader to remove vegetation and remnants of the erosion control matting and to repair minor surface erosion. A 4,000-gallon water truck was used for dust suppression and to add moisture for compaction. An Ingersoll-Rand (IR) SD100 vibratory smooth drum roller was then used to compact the existing Subgrade surface.

### **5.2.2.1 2009 Laboratory and Field Testing**

The laboratory and field testing for the 2009 Subgrade construction activities were performed in accordance with CMIP specifications (SNL/NM, November 2005–Appendix A, Section 02200) and are discussed in Sections 4.3.1 and 4.3.2. The results verified that the 2009 existing Subgrade met the CMIP specifications and were approved by the CQA Engineer. Laboratory results are presented in Table 4, and field-testing results are presented in Tables 10 (CQC) and 11 (CQA).

### **5.2.2.2 2009 Survey Verification**

The 2009 survey approach is discussed in Section 4.4. A CQC survey was performed on the Subgrade surface to establish a baseline for subsequent cover surveys to establish thicknesses and slope according to design specifications. The survey revealed that the Subgrade surface did not meet the 2-percent east-to-west surface design slope across the eastern side of the cover from the central to the southern end of the MWL (the slope ranged from 1.8 to 1.9 percent in this area). Also, the side slopes around the northern end of the MWL were steeper than the 6 to 1 ratio specified in the CMIP (SNL/NM, November 2005). Because the side slopes of the Subgrade extend beyond the original MWL boundary and provide adequate protection of the disposal areas, at the Quality Resolution Meeting held on May 22, 2009, the decision was made to proceed with the Biointrusion Layer installation and adjust both the surface design and side slopes during construction of the overlying layers. This path forward and the Subgrade surface were approved by the CQA Engineer on May 22, 2009 (Section 3.4 and Tables 3 and 14).

## **5.3 Biointrusion Layer**

The Biointrusion Layer was constructed from May 26 through June 17, 2009, and consisted of nominal 4- to 6-inch crushed; angular, highly siliceous, dense contact, metamorphic rock (i.e., hornfels) from the San Lazarus Gulch located in the San Pedro Mountains. This rock was selected by Sandia Project Staff after completing an evaluation of several potential rock sources and consulting with NMED representatives in 2005. Approximately 6,000 cy of rock (8,100 tons) were delivered to the Bulk Waste Staging Area from October 4 through November 14, 2005.

### **5.3.1 Biointrusion Layer Construction Field Tests**

Prior to full-scale installation, a series of small-scale construction tests were performed at the southern end of the MWL to determine the installation method that would be most effective in achieving the following goals:

- Compacting the rock into a structurally sound, interlocking layer
- Filling void space within the Biointrusion Layer with native soil fill
- Creating an even surface to begin construction of the Native Soil Layer
- Creating an even surface to measure and verify Native Soil Layer thickness

Although filling of the void space and creation of a relatively even surface to construct the Native Soil Layer were not addressed in the CMIP, the Sandia Project Staff, Construction Team, and CQA Team identified these issues prior to construction. All parties agreed to a field-testing approach, to be approved by the CQA Engineer based upon engineering judgment, at the preconstruction meeting held on April 30, 2009 (Section 3.1 and Attachment 1).

#### **5.3.1.1 Biointrusion Test Area I**

The first test area was designed to evaluate an approach for filling the void space that consisted of placing a loose lift of native soil fill on the Subgrade surface and then placing and compacting the biointrusion rock down into the loose soil. Two truckloads of dry, loose soil were placed over an approximate 20- by 20-foot area to create a 6- to 8-inch layer prior to placing the rock. The soil was initially spread using a JD 670 motor grader, but this was later switched to a JD 650 bulldozer in an attempt to reduce the soil compaction.

The biointrusion rock was then placed on top of the 6- to 8-inch loose soil layer. Using the JD 650 bulldozer, the biointrusion rock was spread to an approximate thickness of 1 foot and compacted by tracking over the layer with the bulldozer in an attempt to push the rock down into the soil layer. After several passes with the bulldozer, it was clear that the biointrusion rock was not being pressed down through the loose soil layer to the existing Subgrade surface as intended. Instead, the rock appeared to be “free-floating” on the loose soil layer and not fully interlocking. It was determined this procedure was not adequate to meet the stated goals and CMIP specifications (SNL/NM, November 2005–Appendix A, Section 02115).

#### **5.3.1.2 Biointrusion Test Area II**

A second test area was created and the process was changed. Instead of applying a 6- to 8-inch loose soil layer on the surface of the Subgrade prior to placing the rock, the Subgrade surface was scarified using the tracks of the JD 650 bulldozer. This created a rough texture on the Subgrade surface and a thin, irregular layer of loose soil (approximately 1 to 2 inches), which was ideal for filling some of the lower void space in the rock layer without causing the rock to free-float. The final outcome was a stable, interlocking rock structure at the base of the Biointrusion Layer. The rock was compacted using a minimum of four passes with the JD 650

bulldozer. Loose, dry, soil was then placed on top of the rock layer, spread with the JD 650 bulldozer, and worked into the voids through initial spreading and tracking with the bulldozer.

Field observations revealed that the dry, loose soil flowed into the upper rock void space similar to the way sand flows through the restriction in an hourglass. The final two steps after spreading the dry, loose soil involved first compacting a thin (nominally 3-inch) layer of soil over the rock layer with a minimum of four passes with the IR SD100 vibratory roller, and then adding water to the surface of the compacted thin layer to moisture-condition it and the underlying soil that penetrated into the rock void space. After the test, part of the test area was excavated and removed, and soil could be observed penetrating all the way through the 1-foot thick rock layer. Based upon visual inspections and engineering judgment, this second method proved to be the most effective at achieving the stated goals. The revised procedure for the installation of the Biointrusion Layer was approved on May 26, 2009 (Section 3.4 and Table 3). Both test areas were reworked using the approved installation method.

### **5.3.2 Biointrusion Layer Construction**

Loading and hauling of the biointrusion rock material from the Bulk Waste Staging Area occurred from May 26 through June 8, 2009. The Construction Team utilized 12-cy tandem dump trucks to haul material and unload it directly onto the scarified Subgrade surface. A JD 650 bulldozer was used to spread and compact the rock with a target thickness of 1.25 feet to ensure that the 1-foot minimum thickness was achieved.

The biointrusion rock was placed and compacted with a minimum of four passes by the JD 650 bulldozer to ensure compaction and interlocking of the rock. Surveys were performed continually to control and verify thickness. Due to a biointrusion rock volume shortfall, an additional 800 cy (1,100 tons) of rock material were purchased from the original quarry (material still remained from the 2005 stockpiles) and delivered directly to the east side of the site from June 8 through June 12, 2009. This rock was inspected by the CQA Engineer and approved prior to completing the Biointrusion Layer over the northeast, classified portion of the MWL (Section 3.4 and Table 3). A JD 644 wheel loader was used to place the material onto the scarified cover surface and side slopes and the JD 650 bulldozer was used to spread and compact the material.

Visual inspections of the biointrusion crushed rock and loose, dry soil were conducted throughout installation by the CQA Inspector to verify that the biointrusion rock and soil conformed to the CMIP specifications and that no organic matter, rubble, trash, or deleterious

material was identified. Only hand-operated compaction equipment was used within 3 feet of groundwater monitoring well MWL-MW4.

The Biointrusion Layer was completed, surveyed, and approved in three phases by area (South, Northwest, and Northeast). Each individual area of the Biointrusion Layer thickness was verified and approved by the CQA Engineer prior to the placement of any soil on the layer. As each area was surveyed and approved; the installation steps of dry loose soil placement, spreading, and compaction proceeded. All construction was performed in accordance with the revised Biointrusion Layer installation procedure.

### **5.3.3 Void Space Filling and Thin Soil Layer**

After each area of the Biointrusion Layer was compacted, surveyed, and approved, dry, loose soil was placed on the surface and spread and worked into rock void space using a JD 650 bulldozer (minimum four passes to spread and track the soil into the void space). After this step was completed and the overlying soil layer thickness was approximately 3 to 4 inches, an IR SD100 vibratory drum roller was then used (minimum of four passes) to compact the remaining soil on the surface of the rock to form a smooth surface for the construction of the Native Soil Layer. Only hand-operated compaction equipment was used within 3 feet of groundwater monitoring well MWL-MW4.

Water was applied to moisture-condition the applied soil (thin layer and soil in the rock void space). All construction was performed in accordance with the revised Biointrusion Layer installation procedure.

Approximately 3,100 cy of dry, loose soil were used; the majority of which was worked into the Biointrusion Layer voids, while the remaining soil created a nominal 3-inch-thick (average) soil layer on the surface of the Biointrusion Layer. The thin soil layer created a stable surface and reference datum upon which to build and measure thickness of the Native Soil Layer. This approach was important due to the unavoidable irregularities of the biointrusion rock surface caused by the coarse (predominantly 4- to 6-inch) and angular nature of the rock material.

### **5.3.4 Laboratory and Field Testing, Survey Verification, and Approval**

There are no laboratory or field-testing requirements for the Biointrusion Layer and overlying thin soil layer. However, compaction of the thin soil layer was performed following the same process used for Subgrade and Native Soil lifts (except the loose soil layer was thinner than a typical 8-inch loose Subgrade or Native Soil lift).

The rock material was selected in consultation with representatives of the NMED and approved by Sandia Project Staff and the CQA Engineer based upon visual observations and material measurements made in the field. Small-scale field tests and engineering judgment were used to develop a structurally sound approach to filling rock void space and to create an even surface upon which the Native Soil Layer could be constructed and its thickness determined. In-place density and moisture testing of the thin soil layer was not feasible due to the thinness of the soil layer (i.e., less than 4 inches thick) and the presence of rocks immediately below the surface.

The primary specification was Biointrusion Layer thickness of 1 foot minimum with a + 0.25-foot upper tolerance level. This was verified through both the final CQC and CQA verification surveys. The Biointrusion Layer was constructed, surveyed, and approved by the CQA Engineer in three phases by area as previously discussed (Section 5.3.2). The CQC and CQA surveys were performed for each phase/area and used to determine any grid point locations where adjustments were required to meet the thickness specification. Identified grid point locations requiring adjustment were reworked (i.e., additional rock was added and compacted following the same construction process or rock was removed if it was too thick) and resurveyed to verify corrections. After adjustment, the thickness at all grid points was equal to or greater than the 1-foot minimum requirement. The final average thickness of the completed Biointrusion Layer was 1.25 feet (Table 12). This average thickness equals the CMIP upper tolerance thickness of 1.25 feet, although the thickness at some grid points exceeds the 1.25-foot maximum.

In addition, the 2-percent east-to-west surface design slope along the eastern boundary and the side slopes around the northern end of the MWL did not meet specifications. The entire Biointrusion Layer was approved by the CQA Engineer on June 15, 2009 (Section 3.4 and Table 3). No further adjustments were required for the following reasons:

- The maximum thickness resulted in a more protective layer.
- The coarseness of the rock material made fine-tuning the surface to more than 0.25-foot precision very difficult without the risk of compromising the already achieved interlocking lattice structure and void filling.
- The decision had already been made after completion of the Subgrade to correct the 2-percent surface design slope and 6 to 1 side slopes as part of construction of the Native Soil Layer.

A CQC survey was performed on the thin soil layer overlying the Biointrusion Layer to verify the thickness, determine the surface slope, and establish a datum from which to measure the

thickness of the Native Soil Layer. The thickness of this soil layer is not considered part of the Biointrusion Layer or the Native Soil Layer, both of which meet minimum thickness specifications of the CMIP without including this layer. Grid points and surrounding areas where the thin soil layer exceeded 3 inches were rechecked and adjusted using the JD 670 motor grader where feasible. If the soil layer could not be scraped and thinned without encountering the underlying rock, no further adjustment was made.

All grid points that were altered were resurveyed, and the final average thickness of the thin soil layer overlying the Biointrusion Layer was 0.25 feet (Table 12). Final approval of the thin soil layer occurred on June 17, 2009 (Section 3.4 and Table 3).

The final average thickness of the completed Biointrusion Layer was 1.25 feet, which equals the CMIP upper tolerance thickness. The complete volume of rock used for the Biointrusion Layer is estimated at 6,800 cy. The in-place surveyed volume is approximately 5,800 cy. The 1,000-cy discrepancy (approximately 15 percent reduction) is most likely attributable to the fact that the Subgrade surface elevation was lowered approximately 1 to 2 inches during the scarification process prior to installing the Biointrusion Layer rock material. Initial volume estimates of the received rock may have also been biased slightly high.

#### **5.4 Native Soil Layer**

Construction of the Native Soil Layer was conducted from June 16 through August 4, 2009. Construction started on the side slopes around the northern end of the MWL, which were built up in lifts to meet the 6 to 1 slope requirement from June 16 through June 22, 2009. Construction of the Native Soil Layer on the surface of the MWL started on June 18, 2009, after the thin soil layer overlying the Biointrusion Layer was approved on June 17, 2009 (Table 3). Construction of the side slopes around the northern end of the MWL and the first Native Soil lift (Wedge Lift 1) on the MWL surface proceeded concurrently from June 18 through June 22, 2009.

To support construction of the Native and Topsoil Layers, additional soil fill material was excavated, screened to 2-inch minus, and stockpiled at the Borrow Pit from June 12 to July 24, 2009. During this time period, the soil berm around the MWL site originally installed as part of the 2006 Subgrade Construction phase SWPPP was excavated, hauled to the Borrow Pit, and screened for use as native soil fill (a perimeter silt fence had been installed around the berm in late May 2009). The quantity of soil fill stockpiled at the Borrow Pit in 2006 based on CMIP estimates was not sufficient to complete construction of the Native Soil and Topsoil Layers. During the Quality Resolution Meeting held on July 14, 2009, estimates were finalized for

additional soil fill needed for Native Soil and Topsoil Layer construction (Table 3). All required native and topsoil fill was excavated from the Borrow Pit, screened to 2-inch minus, and stockpiled by July 24, 2009.

The CMIP side slope specification and design required that the side slopes extend out from the MWL boundary at a 6 to 1 slope. During initial construction of the Native Soil Layer, the side slopes around the northern end of the MWL were built up using a wedge lift approach, and the final cover toe-of-slope catch points were established, so that at completion of the Topsoil Layer the final side slopes would meet the 6 to 1 CMIP specification (SNL/NM, November 2005–Appendix A, Section 02200). The soil placed and compacted to provide the appropriate side slopes was identified as ‘slope lifts’ and installed following the same procedure as the Native Soil Layer lifts (maximum 8-inch loose, 6-inch compacted lifts). Because the slope thickness tapered toward the toe, the thickness of each lift was also tapered, and therefore these lifts are referred to as “wedge lifts” with the maximum compacted thickness not exceeding 6 inches.

Native soil fill material was hauled from the Borrow Pit in 20-cy dump trucks and unloaded directly onto the MWL surface from June 18 through August 4, 2009. The material was placed, spread, and graded with a JD 670 motor grader; and then compacted using an IR SD100 vibratory roller (minimum four passes). The Native Soil Layer involved the placement and compaction of approximately 17,300 cy of soil (compacted, in-place cy) in eight lifts. Each lift was constructed following the specifications of the CMIP, with a maximum thickness of 8-inch loose, 6-inch compacted. Two wedge lifts (Wedge Lifts 1 and 2) were installed along with two polishing lifts (Lifts 3 and 4) to establish the 2-percent east-to-west surface design slope across the eastern side of the cover from the central to southern end of the MWL. This was necessary because neither the Subgrade nor Biointrusion Layers had the required 2-percent east-to-west surface slope in this part of the MWL (Sections 5.2.2.2 and 5.3.4).

Wedge Lifts 1 and 2 were spatially limited to the eastern side of the cover, as shown in Figure 19. Lifts 3 and 4 are referred to as polishing lifts because, although they extended across the disposal area surface, their thickness was variable, which was necessary to complete the adjustment for the 2-percent east-to-west surface design slope. After installation of Wedge Lifts 1 and 2, some areas of the cover surface required slightly more than a 6-inch compacted thickness. In order to meet the CMIP lift thickness specifications, Lifts 3 and 4 were constructed as generally thinner than 8-inch loose, 6-inch compacted lifts across the entire surface of the MWL. Survey grade stakes were used to guide the construction process for these first four lifts.

Lifts 5 through 8 were more standardized lifts that were installed across the entire cover surface as 8-inch loose, 6-inch compacted lifts. Grade stakes were set across the entire cover surface at or near the 50-foot grid points for each lift to guide the process and allow for visual confirmation that specifications were being followed.

#### **5.4.1 Laboratory and Field Testing**

The laboratory and field-testing activities for the Native Soil Layer side slopes and lifts were performed in accordance with CMIP specifications (SNL/NM, November 2005) and are discussed in Sections 4.3.1 and 4.3.2. The results verified that the Native Soil Layer met the CMIP specifications and were approved by the CQA Engineer. Laboratory results are presented in Tables 5 and 6, and field-testing results are presented in Tables 10 and 11.

Because of the limited spatial distribution of Wedge Lifts 1 and 2, only three CQC and two CQA in-place field density moisture tests were performed on Wedge Lift 1, and two CQC tests and one CQA test were performed on Wedge Lift 2 (total of eight tests for Wedge Lifts 1 and 2). Lift 3 was not thick enough across the surface for field testing in all 13 grid blocks. Four CQC tests and two CQA tests were conducted for Lift 3. All 13 grid blocks were tested for Lifts 4 through 8 as discussed in Section 4.3.2. Figures 21 through 29 show all CQC and CQA field-testing locations for the Native Soil Layer side slopes (Figure 21) and lifts (Figures 22 through 29).

During field testing of Lift 5, Grid Blocks 2, 3, 5, and the east edge of Grid Block 7 failed moisture and density tests. The east slope of Grid Block 7 met specifications after water was added. Grid Blocks 1 through 5 of Lift 5 were ripped using the scarifier shanks on the JD 670 motor grader to a depth of approximately 6 inches, moisture-conditioned, recompact, and retested. The retest results met specifications. The 3-foot perimeter around groundwater monitoring well MWL-MW4 was compacted using a manually operated compactor and tested in addition to Grid Block 9 for Lifts 6 through 8. Lifts 6 and 8 failed the moisture content tests, so additional water was applied to the material. The area was retested and met specifications. Lift 8 and Grid Blocks 8 and 10 also failed initial tests for moisture content, so the same procedure was followed (i.e., additional water was applied) and passing results were obtained from the repeated tests.

#### **5.4.2 Survey Verification and Approval**

The thickness, surface slope, and side slopes of the Native Soil Layer were verified through both CQC and CQA surveys using the 50-foot-spaced verification grid (Figure 18). The CQC survey

data is provided in Table 12. During this verification process, nine points were identified by both the CQC and CQA surveys that were slightly less than the minimum 2.5-foot thickness, with two of these points falling outside the cover surface on the northern side slope. The range of values below the minimum thickness was 2.09 to 2.42 feet, which appears to be related to irregularities (i.e., high spots) in the Biointrusion Layer. A thin layer of additional soil was placed and compacted in these areas to increase the thickness to 2.55 feet, with the thickest fill layer being 0.46 feet (compacted). After adjustments, the corresponding grid points were resurveyed and all grid points met the specification of 2.5-foot minimum thicknesses.

The final average thickness of the completed Native Soil Layer was 2.85 feet, which reflects the buildup on the eastern side of the cover to correct the 2-percent east-to-west surface design slope inherited from the Subgrade and Biointrusion Layer (Table 12; Sections 5.2.2.2 and 5.3.4). Eleven grid points exceeded 3 feet in thickness (D7, E1, E4–E7, F5, G5, H5, I5, and G4); all of these grid points are located at or near the eastern boundary of the MWL where Wedge Lifts 1 and 2 were installed (Table 12; Figures 18 and 19). The two grid points with the thickest measurements, E6 and E7 at 3.66 and 3.98 feet, respectively, are located just south of the MWL boundary (Figure 18). The Native Soil Layer thickness at these two points is greater because they are located over the side slope. The 2-percent east-to-west surface design slope was verified across the central and southern portion of the Native Soil Layer surface, and the side slopes were verified to be 6 to 1 or slightly flatter, with the exception of the northwestern corner where the side slope was 4.4 to 1 (Native Soil Layer QA Verification Survey Plate No. 2 in tabbed section at end of report). No adjustment was required at this one location; final adjustment was made during installation of the Topsoil Layer. Final approval of the Native Soil Layer occurred on August 4, 2009 (Section 3.4 and Table 3).

Based on the final survey data, the final in-place compacted volume of the Native Soil Layer is estimated at 17,300 cy.

### **5.5 Topsoil Layer**

Construction of the Topsoil Layer was conducted from August 3 through August 12, 2009. Topsoil material consisted of topsoil (upper 6 inches of the in situ Borrow Pit Area soil) and native soil (soil from below 6 inches) excavated from the Borrow Pit, screened to 2-inch minus, then admixed with 3/8-inch crushed gravel, 25 percent by volume according to the specifications of Section 02200 in Appendix A of the CMIP (SNL/NM, November 2005). A Pug Mill was mobilized to the Borrow Pit Area in late June 2009 and then set up, calibrated, tested, and operated to blend 3/8-inch crushed gravel with the topsoil fill material. Pug Mill operations were

conducted from July 6 through July 24, 2009. The gravel was delivered and stockpiled at the Borrow Pit just prior to and during the Pug Mill operation period.

Approximately 7,300 cy (loose) of topsoil material with 25 percent by volume, 3/8-inch crushed gravel were hauled from the Borrow Pit in 20-cy dump trucks and unloaded directly onto the MWL surface (approximately 5,500 cy of topsoil and 1,800 cy of 3/8 inch gravel). The material was spread with a JD 670 motor grader in a single, approximately 12-inch loose lift. Hubs and whiskers were used instead of grade stakes for the Topsoil Layer (blue top approach). No compaction was performed on the loose lift beyond that accomplished by the equipment placing the material to facilitate seedling growth and root development.

Visual inspections of the topsoil fill containing 25 percent by volume 3/8-inch crushed gravel were conducted throughout the installation by the CQA Inspector to verify that the topsoil fill conformed to the CMIP specifications. No organic matter, rubble, trash, rocks, or deleterious material greater than 2 inches in dimension was identified.

Due to the larger footprint of the as-constructed ET Cover (versus the 2005 CMIP design [SNL/NM, November 2005]), the toe of the cover slope on the west side extended to the three MWL groundwater monitoring well pads (MW-7 through MW-9) and two shallow vadose zone moisture monitoring access tube pads (MWL-VZ-1 and VZ-2). Soil drainage diversions immediately east (i.e., upslope) of the three monitoring well locations were constructed to create a localized east-west ridge (i.e., localize high point) parallel to the slope angle. These small ridges or high points divert water to the north and south of the monitoring well/access tube pads, protecting them from surface runoff. These features are shown in the 2009 as-built drawing (Figure No. 2, Mixed Waste Landfill Alternative Evapotranspirative Cover Site Plan, provided in a tabbed section at the end of this report) and represent a design change that was approved by the CQA Engineer as part of the Topsoil Layer.

The eastern perimeter boundary drainage swale that was designed to divert surface water run-on around the northern and southern ends of the final ET Cover was completed during Topsoil Layer installation and is shown in the 2009 as-built drawing (Figure No. 2, Mixed Waste Landfill Alternative Evapotranspirative Cover Site Plan, provided in a tabbed section at the end of this report).

Following CQC and CQA verification surveying that confirmed proper layer thickness and slope angles, the Topsoil Layer surface was ripped to loosen the soil and then tilled to break up larger

soil clumps in preparation for seeding. The initial ripping was accomplished using scarifier shanks on the JD 670 motor grader. Additional surface preparations were conducted as part of the revegetation activities discussed in Section 5.6.

### **5.5.1 Laboratory and Field Testing**

The laboratory and field-testing activities performed for the Topsoil Layer are discussed in Sections 4.3.1 and 4.3.2. The Gradation and Classification results verified that the topsoil fill material met the CMIP specifications (SNL/NM, November 2005) and were approved by the CQA Engineer. Laboratory results are presented in Tables 5 and 7 and field-testing results (not required by the CMIP) are presented in Table 10.

Although there were no in-place field density and moisture testing requirements for the Topsoil Layer, field tests were performed for the layer to document the compaction achieved prior to the revegetation effort. Four topsoil Standard Proctor samples were collected to support field testing. Four grid block locations were tested (CQC tests only) at two depths per location, for a total of eight in-place density and moisture tests ranging in depth from 4 to 10 inches. Percent of maximum dry density achieved ranged from 75 percent (at a 4-inch testing depth) to 96 percent (at an 8-inch testing depth), and the moisture content ranged from 3.7 to 5.4 percent.

### **5.5.2 Survey Verification and Approval**

The thickness, surface slope, and side slopes of the Topsoil Layer were verified through both the CQC and CQA surveys using the 50-foot-spaced verification grid (Figure 18). The average thickness of the Topsoil Layer after placement was 1.02 feet, and the thickness at each grid point exceeded the minimum CMIP specification of 8 inches (Table 12). Correction of the side slope at the northwestern corner was verified by both the CQC and CQA surveys. The final CQC and CQA survey data, including the thickness and slopes (surface design and side slopes), were approved by the CQA Engineer on August 12, 2009 (Section 3.4 and Table 3).

Based on the final survey data, the final in-place volume of the Topsoil Layer is 5,400 cy.

## **5.6 Revegetation Activities and Administrative Security Fence Installation**

Revegetation activities were initiated on August 12, 2009, with the installation of an aboveground sprinkler irrigation system that covered the entire surface of the MWL. Tilling, seeding, and crimping operations were conducted from August 19 through September 2, 2009, using a Kubota M7040 agricultural tractor. The tiller was towed by the tractor to till the soil on the cover, slopes, and surrounding area, which broke up the larger soil clumps present after the

surface was ripped using scarifier shanks on the JD 670 motor grader. Tilling on side slopes was conducted perpendicular to the slope direction to minimize surface erosion and was completed on August 20, 2009. After tilling, personnel walked the site to break up clumps near irrigation piping that the tiller did not reach.

After rain delays, seeding operations began on August 25, 2009, and were completed on September 2, 2009. Based on recommendations from the SNL/NM Staff Biologist that were approved by the CQA Engineer on August 25, 2009 (Section 3.4 and Table 3), the following modifications were implemented to the Reclamation Seeding and Mulching Specification of the CMIP (SNL/NM, November 2005–Appendix A, Section 02930):

- Uniform seeding rate of 80 pounds of seed mix per acre (4 times the minimum specified rate of 20 pounds per acre)
- No fertilizer added due to timing of seeding
- Supplemental watering to assist seed germination and root development

The seed drill equipment set at the maximum output rate was capable of applying 20 pounds of seed mix per acre. At this rate, the seed drill equipment would have required a minimum of four passes to achieve the 80-pounds-per-acre requirement. This approach would have resulted in an unacceptable amount of compaction to the topsoil, so the decision was made and approved by the CQA Engineer to spread half of the seed by hand. The remaining seed was applied using two passes with the seed drill equipment. Following placement of seed, straw was blown over the site at the rate of 2 tons per acre and crimped in. Seed and mulch placement were approved by the CQA Engineer on September 2, 2009 (Section 3.4 and Table 3).

Supplemental watering of the seeded Topsoil Layer is not addressed in the CMIP and is not considered part of the alternative cover construction scope. The NMED was notified of the supplemental watering schedule and approach on August 13, 2009. On September 3, 2009, supplemental watering began using the aboveground irrigation system. Watering continued through October 20, 2009, to facilitate the establishment of a native plant community.

Consistent with the NMED conditional approval of the CMIP (Bearzi, December 2008), detailed supplemental watering information will be included in the revised LTMMMP for the MWL.

As seeding and mulching activities were being completed, the three-strand barbed wire administrative security fence was installed around the cover as specified in the CMIP (SNL/NM, November 2005–Appendix A, Section 02445) from August 31 through September 2, 2009. One access gate was placed at the northern end. Due to the slightly larger footprint of the

as-constructed cover, the fence is positioned on the 6 to 1 side slope on the west side of the ET Cover, just east of three groundwater monitoring wells located on this side of the MWL. The location of the administrative security fence is shown in the 2009 As-Built Drawing No. 2 in a tabbed section at the end of this report.

The final CQA Engineer approval of revegetation occurred on September 2, 2009 (Section 3.4 and Table 3).

The Borrow Pit Area was graded for proper drainage from August 18 to August 24, 2009. It will be seeded and reclaimed during the 2010 growing season if it is not transferred to the SNL/NM Facilities organization for continued use as required by the CMIP. Documentation will be provided in the MWL LTMMP.

## **6.0 Monitoring Well (MWL-MW4) Extension**

---

The outer protective casing and the well casing of groundwater monitoring well MWL-MW4 were raised on May 27, 2009, prior to installation of the ET Cover layers, as specified in the CMIP (SNL/NM, November 2005). The two casings were extended to a height approximately 3 feet above the estimated completion surface of the ET Cover assuming the overlying ET cover layers would meet the minimum thickness specifications. Because the three ET Cover layers were constructed with a thickness greater than the minimum specifications (Sections 5.3 through 5.5), the final height of the MWL-MW4 well casing above the surface of the completed ET Cover is approximately 1 foot, 4 inches, which is less than the minimum specification in the CMIP of 2 feet, 6 inches above the final grade of the constructed cover. The final height of the well casing was approved by the CQA Engineer as a design change instead of extending the well casings an additional 1 foot, 2 inches to meet the minimum specification because there were no adverse impacts to the cover quality or performance of the monitoring well. A new concrete well pad and protective bollards were installed around MWL-MW4 on August 13, 2009, after completion of the Topsoil Layer installation. A report summarizing the extension of monitoring well MWL-MW4 is provided in Attachment 8.

Two soil-vapor monitoring wells, required by the NMED and referred to as “soil-vapor sampling points” (Bearzi, December 2008), were installed from August 5 to August 7, 2009, during construction of the Topsoil Layer. The wells were installed through the Topsoil Layer prior to seeding and mulching activities to eliminate damage to both the surface and plants that would result from driving the drilling equipment over the Topsoil Layer surface after having seeded and mulched it. Although required by the NMED, installation of these soil-vapor monitoring wells is not part of cover construction requirements as defined in the CMIP (SNL/NM, November 2005); therefore, the soil-vapor monitoring well installation will be documented in a separate report to be submitted to the NMED for approval.

This page left intentionally blank.

## **7.0 Cover Layer Approvals, Nonconformances, and Design Changes**

---

Documentation associated with the 2009 Quality Resolution Meetings and ET Cover layer approval is summarized in Sections 3.3 and 3.4, Table 3, and Attachments 1 and 2. Based upon the final CQC survey data (Table 12) and 2009 as-built drawings (Figures No. 2 and 3 in tabbed section at the end of this report), the final ET Cover surface meets the 2-percent east-to-west surface design slope, and all side slopes meet or exceed (i.e., are flatter) than the 6 to 1 specification. All cover layers were approved prior to starting construction of the next layer as stipulated in the CMIP CQA Plan (SNL/NM, November 2005–Appendix B).

Consistent with the CMIP CQA Plan, nonconformances are defined as deviations or changes to construction and/or design specifications. If it is determined by the CQA Engineer that a nonconformance has an adverse impact on quality of the ET Cover, a corrective action plan and documentation of corrective action implementation are also required. Design changes are minor variances from construction and/or design specifications that do not have an adverse impact on quality and therefore do not require corrective action. However, nonconformances and design changes must be documented.

Two nonconformances were identified. During the 2006 Subgrade construction phase, CQC versus CQA in-place density and moisture field tests were not clearly distinguished and the CQA Team directed/performed all of the field testing instead of the construction team performing/directing the required CQC tests. The actual in-place density and moisture testing performed during Subgrade construction exceeded the CMIP specifications of 5 CQC tests per acre per lift plus at least 5% additional confirmatory CQA tests. Based upon the aerial extent of the 12 Subgrade lifts, 48 CQC and 3 CQA field tests were required; however, a total of 71 field tests were performed. In the judgment of the CQA Engineers, the testing performed exceeded requirements and there was no quality impact to the Subgrade of the MWL ET Cover.

The second nonconformance occurred during the 2009 ET Cover construction phase and involved saturated hydraulic conductivity tests performed using the ASTM D-5856 rigid wall (remolded) method on the Native Soil Layer fill material. Although the term “rigid wall” is used twice in the CMIP construction specifications (Appendix A, Section 02200 Earthwork) and is a valid method for determining the saturated hydraulic conductivity in these types of soils, the intent of the CMIP specification appears to indicate the use of the ASTM D-5084 flexible wall (undisturbed) method. After discussion at the June 16, 2009 Quality Resolution Meeting, the

project team agreed that the ASTM D5856-95 rigid wall method was the best method for two main reasons: 1) samples could be collected without compromising the integrity of the installed Native Soil Layer lift (i.e., without punching holes in the lift surface), and 2) compaction of the sample in the laboratory could be controlled to accurately simulate compaction achieved in the field. In the judgment of the CQA Engineer there was no impact on the quality of the ET Cover and a corrective action plan was not required.

All design changes are summarized in Table 14, along with a brief explanation of why they had no adverse quality impact. For both the 2006 Subgrade and 2009 ET Cover Construction phases, all technical issues and design changes were addressed by the respective project teams and resolved through a team approach in documented meetings and project-specific approval forms as discussed in Chapter 3.0. The project teams included Sandia Oversight, CQA Team, and Construction Team representatives. The design changes were approved by the CQA Engineer and did not result in an adverse impact on the quality of the final cover. In all instances, the implemented design changes had a neutral or positive impact on ET Cover quality.

For the 2006 Subgrade construction activities, the compaction and in-place density and moisture field-testing approach for the existing MWL surface, supported by Standard Proctor results, provided a more quantitative approach for verifying adequate compaction than the CMIP-specified approach of “counting 10 passes of a roller with ballasted weight of 25 tons and a minimum tire pressure of 90 psi.” The overall relative uniformity of the Borrow Pit soil fill material, particularly after screening and stockpiling procedures, is demonstrated by the large number of Standard Proctor, Gradation, and Classification results collected throughout the 2006 and 2009 construction phases (Tables 4, 5, 6, and 7; Figure 20). These data support the conclusion that the existing MWL surface soil is very similar to the Borrow Pit soil. In addition, the data support the use of relatively few Proctors for the 2009 in-place density and moisture field-testing program, as well as the use of one Proctor to cover approximately 1,500 cy of soil fill during the 2006 Subgrade Construction phase field-testing program, as approved by the respective CQA Engineers.

On May 22, 2009, a Quality Resolution Meeting was held to discuss the 2009 existing Subgrade surface, which did not meet the 2-percent east-to-west surface design slope across the eastern side of the cover from the central portion to the southern end of the MWL (slopes ranged from 1.8 to 1.9 percent in this area). After evaluating the CQC survey data and discussing possible solutions, Sandia Oversight, Construction Team, and CQA Team representatives determined that

the most technically sound and protective engineering solution was to make the surface slope correction (i.e., increase the elevation of the eastern side of the ET Cover surface) during construction of the Native Soil Layer.

Although it was recognized that adjusting the surface slope as part of Native Soil Layer construction would result in an exceedence of the upper tolerance thickness of 2.75 feet, the resulting layer and overall thicker ET Cover would be more protective, both as a physical barrier (between the surface and the waste) and a water storage layer (greater water storage capacity above the waste). The main design purpose of this layer is to act as a water storage reservoir retaining water until it can be removed by evapotranspiration. The thicker Native Soil Layer has a larger capacity for holding water. In addition to these advantages, establishing and/or maintaining the 2-percent surface design slope on the Biointrusion Layer surface would have been difficult due to the coarse, angular nature of the material (predominantly 4- to 6-inch crushed rock). Although the goal was to maintain the 2-percent surface design slope on each ET Cover layer, this slope is most important on the surface of the ET Cover (i.e., the Topsoil Layer) for the purpose of surface water drainage. After careful consideration, the project team agreed that making the 2-percent east-to-west surface design slope correction during Native Soil Layer construction was the best approach.

The issue of the Subgrade side slopes around the northern end of the MWL being steeper than the 6 to 1 ratio specified in the CMIP was also addressed at the Quality Resolution Meeting held on May 22, 2009. Because the side slopes of the Subgrade extend beyond the original MWL boundary, the decision was made and approved by the CQA Engineer to proceed with the Biointrusion Layer installation and correct both the surface design and northern end side slopes during the construction of the overlying layers. Adjusting the side slope angles to 6 to 1 as part of the Subgrade would have extended the overall ET Cover footprint well beyond the design footprint and required a considerable amount of additional biointrusion rock, as well as native soil and topsoil fill material. The groundwater monitoring wells on the west side of the MWL would have been significantly impacted, creating additional design change issues.

Table 15 compares the CMIP in-place, compacted soil and rock volume estimates to the as-constructed estimates based on the final CQC survey data (Table 12) and 2009 as-built drawings (Figures No. 2 and 3 in tabbed section at the end of this report). The as-constructed rock and soil volumes are approximately 27 percent greater than the CMIP estimates, in large part due to the final average thickness of each cover layer exceeding the minimum thickness specified in the CMIP (SNL/NM, November 2005), as discussed in Sections 5.2 through 5.5.

The CMIP cover layer volume estimates are based upon the minimum thickness specifications and assumed a compaction factor (i.e., reduction in volume from loose to compacted soil fill) of approximately 25 percent. The percent compaction achieved during construction appears to be approximately 30 percent instead of 25 percent as estimated in the CMIP based upon comparing loose volume estimates to compacted, in-place volume estimates. The main points related to this design change (i.e., thicker ET Cover that required more materials than estimated in the CMIP) are summarized as follows:

- The thicker overall ET Cover with a larger footprint was necessary to achieve the 2-percent east-to-west cover surface design slope and the 6 to 1 side slopes in accordance with the CMIP specifications and drawings.
- In all cases, the ET Cover layers were constructed to exceed the minimum thickness specifications to ensure a protective final ET Cover (i.e., a conservative construction approach).
- The as-constructed ET Cover is approximately 1.2 feet thicker than the CMIP design minimum thickness specifications, as shown schematically in Figure 4.
- The thicker, more protective final ET Cover was achievable within the estimated project budget and schedule.

The final as-constructed ET Cover meets or exceeds the CMIP (SNL/NM, November 2005) construction and design specifications. Although a higher cover profile does increase cover exposure to wind and water erosion, these factors are mitigated by the design surface and side slopes, as well as the long-term monitoring and maintenance requirements for the ET Cover that will be formalized in the MWL LTMMP.

## **8.0 Conclusions**

---

For the 2006 Subgrade Construction phase only, an independent MWL CQA Plan (SNL/NM, May 2006) was prepared that incorporated the regulatory guidance and design and specification requirements for the construction of the MWL cover as defined in the CMIP (SNL/NM, November 2005). For the 2009 ET Cover Construction phase, the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005) was used directly.

For both the 2006 and 2009 phases, a representative of the CQA team was at the site each workday to inspect and oversee construction activities and the field and laboratory testing. The results of the inspections and oversight are provided on the inspection forms, daily reports, and approval forms attached to this report. This report also presents a summary of the construction activities, CQC and CQA laboratory and field-testing results, CQC and CQA survey results, as-built drawings documenting cover construction, and photographic records of the activities.

All nonconformances and design changes are documented and were made in consultation between the Construction Team, Sandia Project Staff, and the CQA Team. These changes did not result in an adverse impact on the quality of the final cover and did not require corrective action. All cover layers were approved as stipulated by the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer, and all cover-related design changes resulted in a more protective cover. This report and the attachments provide the required documentation to verify that the MWL existing surface, Subgrade, ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers), and site drainage features were prepared and installed in accordance with the CMIP (SNL/NM, November 2005) construction and design specifications. A New Mexico-registered Professional Engineer has certified that the MWL alternative cover construction was performed in accordance with the plans and specifications (Chapter 9.0).

This page left intentionally blank.

## **9.0 Engineering Certification**

---

During construction of the subgrade, I have performed tasks required of the CQA Engineer in accordance with the CQA Plan for the MWL Alternative Cover construction at Sandia National Laboratories, New Mexico. I certify that the MWL subgrade has been prepared and constructed in accordance with construction plans and specifications and the MWL Cover Construction Quality Assurance Plan. I certify that to the best of my knowledge the CQA subgrade preparation draft report accurately documents the CQA activities conducted under my responsible charge as the CQA Engineer.

*Kelly M. Peil*

Kelly M. Peil, PhD, P.E.

MKM Engineers, Inc.



Title: CQA Certifying Engineer

Date: August 31, 2007

State: New Mexico

Registration No. 9718

Note: The certification statement above pertains to the 2006 Subgrade Construction effort only. The CQA subgrade preparation draft report referenced in the statement above was incorporated into this January 2010 CQA Report as explained in Section 1.3

During the construction of the 2009 ET Cover, I have performed tasks required of the CQA Engineer in accordance with the CQA Plan in Appendix B of the MWL CMIP (SNL/NM, November 2005). I was also involved in an oversight role during the 2006 Subgrade Construction phase and have reviewed the associated CQC and CQA data and documentation. I certify that both the 2006 Subgrade and the 2009 ET Cover for the MWL have been prepared and constructed in accordance with the construction plans, drawings, and specifications contained in the MWL CMIP (SNL/NM, November 2005), including Appendix A (MWL Landfill Alternative Cover Construction Specifications Revision 2 [July 29, 2005]) and Appendix B (CQA Plan). I certify that to the best of my knowledge this MWL Alternative Cover CQA Report, as revised to address NMED comments provided on May 20, 2011, accurately documents the construction, CQC, and CQA activities conducted under my responsible charge as the CQA Certifying Engineer.



Donald T. Lopez, PE  
URS Group. Inc.



Title: CQA Certifying Engineer

Date: July 12, 2011

State: New Mexico

Registration No. 5122

## **10.0 References**

---

ASTM International, 2005. "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils," ASTM Method D4318-05, ASTM International, West Conshohocken, Pennsylvania.

ASTM International, 2006a. "Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates," ASTM Method C136-06, ASTM International, West Conshohocken, Pennsylvania.

ASTM International (ASTM), 2006b. "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)," ASTM Method D 2487-06, ASTM International, West Conshohocken, Pennsylvania.

ASTM International, 2007a. "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> [600 kN-m/m<sup>3</sup>])," ASTM Method D698-07, ASTM International, West Conshohocken, Pennsylvania.

ASTM International, 2007b. "Standard Test Method for Measurement of Hydraulic Conductivity of Porous Material Using a Rigid-Wall, Compaction-Mold Permeameter," ASTM Method D5856-95 (2007), ASTM International, West Conshohocken, Pennsylvania.

ASTM International, 2008. "Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)," ASTM Method D6938-08a (formerly ASTM Methods D2922 and D3017), ASTM International, West Conshohocken, Pennsylvania.

Bearzi J.P. (New Mexico Environment Department), September 2006. Letter to P. Wagner (U.S. Department of Energy) and P. Davies (Sandia Corporation), "Fence Removal and Subgrade Preparation, Sandia National Laboratories EPA ID #NM5890110518." September 18, 2006.

Bearzi, J.P. (New Mexico Environment Department), December 2008. Letter to K. Davis (U.S. Department of Energy) and F. Nimick (Sandia Corporation), "Conditional Approval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, Sandia National Laboratories NM5890110518, SNL-05-025." December 22, 2008.

Davis, K. (U.S. Department of Energy), February 2009. Letter to J. Bearzi (New Mexico Environment Department), submitting requested changes in the form of replacement pages in response to the Mixed Waste Landfill Conditional Approval letter from the New Mexico Environment Department dated December 22, 2008. February 12, 2009.

Davis, K. (U.S. Department of Energy), April 2009. Letter to J. Bearzi (New Mexico Environment Department), notifying the New Mexico Environment Department of the start of Mixed Waste Landfill Evapotranspirative Cover construction fieldwork. April 10, 2009.

MKM Engineers, Inc. (MKM), August 2007. "Mixed Waste Landfill Alternative Cover Construction, Subgrade, Draft Quality Assurance Report," prepared for Sandia National Laboratories by MKM Engineers, Inc. under subcontract to URS Group, Inc., Albuquerque, New Mexico.

New Mexico Environment Department (NMED), April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 24, 2004.

New Mexico Environment Department (NMED), May 2005. "Final Order, State of New Mexico Before the Secretary of the Environment in the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill, Sandia National Laboratories, Bernalillo County, New Mexico," EPA ID #5890110518." May 26, 2005.

Sandia National Laboratories/New Mexico (SNL/NM), November 2005. "Mixed Waste Landfill Corrective Measures Implementation Plan," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), May 2006. "MWL Cover Construction Quality Assurance Plan," Environmental Restoration Program, Sandia National Laboratories, Albuquerque, New Mexico.

## Tables



**Table 1**  
**Summary of Mixed Waste Landfill Subgrade and ET Cover Construction Activities**

<b>Activity</b>	<b>Start</b>	<b>Finish</b>	<b>Description</b>
<b>2005 and 2006 Preparation Activities</b>			
Biointrusion Rock Delivery	October 4, 2005	November 14, 2005	Approximately 8,100 tons (6,000 cubic yards) of biointrusion rock delivered to the Bulk Waste Staging Area.
Preconstruction Land Survey	May 10, 2006	May 10, 2006	Existing MWL site surface surveyed to document the preconstruction existing land surface. This survey used to construct the Subgrade and ET Cover as-built drawings.
MWL Borrow Pit Activities	June 14, 2006	July 17, 2006	Surface water and site controls were implemented and soil fill material for construction of the Subgrade and ET Cover layers was excavated, screened to 2-inch minus, and stockpiled.
Hauling Soil for Subgrade	July 31, 2006	November 5, 2006	Screened soil fill stockpiled at the MWL Borrow Pit was hauled and stockpiled at the MWL site for Subgrade construction.
<b>2006 Subgrade Construction Activities</b>			
Existing Land Surface Preparation	October 2, 2006	October 26, 2006	Site security fence was removed, MWL site surface water controls were implemented, and the existing MWL surface was cleared of vegetation, graded, watered, compacted, and field tested.
Subgrade Construction	October 27, 2006	December 21, 2006	Subgrade constructed in 12 lifts to create the central crown and 2% east-to-west design slope over the MWL. Laboratory and field testing conducted for each lift. Final survey completed in April 2007.
Subgrade Protective Measures	April 3, 2007	April 11, 2007	Erosion matting installed over the completed Subgrade surface as a protective measure due to delay in NMED-approval of CMIP and ET Cover implementation. Eastern surface drainage swale and erosion control matting inspected and approved by the CQA Engineer on April 11.
<b>2009 ET Cover Construction Activities</b>			
Mobilization and Training	May 11, 2009	May 18, 2009	Resources, equipment, and office trailer mobilized to site and personnel training completed. Installed new perimeter boundary, silt fence, and drive-off pad. Removed administrative fence.
Subgrade Layer	May 20, 2009	May 22, 2009	Cleared vegetation, watered and compacted surface, and performed field testing and verification survey. Subgrade approved on May 22.

**Table 1 (cont'd.)**  
**Summary of Mixed Waste Landfill Subgrade and ET Cover Construction Activities**

<b>Activity</b>	<b>Start</b>	<b>Finish</b>	<b>Description</b>
<b>2009 ET Cover Construction Activities (cont'd.)</b>			
Biointrusion Layer	May 26, 2009	June 16, 2009	Construction tests conducted on May 26. Hauled and placed existing rock to create 1.25-foot-thick layer, then placed dry, loose soil on top to fill voids and create a thin soil layer above the rock (~3 inches). New rock material hauled directly to site from vendor June 8-12 to complete installation. Verification surveys for thickness of rock layer performed in 3 phases (South, Northwest, Northeast) to allow installation of the overlying thin soil layer to proceed concurrently with Biointrusion Layer installation. Entire Biointrusion Layer approved on June 15, and thin soil layer approved on June 17.
MW4 Extension	May 27, 2009	August 13, 2009	Well casing and protective outer steel casing extended to accommodate surface elevation increase associated with construction of the cover. Concrete pad and well bollards installed on August 13.
Native Soil Layer	June 15, 2009	August 4, 2009	Placed and compacted soil in lifts for side slopes (June 16-22) and cover surface (June 18-August 4). Constructed side slopes to 6 to 1 ratio around north end June 16-22. Construction of Native Soil Layer on cover surface did not proceed until thin soil layer approval on June 17. Wedge lifts used to establish 2% east-to-west surface design slope on cover surface. Verification surveys performed for thickness and slopes – Native Soil Layer approved on August 4.
Borrow Pit Area Activities	June 12, 2009	July 24, 2009	Excavated and screened (2-inch minus) additional soil fill material, including SWPPP berm soil excavated and hauled to the Borrow Pit from the MWL site. Pug Mill operations set up and calibrated to blend topsoil and 3/8-inch crushed gravel – blending performed July 6-24.
Soil-Vapor Monitoring Points	August 6, 2009	August 7, 2009	Two soil-vapor monitoring points (MWL-SV1 and -SV2) installed through the ET Cover to an approximate depth of 35 feet below the original ground surface. Concrete pad and well bollards installed on August 13, 2009.
Topsoil Layer	August 3, 2009	August 12, 2009	Placed topsoil on cover and side slopes, verification survey performed for thickness and slopes – Topsoil Layer approved on August 12. Then surface was ripped and tilled in preparation for seeding. Topsoil not placed on the Native Soil Layer in 9 locations that required final adjustment until they were approved on August 4.
Seeding and Mulching	August 19, 2009	September 2, 2009	Tilled and drill-seeded entire cover surface, side slopes, and disturbed areas. Approximately ½ the seed was hand-broadcasted to minimize compaction caused by multiple passes with the tractor. After rain delays, seeding began on August 25 and the final step of crimping straw mulch into surface was completed and approved on September 2.

**Table 1 (cont'd.)  
Summary of Mixed Waste Landfill Subgrade and ET Cover Construction Activities**

<b>Activity</b>	<b>Start</b>	<b>Finish</b>	<b>Description</b>
<b>2009 ET Cover Construction Activities (cont'd.)</b>			
Supplemental Watering	August 12, 2009	October 20, 2009	Temporary irrigation system set up and tested August 12 through September 2. System operated from September 3 through October 20 to help establish native vegetation.
Administrative Fence	August 31, 2009	September 2, 2009	Perimeter administrative security fence installed around MWL.
Grading and Revegetation of the Borrow Pit	August 18, 2009	August 24, 2009	Borrow Pit Area graded for proper drainage from August 18-24. Will be seeded and reclaimed during the 2010 growing season if it is not transferred to SNL/NM Facilities for continued use.

- CMIP = Corrective Measures Implementation Plan
- CQA = Construction Quality Assurance.
- ET = Evapotranspirative
- MWL = Mixed Waste Landfill
- NMED = New Mexico Environment Department
- SNL/NM = Sandia National Laboratories/New Mexico
- SWPPP = Storm Water Pollution Prevention Program

**Table 2**  
**Summary of CQA Personnel Qualifications**  
**Mixed Waste Landfill ET Cover Construction Project**

<b>Position</b>	<b>Individual(s)</b>	<b>Qualifications</b>
<b>2006 Subgrade Construction</b>		
CQA Engineer	Kelly Peil, PhD, P.E.	Employed by MKM Engineers, Inc.; registered Professional Engineer in the State of New Mexico.
CQA Inspector	Corey Woods, E.I.T.	Employed by MKM Engineers, Inc.; experienced in performing appropriate field tests and making observations during construction activities.
CQA Certifying Engineer	Kelly Peil, PhD, P.E.	Employed by MKM Engineers, Inc.; registered Professional Engineer in the State of New Mexico.
<b>2009 ET Cover Construction</b>		
CQA Certifying Engineer	Donald T. Lopez, PE	Employed by URS Group, Inc.; registered Professional Engineer in the State of New Mexico.
CQA Inspector	Paul Molina, E.I.T.	Employed by URS Group, Inc.; experienced in performing appropriate field tests and making observations during construction activities.
CQA Engineers	Harry Buckner, P.E.	Employed by URS Group, Inc.; experienced in land surveying and is a registered Professional Engineer in the State of New Mexico.
	Marshall W. Nay, PhD, P.E., PLS	Employed by URS Group, Inc.; registered Professional Engineer in the State of New Mexico.

CQA = Construction Quality Assurance  
ET = Evapotranspirative

**Table 3**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Quality Resolution Meetings and Cover Layer Approval**

<b>Date</b>	<b>Meeting<sup>1</sup>/Form</b>	<b>Topic</b>	<b>Comments</b>
<b>Existing Subgrade</b>			
5/22/2009	Quality Resolution	Approval of Subgrade	QA and QC moisture/density testing results and QC survey reviewed and approved by the CQA Engineer. Subgrade approved - construction of the Biointrusion Layer may proceed.
5/22/2009	APPROVAL FORM	Subgrade Approval Form AP# 001	Subgrade surface approved. See approval form in Attachment 2 for additional information.
<b>Biointrusion Layer</b>			
5/26/2009	Quality Resolution	Construction field tests and thickness verification	Biointrusion Layer installation method determination and decision to place all of rock prior to adding dry, loose soil to surface to fill voids.
5/26/2009	APPROVAL FORM	Biointrusion Rock, Installation Procedure, and Thickness Verification Approval Form AP# 002	Biointrusion rock, installation procedure, and thickness verification requirement approved. See approval form in Attachment 2 for additional information.
6/1/2009	Quality Resolution	QC survey and QA verification survey coordination	50-foot verification grid system established.
6/4/2009	Quality Resolution	Rock volume and thickness issues	Additional rock required to complete the Biointrusion Layer. Thickness of the layer in relation to the construction method and nature of rock material was addressed.
6/5/2009	Quality Resolution	QA verification survey and approval for soil placement on the Biointrusion Layer surface	South portion of Biointrusion Layer approved - placement of soil over the rock can proceed except at 4 grid points on the west slope at the south end. Thickness at these points will be adjusted and resurveyed prior to approval.
6/5/2009	APPROVAL FORM	Biointrusion Thickness Approval Form AP# 003	Biointrusion Layer thickness approved (South). See approval form in Attachment 2 for additional information.
6/8/2009	APPROVAL FORM	Additional Biointrusion Rock Approval Form AP# 004	Additional Biointrusion Layer rock approved. See approval form in Attachment 2 for additional information.
6/9/2009	Quality Resolution	QA verification survey and approval for soil placement on the Biointrusion Layer surface	The thickness at the 4 points on the west slope at south end adjusted, resurveyed, and approved – placement of soil over the rock at these 4 grid points approved. Northwest portion of Biointrusion Layer approved except for 2 points on the north slope that will be adjusted, resurveyed, and approved prior to placement of soil.
6/9/2009	APPROVAL FORM	Biointrusion Thickness Approval Form AP# 005	Biointrusion Layer thickness approved (Northwest and South corrections). See approval form in Attachment 2 for additional information.

**Table 3 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Quality Resolution Meetings and Cover Layer Approval**

Date	Meeting <sup>1</sup> /Form	Topic	Comments
<b>Biointrusion Layer (cont'd.)</b>			
6/10/2009	Quality Resolution	Biointrusion Layer east-to-west surface design slope	Discussion whether to use the thin soil layer covering the Biointrusion Layer or the actual Biointrusion Layer rock surface as the new datum for establishing the 2% east-to-west surface design slope. It was decided the 2% surface design slope would be corrected during construction of the Native Soil and Topsoil Layers.
6/15/2009	Quality Resolution	QA verification survey and approval for soil placement on the Biointrusion Layer surface	Northeast portion of Biointrusion Layer approved – placement of soil over the rock can proceed. 2 points on the north slope at the northwest end of the Biointrusion Layer were corrected, resurveyed, and approved – placement of soil over the rock at these 2 points approved.
6/15/2009	APPROVAL FORM	<i>Biointrusion Layer Approval Form AP# 006</i>	<i>Biointrusion Layer (Northeast and Northwest corrections) approved. Entire Biointrusion Layer approved, see approval form in Attachment 2 for additional information.</i>
<b>Thin Soil Layer above Biointrusion Layer</b>			
6/16/2009	Quality Resolution	Biointrusion Layer and overlying thin soil layer thickness, construction of Native Soil Layer, establishing a new datum for the 2% east-to-west surface design slope, establishing the 6:1 side slopes, and K-sat testing	Thin soil layer over Biointrusion Layer to be new construction datum. Thin soil layer thickness to be a nominal 3 inches or less. Native Soil Layer construction procedure (using wedge lifts) to establish the 2% east-to-west surface design slope and 6:1 side slopes. K-sat testing requirements and potential schedule impacts discussed and clarified.
6/17/2009	Quality Resolution	QC survey of thin soil layer overlying the Biointrusion Layer and 2% surface design slope correction.	Review and approval of the thin soil layer QC survey results (average 3 inches thick). Correction of the 2% east-to-west surface design slope to be implemented using wedge lifts.
6/17/2009	APPROVAL FORM	<i>Biointrusion Layer/Thin Soil Layer Approval Form AP# 007</i>	<i>Thin soil layer overlying the Biointrusion Layer approved. See approval form in Attachment 2 for additional information.</i>
<b>Native Soil Layer</b>			
6/22/2009	Quality Resolution	Review of QC survey for Wedge Lifts 1 and 2, construction approach for Polishing Lifts 3 and 4, and QA density/moisture retest	Review and approval of Wedge Lifts 1 and 2. Approach for constructing Polishing Lifts 3 and 4 developed. QA density/moisture retest and approval of North Side Slope Lift 8.
6/22/2009	APPROVAL FORM	<i>Wedge Lifts 1 and 2 Approval Form AP# 008</i>	<i>Wedge Lifts 1 and 2 approved. See approval form in Attachment 2 for additional information.</i>

**Table 3 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Quality Resolution Meetings and Cover Layer Approval**

Date	Meeting <sup>1</sup> /Form	Topic	Comments
<b>Native Soil Layer (cont'd.)</b>			
6/30/2009	Quality Resolution	QC survey results for Polishing Lifts 3 and 4	QC survey results reviewed and Native Soil Polishing Lifts 3 and 4 approved. Installation of Native Soil Lift 5 approved.
6/30/2009	APPROVAL FORM	<i>Polishing Lifts 3 and 4 Approval Form AP# 009</i>	<i>Polishing Lifts 3 and 4 approved. See approval form in Attachment 2 for additional information.</i>
7/1/2009	Quality Resolution	Lift 5 low area	Low area on east side of Grid Block 7 located. Procedure to address consistent with CMIP developed and implemented. Area resurveyed and confirmed prior to installing Lift 6.
7/14/2009	Quality Resolution	Soil fill material shortfall for Native and Topsoil Layers addressed - QA review of EDi soil volume estimates for additional material needed	Stockpiled soil fill material based on CMIP estimates is not sufficient to complete construction of the Native Soil and Topsoil Layers. QA review of EDi additional soil material estimates completed, and path forward resolved.
7/30/2009	Quality Resolution	Native Soil Layer QA and QC verification surveys	Review of Native Soil QA and QC verification survey. Native Soil Layer approved with the exception of 9 locations to be corrected, resurveyed, and approved.
7/30/2009	APPROVAL FORM	<i>Native Soil Layer Approval Form AP# 010</i>	<i>Native Soil Layer thickness approval except for 9 locations requiring adjustment. See approval form in Attachment 2 for additional information.</i>
8/4/2009	Quality Resolution	Native Soil Layer Final QA and QC verification surveys	Corrections at the 9 grid points that required correction reviewed and verified.
8/4/2009	APPROVAL FORM	<i>Native Soil Layer Approval Form AP# 011</i>	<i>Final Native Soil Layer approval, including 9 grid point corrections, 2% east-to-west surface design slope, and 6:1 side slopes. See approval form in Attachment 2 for additional information.</i>
<b>Topsoil Layer</b>			
6/25/2009	Quality Resolution	Review of sieve results for available 3/8-inch crushed gravel to admix with topsoil fill material	No available aggregate met specifications for percent passing through the #4 sieve. Aggregate approved by the CQA Engineer in the formal submittal process.
8/12/2009	Quality Resolution	Topsoil Layer QA and QC verification surveys	QA and QC verification survey results reviewed and the Topsoil Layer approved.
8/12/2009	APPROVAL FORM	<i>Topsoil Layer Approval Form AP# 012</i>	<i>Topsoil Layer approved. See approval form in Attachment 2 for additional information.</i>
<b>Reclamation Seeding and Mulching</b>			
8/19/2009	Quality Resolution	Seed and mulch material inspections and elimination of starter fertilizer	Seed was visually inspected, labels checked, and approved. Mulch also approved. Elimination of fertilizer approved.

**Table 3 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Quality Resolution Meetings and Cover Layer Approval**

<b>Date</b>	<b>Meeting<sup>1</sup>/Form</b>	<b>Topic</b>	<b>Comments</b>
<b>Reclamation Seeding and Mulching (cont'd.)</b>			
8/25/2009	Quality Resolution	Increased seeding rate and application method	Approval of increased seeding rate (from 20 to 80 pounds per acre) and placement method (hand-broadcasting combined with drill-seeding).
8/25/2009	APPROVAL FORM	<i>Seed, Fertilizer, and Mulch Approval Form AP# 013</i>	<i>Increased seeding rate and method, elimination of starter fertilizer, and mulch approved. See approval form in Attachment 2 for additional information.</i>
9/2/2009	Quality Resolution	Inspection and approval of the seeding and mulch	QA approval of seed and mulch as placed on Topsoil Layer.
9/2/2009	APPROVAL FORM	<i>Reclamation Seeding and Mulching Approval Form AP# 014</i>	<i>Seed and mulch placement approved based on visual inspection. See approval form in Attachment 2 for additional information.</i>

<sup>1</sup> All Quality Resolution Meetings are documented in Attachment 1.

CQA = Construction Quality Assurance  
 EDi = Environmental Dimensions, Inc.  
 ET = Evapotranspirative  
 QA = Quality assurance  
 QC = Quality control

**Table 4**  
**Mixed Waste Landfill 2006 Subgrade Construction**  
**Standard Proctor CQC Laboratory Results**

Test Number	Date Sampled	Description	Gradation/ Classification Meet Specification <sup>1</sup>	Maximum Dry Density (lb/ft <sup>3</sup> )	Optimum Moisture Content (%)	Testing Laboratory <sup>2</sup>
MWL-ES-001	10/2/2006	Existing Surface	NA <sup>3</sup>	115.5	13.4	AMEC
MWL-ES-002	10/27/2006	Existing Surface	NA <sup>3</sup>	116.5	11.5	AMEC
MWL-ES-003	10/27/2006	Existing Surface	NA <sup>3</sup>	114.5	11.7	AMEC
MWL-ES-004	10/27/2006	Existing Surface	NA <sup>3</sup>	114.1	14.2	AMEC
MWL-SG-001	10/2/2006	Subgrade Stockpile	YES	113.2	10.9	AMEC
MWL-SG-002	10/31/2006	Subgrade Stockpile	YES	113.3	13.2	AMEC
MWL-SG-003	10/31/2006	Subgrade Stockpile	YES	117.4	12.9	AMEC
MWL-SG-004	10/31/2006	Subgrade Stockpile	YES	118.3	12.7	AMEC
MWL-SG-005	11/2/2006	Subgrade Stockpile	YES	116.7	12.9	AMEC
MWL-SG-006	11/2/2006	Subgrade Stockpile	YES	119.6	11.0	AMEC
MWL-SG-007	11/2/2006	Subgrade Stockpile	YES	115.4	12.9	AMEC
MWL-SG-008	11/8/2006	Subgrade Stockpile	YES	116.6	12.8	AMEC
MWL-SG-009	11/8/2006	Subgrade Stockpile	YES	113.6	12.9	AMEC
MWL-SG-010	11/8/2006	Subgrade Stockpile	YES	113.6	12.6	AMEC
MWL-SG-011 <sup>4</sup>	11/14/2006	Existing Soil	YES	121.2	10.0	AMEC
MWL-SG-012 <sup>4</sup>	11/14/2006	Existing Soil	YES	121.5	9.6	AMEC
MWL-SG-013	11/14/2006	Subgrade Stockpile	YES	116.0	12.3	AMEC
MWL-SG-014	11/16/2006	Subgrade Stockpile	YES	117.9	13.0	AMEC
MWL-SG-015	11/16/2006	Subgrade Stockpile	YES	116.7	12.9	AMEC
MWL-SG-016 <sup>5</sup>	11/20/2006	Subgrade Stockpile	YES	116.4	13.2	AMEC
MWL-SG-017 <sup>5</sup>	11/20/2006	Subgrade Stockpile	YES	116.2	13.1	AMEC
MWL-SG-018 <sup>5</sup>	11/20/2006	Subgrade Stockpile	YES	120.1	11.6	AMEC
MWL-SG-019	11/27/2006	Stockpile at Borrow Area <sup>6</sup>	YES	112.4	13.6	AMEC
MWL-SG-020	11/27/2006	Stockpile at Borrow Area	YES	118.4	12.7	AMEC
MWL-SG-021	11/27/2006	Stockpile at Borrow Area	YES	119.0	12.0	AMEC
MWL-SG-022	12/5/2006	Newly Excavated Soils <sup>7</sup>	YES	115.9	12.2	AMEC
MWL-SG-023	12/12/2006	Newly Excavated Soils <sup>7</sup>	YES	117.9	12.1	AMEC
MWL-SG-024	12/12/2006	Newly Excavated Soils <sup>7</sup>	YES	116.7	11.8	AMEC
MWL-SG-025	12/14/2006	Newly Excavated Soils <sup>7</sup>	YES	114.1	12.8	AMEC
MWL-SG-026 <sup>8</sup>	12/14/2006	Newly Excavated Soils <sup>7</sup>	YES	113.8	13.5	AMEC

<sup>1</sup> Gradation and Classification results are on same laboratory cover sheet with Standard Proctor results in Attachment 7.

<sup>2</sup> Testing laboratory is AMEC Earth & Environmental, Albuquerque, New Mexico (AMEC).

<sup>3</sup> NA = not applicable; there was no gradation specification for the existing surface.

<sup>4</sup> These samples were collected from TA-3 soil that was stockpiled at the MWL prior to Subgrade construction activities. Although the soil met the gradation/classification specifications, it was not used during Subgrade construction. This soil was later used during 2009 ET Cover construction.

<sup>5</sup> These samples were collected but the results were not used; previous samples were sufficient to cover the soil volume used for Subgrade construction.

<sup>6</sup> This soil was excavated and screened along with the initial subgrade material but was not hauled to the MWL until needed.

<sup>7</sup> This soil was excavated and screened after start of Subgrade installation due to additional volume needs.

<sup>8</sup> Proctor not used; soil volume related to Proctor not used until 2009 ET Cover construction.

CQC = Construction Quality Control

lb/ft<sup>3</sup> = pounds per cubic foot

**Table 5**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Standard Proctor CQC Laboratory Results**

Test Number	Date Sampled	Description	Gradation/ Classification Meet Specification <sup>1</sup>	Maximum Dry Density (lb/ft <sup>3</sup> )	Optimum Moisture Content (%)	Testing Laboratory <sup>2</sup>
SNL MWL 052009-1	5/20/2009	Native Soil	YES	116.7	10.6	AMEC
SNL MWL 052009-2	5/20/2009	Native Soil	YES	119.1	10.3	AMEC
SNL MWL 052009-3	5/20/2009	Native Soil	YES	119.3	10.3	AMEC
SNL MWL 052909-4	5/29/2009	Native Soil	YES	117.0	12.0	AMEC
SNL MWL 052909-5	5/29/2009	Native Soil	YES	115.7	12.6	AMEC
SNL MWL 052909-6	5/29/2009	Native Soil	YES	116.2	12.8	AMEC
SNL MWL 052909-7	5/29/2009	Native Soil	YES	115.8	12.3	AMEC
SNL MWL 052909-8	5/29/2009	Native Soil	YES	117.0	12.0	AMEC
SNL MWL 060909-9	6/9/2009	Native Soil	YES	116.2	12.5	AMEC
SNL MWL 060909-10	6/9/2009	Native Soil	YES	113.2	13.5	AMEC
SNL MWL 060909-11	6/9/2009	Native Soil	YES	112.2	14.6	AMEC
SNL MWL 060909-12	6/9/2009	Native Soil	YES	113.9	13.6	AMEC
SNL MWL 060909-13	6/9/2009	Native Soil	YES	115.9	12.3	AMEC
SNL MWL 062409-14	6/24/2009	Native Soil	YES	114.7	13.3	AMEC
SNL MWL 062409-15	6/24/2009	Native Soil	YES	117.7	11.8	AMEC
SNL MWL 062409-16	6/24/2009	Native Soil	YES	116.6	12.4	AMEC
SNL MWL 062409-17	6/24/2009	Native Soil	YES	116.9	11.0	AMEC
SNL MWL 062409-18	6/24/2009	Native Soil	YES	117.6	11.6	AMEC
SNL MWL 062909-19	6/29/2009	Native Soil	YES	117.7	12.0	AMEC
SNL MWL 062909-20	6/29/2009	Native Soil	YES	116.9	12.2	AMEC
SNL MWL 062909-21	6/29/2009	Native Soil	NO	115.9	12.7	AMEC
SNL MWL 062909-22	6/29/2009	Native Soil	YES	117.8	11.8	AMEC
SNL MWL 062909-23	6/29/2009	Native Soil	YES	116.6	11.6	AMEC
SNL MWL 062909-24	6/29/2009	Native Soil	YES	117.7	11.3	AMEC
SNL MWL 063009-25	6/30/2009	Native Soil	YES	118.4	11.7	AMEC
SNL MWL 063009-26	6/30/2009	Native Soil	YES	118.0	11.8	AMEC
SNL MWL 063009-27	6/30/2009	Native Soil	YES	118.3	11.2	AMEC
SNL MWL 063009-28	6/30/2009	Native Soil	YES	118.1	10.8	AMEC
SNL MWL 063009-29	6/30/2009	Native Soil	YES	118.2	11.6	AMEC
SNL MWL 063009-30	6/30/2009	Native Soil	YES	117.8	12.5	AMEC
SNL MWL Berm-1 <sup>3</sup>	6/30/2009	Native Soil	YES	115.0	10.0	AMEC
SNL MWL Berm-2 <sup>3</sup>	6/30/2009	Native Soil	YES	117.0	10.4	AMEC
SNL MWL Berm-3 <sup>3</sup>	6/30/2009	Native Soil	YES	116.2	10.2	AMEC
SNL MWL Berm-4	7/10/2009	Native Soil	YES	117.8	11.1	AMEC
SNL MWL Berm-5	7/10/2009	Native Soil	YES	117.0	11.1	AMEC
SNL MWL Berm-6	7/14/2009	Native Soil	YES	116.2	12.3	AMEC

**Table 5 (cont'd.)**  
**Mixed Waste Landfill 2009 MWL ET Cover Construction**  
**Standard Proctor CQC Laboratory Results**

Test Number	Date Sampled	Description	Gradation/ Classification Meet Specification <sup>1</sup>	Maximum Dry Density (lb/ft <sup>3</sup> )	Optimum Moisture Content (%)	Testing Laboratory <sup>2</sup>
SNL MWL Berm-7	7/14/2009	Native Soil	YES	116.6	12.7	AMEC
SNL MWL Berm-8	7/14/2009	Native Soil	YES	118.6	11.3	AMEC
SNL MWL Berm-9	7/16/2009	Native Soil	YES	114.6	13.0	AMEC
SNL MWL Berm-10	7/16/2009	Native Soil	YES	116.0	11.2	AMEC
SNL MWL Berm-11	7/16/2009	Native Soil	YES	115.3	13.2	AMEC
SNL MWL Berm-12	7/16/2009	Native Soil	YES	117.7	12.1	AMEC
SNL MWL Berm-13	7/16/2009	Native Soil	YES	115.0	13.0	AMEC
SNL MWL Berm-14	7/16/2009	Native Soil	YES	114.2	13.5	AMEC
SNL MWL Berm-15	7/16/2009	Native Soil	YES	115.9	11.3	AMEC
SNL MWL Berm-16	7/16/2009	Native Soil	YES	116.0	14.4	AMEC
SNL MWL Berm-17	7/23/2009	Native Soil	YES	114.9	15.0	AMEC
SNL MWL Berm-18	7/23/2009	Native Soil	YES	114.7	11.6	AMEC
SNL MWL Berm-19	7/23/2009	Native Soil	YES	117.5	10.9	AMEC
SNL MWL 060209-4	6/2/2009	Topsoil	YES	118.9	9.6	AMEC
SNL MWL 060209-6	6/2/2009	Topsoil	YES	116.2	10.9	AMEC
SNL MWL 071009-8	7/10/2009	Topsoil	YES	117.8	11.8	AMEC
SNL MWL 071409-10	7/14/2009	Topsoil	YES	118.0	11.2	AMEC

<sup>1</sup> Gradation and Classification results are presented in Tables 6 and 7, and are on same laboratory cover sheet with Standard Proctor results in Attachment 7.

<sup>2</sup> Testing laboratory is AMEC Earth & Environmental, Albuquerque, New Mexico (AMEC).

<sup>3</sup> Sample identification number on laboratory data sheet in Attachment 7 incorrectly spells 'berm' as 'burn' for these samples.

CQC = Construction Quality Control

ET = Evapotranspirative

lb/ft<sup>3</sup> = Pounds per cubic foot

MWL = Mixed Waste Landfill

**Table 6**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Native Soil Layer Gradation and Classification CQC Laboratory Results**

Test Number	Date Sampled	Material Description	% Passing Sieve Size						Soil Classification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200	
SNL MWL 052009-1	5/20/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	95	87	34	SC-SM
SNL MWL 052009-2	5/20/2009	Native Soil Stockpile <sup>1</sup>	100	98	97	90	81	26	SC-SM
SNL MWL 052009-3	5/20/2009	Native Soil Stockpile <sup>1</sup>	100	98	98	90	82	26	SC-SM
SNL MWL 052909-4	5/29/2009	Native Soil Stockpile <sup>1</sup>	99	98	98	90	81	31	SM
SNL MWL 052909-5	5/29/2009	Native Soil Stockpile <sup>1</sup>	98	98	97	92	86	36	SC-SM
SNL MWL 052909-6	5/29/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	96	90	38	SC
SNL MWL 052909-7	5/29/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	96	90	37	SC-SM
SNL MWL 052909-8	5/29/2009	Native Soil Stockpile <sup>1</sup>	99	99	98	94	87	32	SC-SM
SNL MWL 060909-9	6/9/2009	Native Soil Stockpile <sup>1</sup>	99	99	98	93	87	36	SC
SNL MWL 060909-10	6/9/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	95	88	38	SC
SNL MWL 060909-11	6/9/2009	Native Soil Stockpile <sup>1</sup>	99	99	98	94	88	29	SC-SM
SNL MWL 060909-12	6/9/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	94	87	35	SC-SM
SNL MWL 060909-13	6/9/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	93	86	27	SC-SM
SNL MWL 062409-14	6/24/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	95	89	38	SC-SM
SNL MWL 062409-15	6/24/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	95	89	35	SC-SM
SNL MWL 062409-16	6/24/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	93	86	33	SM
SNL MWL 062409-17	6/24/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	95	88	33	SM
SNL MWL 062409-18	6/24/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	93	86	33	SM
SNL MWL 062909-19	6/29/2009	Native Soil Stockpile <sup>1</sup>	99	98	97	93	86	33	SC-SM
SNL MWL 062909-20	6/29/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	96	90	36	SC-SM
SNL MWL 062909-21	6/29/2009	Native Soil Stockpile <sup>1</sup>	100	99	98	93	86	41	SC-SM
SNL MWL 062909-22	6/29/2009	Native Soil Stockpile <sup>1</sup>	100	100	100	96	90	36	SM
SNL MWL 062909-23	6/29/2009	Native Soil Stockpile <sup>1</sup>	100	99	99	93	88	36	SM
SNL MWL 062909-24	6/29/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	94	88	34	SC-SM
SNL MWL 063009-25	6/30/2009	Native Soil Stockpile <sup>1</sup>	99	98	98	92	86	34	SC-SM
SNL MWL 063009-26	6/30/2009	Native Soil Stockpile <sup>1</sup>	99	98	97	93	87	36	SC-SM
SNL MWL 063009-27	6/30/2009	Native Soil Stockpile <sup>1</sup>	98	97	96	91	85	32	SM
SNL MWL 063009-28	6/30/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	95	88	33	SM
SNL MWL 063009-29	6/30/2009	Native Soil Stockpile <sup>1</sup>	100	99	99	94	88	33	SM
SNL MWL 063009-30	6/30/2009	Native Soil Stockpile <sup>1</sup>	100	100	99	96	91	39	SC-SM
SNL MWL Berm-1 <sup>2</sup>	6/30/2009	Native Soil Excavated <sup>3</sup>	100	99	99	96	92	30	SM
SNL MWL Berm-2 <sup>2</sup>	6/30/2009	Native Soil Excavated <sup>3</sup>	99	98	97	92	86	27	SM

**Table 6 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction Phase CQC**  
**Native Soil Layer Gradation and Classification Laboratory Results**

Test Number	Date Sampled	Material Description	% Passing Sieve Size						Soil Classification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200	
SNL MWL Berm-3 <sup>2</sup>	6/30/2009	Native Soil Excavated <sup>3</sup>	99	97	96	91	86	26	SM
SNL MWL Berm-4	7/10/2009	Native Soil Excavated	100	100	100	97	90	28	SC-SM
SNL MWL Berm-5	7/10/2009	Native Soil Excavated <sup>3</sup>	100	98	97	91	85	24	SM
SNL MWL Berm-6	7/14/2009	Native Soil Excavated <sup>3</sup>	100	100	100	95	88	32	SM
SNL MWL Berm-7	7/14/2009	Native Soil Excavated <sup>3</sup>	100	99	99	94	88	32	SC-SM
SNL MWL Berm-8	7/14/2009	Native Soil Excavated <sup>3</sup>	100	100	99	95	89	36	SC-SM
SNL MWL Berm-9	7/16/2009	Native Soil Excavated <sup>3</sup>	100	99	99	97	92	38	SC-SM
SNL MWL Berm-10	7/16/2009	Native Soil Excavated <sup>3</sup>	100	100	99	95	90	30	SM
SNL MWL Berm-11	7/16/2009	Native Soil Excavated <sup>3</sup>	100	100	100	96	91	36	SC-SM
SNL MWL Berm-12	7/16/2009	Native Soil Excavated <sup>3</sup>	100	99	98	94	89	32	SC-SM
SNL MWL Berm-13	7/16/2009	Native Soil Excavated <sup>3</sup>	100	100	99	94	89	37	SC
SNL MWL Berm-14	7/16/2009	Native Soil Excavated <sup>3</sup>	100	99	99	97	92	34	SM
SNL MWL Berm-15	7/16/2009	Native Soil Excavated <sup>3</sup>	100	100	100	97	92	37	SC-SM
SNL MWL Berm-16	7/16/2009	Native Soil Excavated <sup>3</sup>	100	100	99	96	90	34	SC-SM
SNL MWL Berm-17	7/23/2009	Native Soil Excavated <sup>3</sup>	100	98	98	93	87	34	SM
SNL MWL Berm-18	7/23/2009	Native Soil Excavated <sup>3</sup>	97	95	94	91	86	26	SM
SNL MWL Berm-19	7/23/2009	Native Soil Excavated <sup>3</sup>	100	100	100	97	92	34	SM

<sup>1</sup> Native soil excavated, screened to 2-inch minus, and stockpiled in 2006.

<sup>2</sup> Sample identification number on laboratory data sheet incorrectly spells 'berm' as 'burm' for these samples.

<sup>3</sup> Native soil excavated, screened to 2-inch minus, and stockpiled during 2009 ET Cover construction.

**Table 7**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Topsoil Gradation and Classification CQC Laboratory Results**

Test Number	Date Sampled	Material Description <sup>1</sup>	% Passing Sieve Size						Soil Classification	Gradation/Classification Meet Specification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200		
SNL MWL -060209-1	6/2/2009	Topsoil excavated and screened in 2006	100	100	100	98	92	32	SM	YES
SNL MWL -060209-2	6/2/2009	Topsoil excavated and screened in 2006	100	100	100	94	86	29	SM	YES
SNL MWL -060209-3	6/2/2009	Topsoil excavated and screened in 2006	100	100	100	98	93	33	SM	YES
SNL MWL -060209-4	6/2/2009	Topsoil excavated and screened in 2006	100	100	100	98	91	30	SM	YES
SNL MWL -060209-5	6/2/2009	Topsoil excavated and screened in 2006	100	100	100	97	90	30	SM	YES
SNL MWL -060209-6	6/2/2009	Topsoil excavated and screened in 2006	100	100	99	96	90	31	SM	YES
SNL MWL -071009-7	7/10/2009	Topsoil excavated and screened in 2009 from west side of borrow area	100	100	100	97	92	27	SM	YES
SNL MWL 071009-8	7/10/2009	Topsoil excavated and screened in 2009 from west site of borrow area	100	99	99	95	89	21	SM	YES
SNL MWL 071009-9	7/10/2009	Topsoil excavated and screened in 2009 from west side of borrow area	100	100	99	96	90	26	SM	YES
SNL MWL 071409-10	7/14/2009	Topsoil excavated and screened in 2009 from west side of borrow area	100	99	99	95	89	31	SM	YES
SNL MWL 071609-11	7/16/2009	Topsoil excavated and screened in 2009 from west side of borrow area	100	100	100	98	94	36	SC-SM	YES
SNL MWL 071609-12	7/23/2009	Topsoil excavated and screened in 2009 from south side of borrow area	100	100	100	96	90	29	SM	YES

<sup>1</sup> All samples of topsoil fill were collected prior to mixing with 3/8 inch crushed gravel.

**Table 8**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Saturated Hydraulic Conductivity CQC Laboratory Results**

<b>Sample Description</b>	<b>Location</b>	<b>Date Sampled</b>	<b>Sample Compaction</b>	<b>Average Saturated Hydraulic Conductivity<sup>1</sup> (K<sub>sat</sub>) in cm/s<sup>2</sup></b>
Native Soil Wedge Lift 1	Grid Block 8	6/19/2009	90.0%	<b>4.02E-04</b>
Native Soil Wedge Lift 2	Grid Block 11	6/22/2009	89.0%	<b>3.58E-05</b>
Native Soil Lift 3-1	Collected Prior to Placement	6/17/2009	90.2%	<b>1.59E-06</b>
Native Soil Lift 3-2	Collected Prior to Placement	6/17/2009	89.7%	<b>1.81E-06</b>
Native Soil Lift 3-3	Collected Prior to Placement	6/17/2009	91.0%	<b>1.98E-06</b>
Native Soil Lift 4	Grid Block 2	6/30/2009	84.6%	<b>2.52E-04</b>
Native Soil Lift 4	Grid Block 6	6/30/2009	81.2%	<b>1.87E-04</b>
Native Soil Lift 4	Grid Block 9	6/30/2009	89.8%	<b>2.14E-04</b>
Native Soil Lift 5	Grid Block 1	7/9/2009	90.0%	<b>2.66E-04</b>
Native Soil Lift 5	Grid Block 4 Retest	7/8/2009	95.3%	<b>1.43E-04</b>
Native Soil Lift 5	Grid Block 8 Retest	7/8/2009	94.6%	<b>1.63E-04</b>
Native Soil Lift 6-1	Grid Block 3	7/16/2009	90.2%	<b>3.05E-04</b>
Native Soil Lift 6-2	Grid Block 6	7/16/2009	90.3%	<b>3.51E-04</b>
Native Soil Lift 6-3	Grid Block 12	7/16/2009	89.5%	<b>2.55E-04</b>
Native Soil Lift 7	Grid Block 1 Retest	7/20/2009	94.8%	<b>2.18E-04</b>
Native Soil Lift 7	Grid Block 5 Retest	7/20/2009	94.8%	<b>1.87E-04</b>
Native Soil Lift 7	Grid Block 13	7/22/2009	89.5%	<b>2.50E-04</b>
Native Soil Lift 8	Grid Block 2	7/27/2009	90.4%	<b>1.22E-06</b>
Native Soil Lift 8	Grid Block 7	7/27/2009	90.0%	<b>1.23E-06</b>
Native Soil Lift 8	Grid Block 9	7/27/2009	90.0%	<b>1.36E-06</b>
<b>Average</b>			<b>90.2%</b>	<b>1.62E-04</b>
<b>Geometric Mean</b>			<b>90.2%</b>	<b>4.72E-05</b>
<b>Median</b>			<b>90.0%</b>	<b>1.87E-04</b>

<sup>1</sup> Maximum Value is 4.6E-04.

<sup>2</sup> Tests were performed using ASTM D5856 Rigid Wall Method.

CQC = Construction Quality Control

ET = Evapotranspirative

**Table 9**  
**Mixed Waste Landfill 2006 Subgrade Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft <sup>3</sup> )	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Specification	Meets Moisture Specification	Testing Laboratory <sup>3</sup>
MWL-ES1-001	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA <sup>2</sup>	90.1	13.8	NA <sup>2</sup>	NA <sup>2</sup>	AMEC
MWL-ES1-002	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	96.8	7.5	NA	NA	AMEC
MWL-ES1-003	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	95.4	7.8	NA	NA	AMEC
MWL-ES1-004	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	91.8	10.2	NA	NA	AMEC
MWL-ES1-005	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	92.5	7.1	NA	NA	AMEC
MWL-ES1-006	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	93.3	7.4	NA	NA	AMEC
MWL-ES1-007	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	96.1	9.5	NA	NA	AMEC
MWL-ES1-008	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	93.7	10.6	NA	NA	AMEC
MWL-ES1-009	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	94.1	8.0	NA	NA	AMEC
MWL-ES1-010	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	89.6	11.9	NA	NA	AMEC
MWL-ES1-011	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	93.2	8.4	NA	NA	AMEC
MWL-ES1-012	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	>100	8.1	NA	NA	AMEC
MWL-ES1-013	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	98.9	8.8	NA	NA	AMEC
MWL-ES1-014	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	95.4	8.8	NA	NA	AMEC
MWL-ES1-015	10/27/2006	Existing Soil Surface	Figure 5	115.5	13.4	NA	95.1	11.9	NA	NA	AMEC
MWL-SG1-001	10/31/2006	Subgrade Lift 1	Figure 6	113.2	10.9	90	100.0	9.1	YES	YES	AMEC
MWL-SG1-002	10/31/2006	Subgrade Lift 1	Figure 6	113.2	10.9	90	99.6	9.8	YES	YES	AMEC
MWL-SG2-001	10/31/2006	Subgrade Lift 2	Figure 7	113.2	10.9	90	97.7	11.1	YES	YES	AMEC
MWL-SG2-002	10/31/2006	Subgrade Lift 2	Figure 7	113.2	10.9	90	99.8	10.6	YES	YES	AMEC
MWL-SG3-001	10/31/2006	Subgrade Lift 3	Figure 8	113.2	10.9	90	94.3	10.0	YES	YES	AMEC
MWL-SG3-002	10/31/2006	Subgrade Lift 3	Figure 8	113.2	10.9	90	93.0	10.6	YES	YES	AMEC
MWL-SG3-003	10/31/2006	Subgrade Lift 3	Figure 8	113.2	10.9	90	99.8	10.0	YES	YES	AMEC
MWL-SG3-004	10/31/2006	Subgrade Lift 3	Figure 8	113.2	10.9	90	96.8	10.7	YES	YES	AMEC
MWL-SG3-005	10/31/2006	Subgrade Lift 3	Figure 8	113.2	10.9	90	100.0	9.0	YES	YES	AMEC
MWL-SG4-001	10/31/2006	Subgrade Lift 4	Figure 9	113.2	10.9	90	93.8	10.7	YES	YES	AMEC

**Table 9 (cont'd.)**  
**Mixed Waste Landfill 2006 Subgrade Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft <sup>3</sup> )	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Specification	Meets Moisture Specification	Testing Laboratory <sup>3</sup>
MWL-SG4-002	10/31/2006	Subgrade Lift 4	Figure 9	113.2	10.9	90	94.3	10.5	YES	YES	AMEC
MWL-SG4-003	11/1/2006	Subgrade Lift 4	Figure 9	113.2	10.9	90	91.0	11.1	YES	YES	AMEC
MWL-SG4-004	11/1/2006	Subgrade Lift 4	Figure 9	113.2	10.9	90	98.2	9.6	YES	YES	AMEC
MWL-SG4-005	11/2/2006	Subgrade Lift 4	Figure 9	113.2	10.9	90	90.4	8.9	YES	YES	AMEC
MWL-SG5-001	11/1/2006	Subgrade Lift 5	Figure 10	113.2	10.9	90	96.1	10.2	YES	YES	AMEC
MWL-SG6-001	11/2/2006	Subgrade Lift 6	Figure 11	113.2	10.9	90	100.0	9.2	YES	YES	AMEC
MWL-SG6-002	11/2/2006	Subgrade Lift 6	Figure 11	113.2	10.9	90	97.6	11.0	YES	YES	AMEC
MWL-SG6-003	11/2/2006	Subgrade Lift 6	Figure 11	113.2	10.9	90	95.0	12.1	YES	YES	AMEC
MWL-SG7-001	11/6/2006	Subgrade Lift 7	Figure 12	113.3	13.2	90	96.9	11.2	YES	YES	AMEC
MWL-SG8-001	11/7/2006	Subgrade Lift 8	Figure 13	113.3	13.2	90	98.4	11.5	YES	YES	AMEC
MWL-SG8-002	11/7/2006	Subgrade Lift 8	Figure 13	113.3	13.2	90	94.8	11.5	YES	YES	AMEC
MWL-SG8-003	11/7/2006	Subgrade Lift 8	Figure 13	113.3	13.2	90	92.1	12.5	YES	YES	AMEC
MWL-SG9-001	11/7/2006	Subgrade Lift 9	Figure 14	117.4	12.9	90	91.6	14.2	YES	YES	AMEC
MWL-SG9-002	11/7/2006	Subgrade Lift 9	Figure 14	117.4	12.9	90	96.9	11.0	YES	YES	AMEC
MWL-SG9-003	11/7/2006	Subgrade Lift 9	Figure 14	117.4	12.9	90	93.8	11.0	YES	YES	AMEC
MWL-SG9-004	11/8/2006	Subgrade Lift 9	Figure 14	117.4	12.9	90	92.3	12.7	YES	YES	AMEC
MWL-SG9-005	11/9/2006	Subgrade Lift 9	Figure 14	118.3	12.7	90	95.7	11.7	YES	YES	AMEC
MWL-SG10-001	11/9/2006	Subgrade Lift 10	Figure 15	118.3	12.7	90	94.0	13.8	YES	YES	AMEC
MWL-SG10-002	11/9/2006	Subgrade Lift 10	Figure 15	118.7	12.4	90	93.3	11.3	YES	YES	AMEC
MWL-SG10-003	11/9/2006	Subgrade Lift 10	Figure 15	118.7	12.4	90	91.2	11.7	YES	YES	AMEC
MWL-SG10-004	11/14/2006	Subgrade Lift 10	Figure 15	119.6	11.2	90	94.4	9.6	YES	YES	AMEC
MWL-SG10-005	11/14/2006	Subgrade Lift 10	Figure 15	119.6	11.2	90	98.2	9.6	YES	YES	AMEC
MWL-SG10-006	11/14/2006	Subgrade Lift 10	Figure 15	119.6	11.2	90	94.4	12.5	YES	YES	AMEC
MWL-SG10-007	11/14/2006	Subgrade Lift 10	Figure 15	119.6	11.2	90	95.8	9.4	YES	YES	AMEC
MWL-SG10-008	11/14/2006	Subgrade Lift 10	Figure 15	119.6	11.2	90	98.7	10.9	YES	YES	AMEC
MWL-SG10-009	11/14/2006	Subgrade Lift 10	Figure 15	115.4	12.9	90	92.3	13.9	YES	YES	AMEC
MWL-SG10-010	11/14/2006	Subgrade Lift 10	Figure 15	115.4	12.9	90	99.1	12.4	YES	YES	AMEC
MWL-SG11-001	11/15/2006	Subgrade Lift 11	Figure 16	115.4	12.9	90	99.3	11.8	YES	YES	AMEC
MWL-SG11-002	11/15/2006	Subgrade Lift 11	Figure 16	115.4	12.9	90	97.8	14.2	YES	YES	AMEC
MWL-SG11-003	11/16/2006	Subgrade Lift 11	Figure 16	116.5	13.0	90	93.5	14.1	YES	YES	AMEC
MWL-SG11-004	11/16/2006	Subgrade Lift 11	Figure 16	116.5	13.0	90	98.4	11.5	YES	YES	AMEC
MWL-SG11-005	11/16/2006	Subgrade Lift 11	Figure 16	116.5	13.0	90	98.2	12.7	YES	YES	AMEC

**Table 9 (cont'd.)**  
**Mixed Waste Landfill 2006 Subgrade Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>1</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Specification	Meets Moisture Specification	Testing Laboratory <sup>3</sup>
MWL-SG11-006	11/16/2006	Subgrade Lift 11	Figure 16	113.5	13.0	90	93.9	11.8	YES	YES	AMEC
MWL-SG11-007	11/16/2006	Subgrade Lift 11	Figure 16	113.5	13.0	90	99.6	14.1	YES	YES	AMEC
MWL-SG11-008	11/16/2006	Subgrade Lift 11	Figure 16	113.5	13.0	90	100.0	12.6	YES	YES	AMEC
MWL-SG11-009	11/20/2006	Subgrade Lift 11	Figure 16	113.5	13.0	90	100.0	14.1	YES	YES	AMEC
MWL-SG11-010	11/20/2006	Subgrade Lift 11	Figure 16	113.5	13.0	90	96.3	12.0	YES	YES	AMEC
MWL-SG11-011	11/21/2006	Subgrade Lift 11	Figure 16	113.6	12.6	90	96.8	14.3	YES	YES	AMEC
MWL-SG11-012	11/21/2006	Subgrade Lift 11	Figure 16	113.6	12.6	90	100.0	11.8	YES	YES	AMEC
MWL-SG11-013	11/21/2006	Subgrade Lift 11	Figure 16	113.6	12.6	90	92.9	13.7	YES	YES	AMEC
MWL-SG11-014	11/21/2006	Subgrade Lift 11	Figure 16	113.6	12.6	90	93.7	12.3	YES	YES	AMEC
MWL-SG11-015	11/21/2006	Subgrade Lift 11	Figure 16	116.0	12.3	90	97.8	10.7	YES	YES	AMEC
MWL-SG11-016	11/21/2006	Subgrade Lift 11	Figure 16	116.0	12.3	90	98.4	11.6	YES	YES	AMEC
MWL-SG11-017	11/21/2006	Subgrade Lift 11	Figure 16	116.0	12.3	90	97.2	13.9	YES	YES	AMEC
MWL-SG11-018	11/22/2006	Subgrade Lift 11	Figure 16	116.0	12.3	90	100.0	13.2	YES	YES	AMEC
MWL-SG12-001	11/30/2006	Subgrade Lift 12	Figure 17	117.9	13.0	90	93.2	12.2	YES	YES	AMEC
MWL-SG12-002	11/30/2006	Subgrade Lift 12	Figure 17	117.9	13.0	90	96.9	11.7	YES	YES	AMEC
MWL-SG12-003	11/30/2006	Subgrade Lift 12	Figure 17	118.1	13.3	90	99.7	11.8	YES	YES	AMEC
MWL-SG12-004	11/30/2006	Subgrade Lift 12	Figure 17	118.1	13.3	90	99.1	12.2	YES	YES	AMEC
MWL-SG12-005	12/5/2006	Subgrade Lift 12	Figure 17	118.4	12.7	90	100.0	12.3	YES	YES	AMEC
MWL-SG12-006	12/5/2006	Subgrade Lift 12	Figure 17	118.4	12.7	90	94.6	12.4	YES	YES	AMEC
MWL-SG12-007	12/7/2006	Subgrade Lift 12	Figure 17	112.4	13.6	90	100.0	13.1	YES	YES	AMEC
MWL-SG12-008	12/7/2006	Subgrade Lift 12	Figure 17	112.4	13.6	90	100.0	14.1	YES	YES	AMEC
MWL-SG12-009	12/7/2006	Subgrade Lift 12	Figure 17	119.0	12.0	90	94.4	13.6	YES	YES	AMEC
MWL-SG12-010	12/7/2006	Subgrade Lift 12	Figure 17	119.0	12.0	90	92.8	11.9	YES	YES	AMEC
MWL-SG12-011	12/13/2006	Subgrade Lift 12	Figure 17	115.9	12.2	90	99.1	10.8	YES	YES	AMEC
MWL-SG12-012	12/13/2006	Subgrade Lift 12	Figure 17	115.9	12.2	90	97.6	12.1	YES	YES	AMEC
MWL-SG12-013	12/15/2006	Subgrade Lift 12	Figure 17	115.9	12.2	90	96.9	12.3	YES	YES	AMEC
MWL-SG12-014	12/15/2006	Subgrade Lift 12	Figure 17	117.9	12.1	90	96.0	13.7	YES	YES	AMEC
MWL-SG12-015	12/18/2006	Subgrade Lift 12	Figure 17	117.9	12.1	90	92.2	14.0	YES	YES	AMEC
MWL-SG12-016	12/18/2006	Subgrade Lift 12	Figure 17	117.9	12.1	90	94.2	13.1	YES	YES	AMEC

<sup>1</sup> lb/ft<sup>3</sup> = Pounds per cubic foot.

<sup>2</sup> NA = Not applicable; there were no Maximum Density and Moisture Content specifications for the existing surface.

<sup>3</sup> AMEC = AMEC Earth & Environmental, Albuquerque, New Mexico.

**Table 10**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 1 <sup>4</sup>	120.1	11.6	90%	97	11.4	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 2 <sup>4</sup>	120.1	11.6	90%	99	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 3 <sup>4</sup>	120.1	11.6	90%	100	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 4 <sup>4</sup>	120.1	11.6	90%	100	9.9	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 5 <sup>4</sup>	120.1	11.6	90%	98	11.6	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 6 <sup>4</sup>	120.1	11.6	90%	98	10.5	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 7 <sup>4</sup>	120.1	11.6	90%	100	10.2	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 8 <sup>4</sup>	120.1	11.6	90%	98	11.5	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 9 <sup>4</sup>	120.1	11.6	90%	98	9.7	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 10 <sup>4</sup>	120.1	11.6	90%	96	11.6	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 11 <sup>4</sup>	120.1	11.6	90%	99	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 12 <sup>4</sup>	120.1	11.6	90%	97	10.2	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 13 <sup>4</sup>	120.1	11.6	90%	98	10.2	YES	YES	AMEC
EDi North Slope Lift 1	6/17/2009	North Slope, Lift 1	North Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.2	YES	YES	AMEC
EDi North Slope Lift 2	6/17/2009	North Slope, Lift 2	North Side Slope <sup>5</sup>	120.1	11.6	90%	99	10.8	YES	YES	AMEC
EDi North Slope Lift 3	6/17/2009	North Slope, Lift 3	North Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.8	YES	YES	AMEC
EDi North Slope Lift 4	6/17/2009	North Slope, Lift 4	North Side Slope <sup>5</sup>	120.1	11.6	90%	95	12.7	YES	YES	AMEC
EDi North Slope Lift 5	6/18/2009	North Slope, Lift 5	North Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.8	YES	YES	AMEC
EDi North Slope Lift 6	6/18/2009	North Slope, Lift 6	North Side Slope <sup>5</sup>	120.1	11.6	90%	99	11.1	YES	YES	AMEC
EDi North Slope Lift 7	6/19/2009	North Slope, Lift 7	North Side Slope <sup>5</sup>	115.8	12.3	90%	93	14.3	YES	YES	AMEC
EDi North Slope Lift 8	6/19/2009	North Slope, Lift 8	North Side Slope <sup>5</sup>	115.8	12.3	90%	93	14.2	YES	YES	AMEC
EDi East Slope Lift 1	6/17/2009	East Slope, Lift 1	East Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.0	YES	YES	AMEC
EDi East Slope Lift 2	6/17/2009	East Slope, Lift 2	East Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.2	YES	YES	AMEC
EDi East Slope Lift 3	6/17/2009	East Slope, Lift 3	East Side Slope <sup>5</sup>	120.1	11.6	90%	97	12.2	YES	YES	AMEC
EDi East Slope Lift 4	6/17/2009	East Slope, Lift 4	East Side Slope <sup>5</sup>	120.1	11.6	90%	98	11.3	YES	YES	AMEC
EDi East Slope Lift 5	6/18/2009	East Slope, Lift 5	East Side Slope <sup>5</sup>	120.1	11.6	90%	96	11.3	YES	YES	AMEC
EDi East Slope Lift 6	6/18/2009	East Slope, Lift 6	East Side Slope <sup>5</sup>	120.1	11.6	90%	99	11.7	YES	YES	AMEC
EDi West Slope Lift 1	6/17/2009	West Slope, Lift 1	West Side Slope <sup>5</sup>	120.1	11.6	90%	96	11.7	YES	YES	AMEC
EDi West Slope Lift 2	6/17/2009	West Slope, Lift 2	West Side Slope <sup>5</sup>	120.1	11.6	90%	98	11.8	YES	YES	AMEC
EDi West Slope Lift 3	6/17/2009	West Slope, Lift 3	West Side Slope <sup>5</sup>	120.1	11.6	90%	96	11.1	YES	YES	AMEC
EDi West Slope Lift 4	6/17/2009	West Slope, Lift 4	West Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.1	YES	YES	AMEC
EDi West Slope Lift 5	6/18/2009	West Slope, Lift 5	West Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.3	YES	YES	AMEC

**Table 10 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
EDi West Slope Lift 6	6/18/2009	West Slope, Lift 6	West Side Slope <sup>5</sup>	120.1	11.6	90%	98	11.9	YES	YES	AMEC
EDi Dog Leg Lift 1	6/18/2009	Lift 1 on Dog Leg	Dog Leg Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.9	YES	YES	AMEC
EDi Dog Leg Lift 2	6/18/2009	Lift 2 on Dog Leg	Dog Leg Side Slope <sup>5</sup>	120.1	11.6	90%	97	11.1	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 7	115.8	12.3	90%	96	11.1	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 8	115.8	12.3	90%	97	12.4	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 11	115.8	12.3	90%	94	12.2	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 7	115.8	12.3	90%	97	11.7	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 8	115.8	12.3	90%	96	10.6	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 11	115.8	12.3	90%	96	11.5	YES	YES	AMEC
EDi NS Lift 3	6/23/2009	Native Soil Lift 3	Grid Block 1	115.8	12.3	90%	100	10.7	YES	YES	AMEC
EDi NS Lift 3	6/23/2009	Native Soil Lift 3	Grid Block 2	115.8	12.3	90%	100	10.3	YES	YES	AMEC
EDi NS Lift 3	6/24/2009	Native Soil Lift 3	Grid Block 6	117.0	12.0	90%	97	11.6	YES	YES	AMEC
EDi NS Lift 3	6/24/2009	Native Soil Lift 3	Grid Block 8	117.0	12.0	90%	95	10.9	YES	YES	AMEC
EDi NS Lift 3	6/26/2009	Native Soil Lift 3	Grid Block 11 SE	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift 3	6/26/2009	Native Soil Lift 3	Grid Block 11 NE	117.0	12.0	90%	91	12.4	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 1	117.0	12.0	90%	100	13.8	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 2	117.0	12.0	90%	98	11.6	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 3	117.0	12.0	90%	94	13.8	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 4	117.0	12.0	90%	97	12.4	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 5	117.0	12.0	90%	97	12.9	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 6	117.0	12.0	90%	100	13.5	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 7	117.0	12.0	90%	99	11.6	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 8	117.0	12.0	90%	100	12.7	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 9	117.0	12.0	90%	100	12.0	YES	YES	AMEC
EDi NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 10	117.0	12.0	90%	97	12.0	YES	YES	AMEC
EDi NS Lift 4	6/29/2009	Native Soil Lift 4	Grid Block 11	117.0	12.0	90%	98	10.1	YES	YES	AMEC
EDi NS Lift 4	6/29/2009	Native Soil Lift 4	Grid Block 12	117.0	12.0	90%	96	13.1	YES	YES	AMEC
EDi NS Lift 4	6/29/2009	Native Soil Lift 4	Grid Block 13	117.0	12.0	90%	97	10.9	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 1	117.0	12.0	90%	94	12.3	YES	YES	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/9/2009	Native Soil Lift 5	Grid Block 1	117.0	12.0	90%	95	10.9	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 2	117.0	12.0	90%	91	6.8	YES	<b>NO</b>	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/9/2009	Native Soil Lift 5	Grid Block 2	117.0	12.0	90%	100	10.5	YES	YES	AMEC

**Table 10 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 3	117.0	12.0	90%	89	12.2	<b>NO</b>	YES	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/9/2009	Native Soil Lift 5	Grid Block 3	117.0	12.0	90%	99	12.2	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 4	117.0	12.0	90%	95	11.9	YES	YES	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/9/2009	Native Soil Lift 5	Grid Block 4	117.0	12.0	90%	100	12.1	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 5	117.0	12.0	90%	89	6.9	<b>NO</b>	<b>NO</b>	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/9/2009	Native Soil Lift 5	Grid Block 5	117.0	12.0	90%	99	13.5	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 6	117.0	12.0	90%	100	13.4	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 7 East Edge <sup>7</sup>	117.0	12.0	90%	89	7.1	<b>NO</b>	<b>NO</b>	AMEC
EDi NS Lift 5 Retest <sup>6</sup>	7/1/2009	Native Soil Lift 5	Grid Block 7 East Edge <sup>7</sup>	117.0	12.0	90%	96	10.3	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 7	117.0	12.0	90%	96	13.6	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 8	117.0	12.0	90%	97	10.8	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 9	117.0	12.0	90%	98	11.9	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 10	117.0	12.0	90%	94	11.1	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 11	117.0	12.0	90%	91	10.2	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 12	117.0	12.0	90%	96	11.5	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 13	117.0	12.0	90%	95	12.1	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 1	117.0	12.0	90%	97	14.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 2	117.0	12.0	90%	96	14.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 3	117.0	12.0	90%	99	10.2	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 4	117.0	12.0	90%	94	10.1	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 5	117.0	12.0	90%	99	12.5	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 6	117.0	12.0	90%	94	10.7	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 7	117.0	12.0	90%	91	10.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 8	117.0	12.0	90%	100	11.6	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 9	117.0	12.0	90%	100	12.4	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 10	117.0	12.0	90%	100	10.5	YES	YES	AMEC
EDi NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 11	117.0	12.0	90%	99	10.9	YES	YES	AMEC
EDi NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 12	117.0	12.0	90%	99	12.7	YES	YES	AMEC
EDi NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 13	117.0	12.0	90%	99	13.2	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	MW-4	117.0	12.0	90%	94	9.6	YES	<b>NO</b>	AMEC
EDi NS Lift 6 Retest <sup>6</sup>	7/21/2009	Native Soil Lift 6	MW-4	117.0	12.0	90%	91	10.3	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 1	117.0	12.0	90%	94	13.7	YES	YES	AMEC

**Table 10 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 2	117.0	12.0	90%	96	13.6	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 3	117.0	12.0	90%	94	11.4	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 4	117.0	12.0	90%	94	13.0	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 5	117.0	12.0	90%	95	11.8	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 6	117.0	12.0	90%	100	10.6	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 7	117.0	12.0	90%	100	12.2	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 8	117.0	12.0	90%	96.0	11.0	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 9	117.0	12.0	90%	100	12.4	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 10	117.0	12.0	90%	100	12.6	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 11	117.0	12.0	90%	99	11.9	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 12	117.0	12.0	90%	95	13.8	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 13	117.0	12.0	90%	99	11.2	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 1	117.0	12.0	90%	100	10.7	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 2	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 3	117.0	12.0	90%	99	12.5	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 4	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 5	117.0	12.0	90%	97	13.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 6	117.0	12.0	90%	100	10.0	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 7	117.0	12.0	90%	100	10.0	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 8	117.0	12.0	90%	98	8.6	YES	<b>NO</b>	AMEC
EDi NS Lift 8 Retest <sup>6</sup>	7/28/2009	Native Soil Lift 8	Grid Block 8	117.0	12.0	90%	100	10.3	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 9	117.0	12.0	90%	100	10.1	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 10	117.0	12.0	90%	98	7.6	YES	<b>NO</b>	AMEC
EDi NS Lift 8 Retest <sup>6</sup>	7/28/2009	Native Soil Lift 8	Grid Block 10	117.0	12.0	90%	100	11.2	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 11	117.0	12.0	90%	100	10.5	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 12	117.0	12.0	90%	100	11.9	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 13	117.0	12.0	90%	100	10.9	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	MW-4	117.0	12.0	90%	98	8.8	YES	<b>NO</b>	AMEC
EDi NS Lift 8 Retest <sup>6</sup>	7/28/2009	Native Soil Lift 8	MW-4	117.0	12.0	90%	97	10.3	YES	YES	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 12 4" depth	118.9	9.6	NA <sup>9</sup>	89	4.7	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 12 10" depth	118.9	9.6	NA <sup>9</sup>	94	4.9	NA <sup>9</sup>	NA <sup>9</sup>	AMEC

**Table 10 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQC Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 8 4" depth	118.9	9.6	NA <sup>9</sup>	75	3.9	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 8 6" depth	118.9	9.6	NA <sup>9</sup>	82	3.9	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 2 4" depth	118.9	9.6	NA <sup>9</sup>	89	3.8	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 2 8" depth	118.9	9.6	NA <sup>9</sup>	96	3.7	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 5 4" depth	118.9	9.6	NA <sup>9</sup>	88	5.4	NA <sup>9</sup>	NA <sup>9</sup>	AMEC
EDi NS Top Soil <sup>8</sup>	9/03/2009	Topsoil	Grid Block 5 8" depth	118.9	9.6	NA <sup>9</sup>	94	3.8	NA <sup>9</sup>	NA <sup>9</sup>	AMEC

<sup>1</sup> Locations shown for all CQC field tests, except Topsoil Layer tests, in Figures 21 through 29.

<sup>2</sup> lb/ft<sup>3</sup> = Pounds per cubic foot.

<sup>3</sup> AMEC = AMEC Earth and Environmental, Albuquerque, New Mexico.

<sup>4</sup> Location incorrectly referred to as 'Grid Line' instead of Grid Block on laboratory data sheet.

<sup>5</sup> All side slope work to establish the required 6 to 1 slope angle was performed as the first part of Native Soil Layer construction around the northern half of the MWL boundary (North, West, East, and Dog Leg boundary areas). Locations of all CQC side slope tests are shown in Figure 22.

<sup>6</sup> All retests were performed at the same location as the original test.

<sup>7</sup> This location is labeled "EDi-NS-L5-GB7A" in Figure 26 and is located on the northeastern boundary of Grid Block 6.

<sup>8</sup> Topsoil Layer density and moisture testing were performed but not required. These test locations were not surveyed.

<sup>9</sup> NA = Not applicable; Maximum Density and Moisture Content specifications and tests do not apply to the topsoil layer.

**Table 11**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**In-Place Density and Moisture Content CQA Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
URS Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 5	120.1	11.6	90%	98	10.6	YES	YES	AMEC
URS Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 12	120.1	11.6	90%	97	11.0	YES	YES	AMEC
URS Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 8	120.1	11.6	90%	99	10.0	YES	YES	AMEC
URS Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 1	120.1	11.6	90%	98	10.0	YES	YES	AMEC
URS North Slope Lift 7	6/19/2009	North Slope Lift 7	North Slope <sup>4</sup>	115.8	12.3	90%	92	14	YES	YES	AMEC
URS North Slope Lift 8	6/19/2009	North Slope Lift 8	North Slope <sup>4</sup>	115.8	12.3	90%	89	15.2	<b>NO</b>	<b>NO</b>	AMEC
URS North Slope Lift 8 Retest <sup>5</sup>	6/22/2009	North Slope Lift 8	Grid Block 5 <sup>4</sup>	115.8	12.3	90%	92	11.0	YES	YES	AMEC
URS North Slope Lift 8 Retest <sup>5</sup>	6/22/2009	North Slope Lift 8	Grid Block 10 <sup>4</sup>	115.8	12.3	90%	92	10.5	YES	YES	AMEC
URS North Slope Lift 8 Retest <sup>5</sup>	6/22/2009	North Slope Lift 8	Grid Block 13 <sup>4</sup>	115.8	12.3	90%	91	10.9	YES	YES	AMEC
URS East Slope Lift 5	6/19/2009	East Slope Lift 5	East Slope <sup>4</sup>	120.1	11.6	90%	94	10.3	YES	YES	AMEC
URS East Slope Lift 6	6/19/2009	East Slope Lift 6	East Slope <sup>4</sup>	120.1	11.6	90%	98	10.1	YES	YES	AMEC
URS West Slope Lift 5	6/19/2009	West Slope Lift 5	West Slope <sup>4</sup>	120.1	11.6	90%	96	10.6	YES	YES	AMEC
URS West Slope Lift 6	6/19/2009	West Slope Lift 6	West Slope <sup>4</sup>	120.1	11.6	90%	98	11.1	YES	YES	AMEC
URS Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 8	115.8	12.3	90%	91	10.7	YES	YES	AMEC
URS Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 11	115.8	12.3	90%	92	11.0	YES	YES	AMEC
URS Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 11	115.8	12.3	90%	94	11.0	YES	YES	AMEC
URS NS Lift 3	6/23/2009	Native Soil Lift 3	Grid Block 2	115.8	12.3	90%	97	10.8	YES	YES	AMEC
URS NS Lift 3	6/24/2009	Native Soil Lift 3	Grid Block 8	117.0	12.0	90%	94	10.0	YES	YES	AMEC
URS NS Lift 3	6/26/2009	Native Soil Lift 3	Grid Block 11	117.0	12.0	90%	98	13.7	YES	YES	AMEC
URS NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 1	117.0	12.0	90%	100	14.0	YES	YES	AMEC
URS NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 3	117.0	12.0	90%	95	13.5	YES	YES	AMEC
URS NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 5	117.0	12.0	90%	95	12.8	YES	YES	AMEC
URS NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 9	117.0	12.0	90%	98	11.5	YES	YES	AMEC
URS NS Lift 4	6/26/2009	Native Soil Lift 4	Grid Block 7	117.0	12.0	90%	96	11.6	YES	YES	AMEC
URS NS Lift 4	6/29/2009	Native Soil Lift 4	Grid Block 13	117.0	12.0	90%	98	11.6	YES	YES	AMEC
URS NS Lift 4	6/29/2009	Native Soil Lift 4	Grid Block 11	117.0	12.0	90%	97	10.1	YES	YES	AMEC
URS NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 12	117.0	12.0	90%	92	10.0	YES	YES	AMEC
URS NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 10	117.0	12.0	90%	94	12.3	YES	YES	AMEC
URS NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 8	117.0	12.0	90%	93	12.8	YES	YES	AMEC
URS NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 6	117.0	12.0	90%	97	13.5	YES	YES	AMEC
URS NS Lift 5	7/9/2009	Native Soil Lift 5	Grid Block 4	117.0	12.0	90%	100	10.0	YES	YES	AMEC

**Table 11 (cont'd.)  
Mixed Waste Landfill 2009 ET Cover Construction  
In-Place Density and Moisture Content CQA Field Results**

Test Number	Date of Field Test	Description	Location <sup>1</sup>	Standard Proctor Maximum Density (lb/ft <sup>3</sup> ) <sup>2</sup>	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory <sup>3</sup>
URS NS Lift 5	7/9/2009	Native Soil Lift 5	Grid Block 2	117.0	12.0	90%	97	10.2	YES	YES	AMEC
URS NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 11	117.0	12.0	90%	99	10.4	YES	YES	AMEC
URS NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 13	117.0	12.0	90%	100	12.2	YES	YES	AMEC
URS NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 8	117.0	12.0	90%	100	12.8	YES	YES	AMEC
URS NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 6	117.0	12.0	90%	93	10.3	YES	YES	AMEC
URS NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 2	117.0	12.0	90%	95	14.0	YES	YES	AMEC
URS NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 4	117.0	12.0	90%	97	10.9	YES	YES	AMEC
URS NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 9	117.0	12.0	90%	100	11.4	YES	YES	AMEC
URS NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 11	117.0	12.0	90%	96	12.0	YES	YES	AMEC
URS NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 13	117.0	12.0	90%	98	12.8	YES	YES	AMEC
URS NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 9	117.0	12.0	90%	99	11.9	YES	YES	AMEC
URS NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 7	117.0	12.0	90%	100	12.4	YES	YES	AMEC
URS NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 1	117.0	12.0	90%	93	14.0	YES	YES	AMEC
URS NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 3	117.0	12.0	90%	92	10.5	YES	YES	AMEC
URS NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 5	117.0	12.0	90%	95	12.2	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 12	117.0	12.0	90%	100	10.0	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 6	117.0	12.0	90%	99	10.0	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 2	117.0	12.0	90%	99	10.8	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 4	117.0	12.0	90%	97	12.1	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 8	117.0	12.0	90%	100	10.3	YES	YES	AMEC
URS NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 10	117.0	12.0	90%	99	11.0	YES	YES	AMEC

<sup>1</sup> Locations shown for all CQA field tests in Figures 21 through 29.

<sup>2</sup> lb/ft<sup>3</sup> = Pounds per cubic foot.

<sup>3</sup> AMEC = AMEC Earth and Environmental, Albuquerque, New Mexico.

<sup>4</sup> All side slope work to establish the required 6 to 1 slope angle was performed as the first part of Native Soil Layer construction around the northern half of the MWL boundary (North, West, and East boundary areas). Locations of all CQC side slope tests are shown in Figure 22.

<sup>5</sup> Three retests were performed for the one North Slope Lift 8 test that failed (6-19-09 test). The three retests were performed on 6-22-09 across the northern slope area within Grid Blocks 5, 10, and 13 to make sure density and moisture specifications were consistently met across the entire northern boundary for Lift 8. The original failed test location and three retest locations are shown in Figure 22.

**Table 12**  
**Mixed Waste Landfill 2009 ET Cover Construction CQC**  
**Land Survey Elevation Data**

Grid No.	Subgrade		Biointrusion Rock Layer			Thin Soil Layer above Biointrusion Layer			Native Soil Layer			Topsoil Layer		
	Pt. No.	Elev.	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)
A1	1043	5379.49	1747	5380.75	1.26	1905	5380.94	0.19	5311	5383.51	2.76	5256	5384.52	1.01
A2	1071	5380.15	1755	5381.28	1.13	1904	5381.54	0.26	5310	5384.04	2.76	5262	5385.03	0.99
A3	1080	5380.94	1758	5382.26	1.32	1903	5382.43	0.17	5307	5384.93	2.67	5264	5385.99	1.06
A4	1095	5381.97	1761	5383.18	1.21	1923	5383.46	0.28	5306	5385.99	2.81	5267	5387.02	1.03
A5	1106	5383.08	1770	5384.54	1.46	1929	5384.78	0.24	5290	5387.28	2.74	5274	5388.33	1.05
A6	1127	5383.83	1806	5385.11	1.28	1940	5385.40	0.29	5289	5387.93	2.82	5279	5388.89	0.96
A7	1139	5384.83	1820	5386.03	1.20	1955	5386.35	0.32	5347	5388.54	2.51	5281	5389.58	1.04
B1	1044	5380.16	1777	5381.49	1.33	1900	5381.74	0.25	5312	5384.36	2.87	5276	5385.40	1.04
B2	1070	5380.88	1754	5382.13	1.25	1921	5382.39	0.26	5309	5384.87	2.74	5261	5385.90	1.03
B3	1081	5382.03	1759	5383.32	1.29	1901	5383.51	0.19	5300	5385.98	2.66	5265	5387.00	1.02
B4	1094	5382.97	1760	5384.17	1.20	1902	5384.47	0.30	5305	5386.99	2.82	5266	5388.01	1.02
B5	1112	5384.18	1769	5385.46	1.28	1928	5385.61	0.15	5291	5388.09	2.63	5273	5389.08	0.99
B6	1126	5385.06	1805	5386.18	1.12	1939	5386.39	0.21	5292	5388.92	2.74	5278	5389.87	0.95
B7	1140	5386.02	1821	5387.19	1.17	1950	5387.26	0.07	5346	5389.37	2.18	5282	5390.50	1.13
C1	1048	5380.74	1778	5382.24	1.50	1898	5382.38	0.14	5313	5384.87	2.63	5277	5385.88	1.01
C2	1069	5381.65	1746	5382.86	1.21	1920	5383.15	0.29	5340	5385.59	2.73	5255	5386.56	0.97
C3	1082	5382.47	1711	5383.75	1.28	1897	5384.05	0.30	5315	5386.61	2.86	5247	5387.60	0.99
C4	1093	5383.43	1712	5384.70	1.27	1896	5384.94	0.24	5304	5387.52	2.82	5248	5388.55	1.03
C5	1113	5384.80	1713	5385.88	1.08	1895	5386.01	0.13	5294	5388.59	2.71	5249	5389.59	1.00
C6	1125	5385.76	1835	5386.97	1.21	1938	5387.26	0.29	5345	5389.57	2.60	5284	5390.65	1.08
C7	1141	5386.37	1834	5387.66	1.29	1949	5387.96	0.30	5293	5390.48	2.82	5283	5391.59	1.11

**Table 12 (cont'd.)**  
**Mixed Waste Landfill 2009 ET Cover Construction CQC**  
**Land Survey Elevation Data**

Grid No.	Subgrade		Biointrusion Rock Layer			Thin Soil Layer above Biointrusion			Native Soil Layer			Topsoil Layer		
	Pt. No.	Elev.	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)
D1	1049	5381.12	1719	5382.38	1.26	1889	5382.59	0.21	5314	5385.09	2.71	5254	5386.07	0.98
D2	1068	5381.85	1710	5383.13	1.28	1892	5383.35	0.22	5341	5385.77	2.64	5246	5386.78	1.01
D3	1083	5382.71	1709	5383.83	1.12	1891	5384.07	0.24	5316	5386.80	2.97	5245	5387.78	0.98
D4	1092	5383.55	1708	5384.80	1.25	1893	5385.08	0.28	5303	5387.77	2.97	5244	5388.78	1.01
D5	1114	5384.75	1707	5385.78	1.03	1894	5386.01	0.23	5295	5388.73	2.95	5243	5389.77	1.04
D6	1124	5385.90	1847	5387.17	1.27	1931	5387.35	0.18	5296	5389.74	2.57	5288	5390.78	1.04
D7	1142	5386.36	1837	5387.64	1.28	1953	5387.94	0.30	5297	5390.77	3.13	5285	5391.79	1.02
E1	1054	5381.20	1717	5382.43	1.23	1882	5382.71	0.28	5319	5385.22	2.79	5253	5386.21	0.99
E2	1067	5381.76	1702	5383.05	1.29	1886	5383.20	0.15	5318	5385.86	2.81	5238	5386.84	0.98
E3	1084	5382.77	1703	5383.98	1.21	1883	5384.24	0.26	5317	5386.84	2.86	5239	5387.84	1.00
E4	1091	5383.58	1704	5384.69	1.11	1884	5384.97	0.28	5302	5387.85	3.16	5240	5388.83	0.98
E5	1115	5384.28	1705	5385.45	1.17	1885	5385.75	0.30	5301	5388.85	3.40	5241	5389.82	0.97
E5.1	1116	5384.56	1706	5385.79	1.23	1933	5386.09	0.30	5300	5389.12	3.33	5242	5390.06	0.94
E6	1123	5384.76	1846	5386.17	1.41	1932	5386.49	0.32	5299	5389.83	3.66	5287	5390.83	1.00
E7	1143	5385.07	1845	5386.91	1.84	1948	5387.24	0.33	5298	5390.89	3.98	5286	5391.91	1.02
F1	1055	5380.98	1716	5382.09	1.11	1887	5382.34	0.25	5320	5384.87	2.78	5252	5385.88	1.01
F2	1066	5381.78	1701	5382.85	1.07	1880	5383.11	0.26	5321	5385.49	2.64	5237	5386.52	1.03
F3	1085	5382.73	1700	5383.80	1.07	1879	5384.09	0.29	5322	5386.57	2.77	5236	5387.61	1.04
F4	1090	5383.53	1699	5384.81	1.28	1878	5384.89	0.08	5323	5387.48	2.67	5235	5388.63	1.15
F5	1117	5384.19	1698	5385.41	1.22	1877	5385.67	0.26	5324	5388.46	3.05	5234	5389.49	1.03

**Table 12 (cont'd.)  
Mixed Waste Landfill 2009 ET Cover Construction CQC  
Land Survey Elevation Data**

Grid No.	Subgrade		Biointrusion Rock Layer			Thin Soil Layer above Biointrusion			Native Soil Layer			Topsoil Layer		
	Pt. No.	Elev.	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)	Pt. No.	Elev.	Depth (ft)
G1	1058	5380.64	1715	5381.97	1.33	1868	5382.25	0.28	5329	5384.75	2.78	5251	5385.77	1.02
G2	1065	5381.27	1692	5382.51	1.24	1871	5382.75	0.24	5328	5385.34	2.83	5232	5386.42	1.08
G3	1086	5382.40	1749	5383.72	1.32	1872	5383.92	0.20	5327	5386.42	2.70	5258	5387.49	1.07
G4	1089	5383.14	1748	5384.40	1.26	1873	5384.99	0.59	5326	5387.44	3.04	5257	5388.45	1.01
G5	1118	5383.98	1695	5385.21	1.23	1874	5385.54	0.33	5325	5388.41	3.20	5233	5389.39	0.98
H1	1063	5380.35	1714	5381.73	1.38	1866	5382.02	0.29	5330	5384.43	2.70	5250	5385.52	1.09
H2	1064	5381.28	1691	5382.33	1.05	1869	5382.62	0.29	5331	5385.17	2.84	5231	5386.19	1.02
H3	1087	5382.00	1768	5383.44	1.44	1864	5383.74	0.30	5332	5386.19	2.75	5272	5387.24	1.05
H4	1088	5382.97	1766	5384.42	1.45	1865	5384.68	0.26	5333	5387.20	2.78	5270	5388.27	1.07
H5	1119	5383.87	1688	5384.94	1.07	1863	5385.28	0.34	5334	5388.19	3.25	5230	5389.27	1.08
I1	1189	5379.82	1750	5381.09	1.27	1853	5381.34	0.25	5339	5383.82	2.73	5259	5384.83	1.01
I2	1184	5380.56	1751	5381.87	1.31	1855	5382.07	0.20	5338	5384.53	2.66	5260	5385.55	1.02
I3	1180	5381.40	1683	5382.73	1.33	1857	5382.99	0.26	5337	5385.70	2.97	5228	5386.64	0.94
I4	1177	5382.56	1767	5383.89	1.33	1861	5384.14	0.25	5336	5386.59	2.70	5271	5387.66	1.07
I5	1172	5383.51	1685	5384.58	1.07	1859	5384.78	0.20	5335	5387.60	3.02	5229	5388.60	1.00
			<b>Average Depth = 1.25</b>			<b>Average Depth = 0.25</b>			<b>Average Depth = 2.85</b>			<b>Average Depth = 1.02</b>		

Note: The location of verification survey grid points is shown in Figure 18.

**Table 13**  
**Mixed Waste Landfill 2009 ET Cover Construction Equipment Summary**

Vehicle	Make/Model	Gross Weight (lbs)	Tire Size	Tire Pressure (if applicable)	Specific Application	Other Pertinent Information
Motor Grader	JD 670 D	37,790	14.00-24 12PR	55	Place, process and grade native soil and topsoil	
Dozer	JD 650 J	18,598	NA		Spread and grade biointrusion layer rock and soil	Shoe size 18 in., track length (on ground surface) 7.25 ft
Vibratory Roller	IR SD100	22,490 Total Drum 13,320	23.1 x 26-8PR	35	Proof roll subgrade, compaction of native soil lifts	Drum: 84"W x 59"Dia., 52,520 lbs max centrifugal force
Wheel Loader	JD 644 J	40,620	23.5 R25	40	Placement of biointrusion rock, material loading	
Wheel Loader	JD 544 J	28,534	20.5 R25	40	Material loading, grading on landfill cover	
Skid Steer Loader	CAT 242B	6,914	12-16.5	50	T-post removal, site grading, transport jumping jack compactor	
<b>Secondary Vehicles</b>						
Water Truck	4000 Gallon	46,000	11R-22.5	110	Material processing, dust suppression	
Water Truck	2000 Gallon	29,000	11R-22.5	110	Material processing, dust suppression	
Dump Truck, Tandem (3)	12 Cu. Yd.	46,000			Haul biointrusion rock	
Bottom Dump Truck (4)	20 Cu. Yd.	80,000	11R-22.5	110	Haul and place native soil and topsoil	Dumps with 8-ft axle spread Max 86,000 G.V.W.
Ag Tractor	KUBOTA M7040	4,608	Front 9.5-24 Rear 16.9-30	Front 45 Rear 25	Tilling , drill seeding and crimping straw mulch	
Dump Truck Single Axle	GMC Top Kick	26,000	19.5 R-20	100	Haul straw bales, tow straw blower	

**Table 13 (cont'd.)  
Mixed Waste Landfill 2009 ET Cover Construction Equipment Summary**

Vehicle	Make/Model	Gross Weight (lbs)	Tire Size	Tire Pressure (if applicable)	Specific Application	Other Pertinent Information
<b>Borrow Pit Operations</b>						
Excavator	JD 200 CLC	44,750	NA		Excavate native and topsoil, feed screen plant	Shoe size 32 in., track length (on ground surface) 12 ft
Excavator	JD 240 CLC	54,654	NA		Load trucks, excavate native and topsoil, feed screen plant	Shoe size 32 in., track length (on ground surface) 12.5 ft
Wheel Loader	JD 644 J	40,620	23.5 R25	40	Load trucks, support screening plant operations	
Wheel Loader	JD 544 J	28,534	20.5 R25	40	Load trucks, support screening plant operations	
Wheel Loader	CAT 966 E	44,551	26.5-25 14PR	40	Feed pug mill during topsoil blending	
Wheel Loader	CAT 966 F	45,162	26.5-25 14PR	40	Wheel material away from pug mill, build stockpile	
Motor Grader	JD 670 D	37,790	14.00-24 12PR	55	Site grading, road maintenance at borrow area	

ET = Evapotranspirative

NA = Not applicable

**Table 14**  
**Mixed Waste Landfill Subgrade and ET Cover Design Change Summary**

CMIP Specification	Description	No Adverse Quality Impact Summary
<b>2006 Subgrade Preparation</b>		
Appendix A, Earthwork, 02200, Section 3.3.3	Existing surface was to be compacted with 10 passes of a roller with ballasted weight of 25 tons and a minimum tire pressure of 90 psi – a smaller roller and fewer passes used and compaction specifications were met. Optimum moisture content could not be attained for the existing ground surface, but was not a requirement.	Field tests were not required but used to verify soil density specifications were met with the equipment used.
Appendix A, Earthwork, 02200, Section 3.4.2 and Table 3.1	First Standard Proctor sample used to characterize ~1,384 cy (versus 500 cy) because the next two sample results were not available after the initial 500 cy was installed (due to laboratory turnaround times).	Fill soil properties are consistent.
<b>2009 ET Cover Construction</b>		
Design drawings	The Subgrade top east-to-west surface slope was less than the 2% design slope in the east-central portion of the Subgrade surface (~1.8%)	2% design slope established with Native and Topsoil Layers.
Design drawings	The Subgrade side slopes were steeper than 6:1	6:1 side slopes established with Native and Topsoil Layers.
Design drawings	The Biointrusion Layer side slopes were steeper than 6:1, consistent with the Subgrade side slopes.	6:1 side slopes established with Native and Topsoil Layers.
Design drawings	The Biointrusion surface slope was less than the 2% design slope in specific areas, consistent with the Subgrade surface (~1.8%).	2% design slope established with Native and Topsoil Layers.
Appendix A, Earthwork, 02200, Section 3.3.5	The procedure for filling void spaces in the Biointrusion Layer was not addressed in the CMIP.	Soil added to void spaces created a more structurally sound cover less prone to subsidence.
Appendix A, Earthwork, 02200, Section 3.3.5	Establishing a smooth surface on the Biointrusion Layer upon which the Native Soil Layer could be constructed was not addressed in the CMIP.	Thin soil layer added created a more regular surface on which the Native Soil Layer was constructed, resulting in a more structurally sound Native Soil Layer.
Appendix B, Section 5.0 and Grades, Lines, and Levels, Section 1.4.2	The Native Soil Layer average thickness exceeded the maximum thickness of 2.75 feet by 0.10 feet.	Slight thickness exceedence resulted in a more protective Native Soil Layer.
Appendix A, Earthwork, 02200, Section 2.1.2	The 3/8-inch crushed gravel used in the Topsoil Layer did not meet specifications for the percent passing the #4 sieve (the “no more than 5%” requirement was exceeded). No locally available 3/8-inch gravel met the specification.	Approved aggregate had the lowest percent passing of available material.
Appendix A, Reclamation Seeding and Mulching, Section 2.2.1	Topsoil Layer seeding rate was increased from 20 to 80 pounds per acre. Some of the additional seed quantity was applied by hand (hand broadcasting) to ensure a relatively even distribution across the cover surface, side slopes, and disturbed areas.	Higher seeding rate and application process increased the probability of successful revegetation.

**Table 14 (cont'd.)  
Mixed Waste Landfill Subgrade and ET Cover Design Change Summary**

CMIP Specification	Description	No Adverse Quality Impact Summary
<b>2009 ET Cover Construction (cont'd.)</b>		
Appendix A, Reclamation Seeding and Mulching, Section 2.2.2	A starter fertilizer was not used because the seeding was performed late in the growing season. When fertilizer is used late in the growing season, growth is artificially stimulated and seedlings are more susceptible to frost damage.	Use of fertilizer late in the growing season can be harmful to long-term plant growth.
Appendix A, Reclamation Seeding and Mulching	Use of supplemental watering (i.e., as temporary irrigation system) was not addressed in the CMIP, but was approved by the NMED in the conditional approval of the CMIP (Bearzi, December 2008).	Use of supplemental watering increases the probability of successful revegetation.
Appendix A, Earthwork, 02200	Soil drainage diversions at monitoring well locations along the west slope of the cover were not addressed in the CMIP. They are necessary to divert runoff around monitoring well locations due to the larger footprint of the cover.	Drainage features will protect the existing monitoring wells from side-slope drainage.
Section 6.0 of CMIP main text and Design Drawings	Soil and rock volumes used to construct the ET Cover are larger than the estimated volumes in the CMIP.	Larger volumes used resulted in a more protective final cover.
Design Drawings	Final footprint of the cover is larger than the CMIP design.	Larger footprint is structurally sound and more protective of the disposal areas.
Appendix A, Monitoring Well MW-4 Extension, 02670, Section 3.1	The existing concrete pad of MWL-MW-4 was not broken up and removed when the well and protective casing were extended. It was left around the protective steel casing and incorporated into the Subgrade.	Incorporating the concrete pad into the Subgrade created a structurally sound "anchor" for the extended casing.
Appendix A, Monitoring Well MW-4 Extension, 02670, Section 3.1	The final height of the MWL-MW-4 well casing is less than the minimum specification of 2 feet, 6 inches above the final grade of the constructed cover.	The height of the well casing (16 inches) does not adversely impact access to the well or well performance.
Not Included in the CMIP	Two soil-vapor monitoring points were installed through the ET Cover per the NMED conditional approval of the CMIP (Bearzi, December 2008) and direction received from NMED.	Required by NMED and installed prior to revegetation of Topsoil Layer to minimize impact to cover.
Section 7.1 of CMIP main text and Design drawings	Three angled boreholes for vadose zone moisture monitoring are addressed in the CMIP and shown on the design drawings but were installed in August 2003. The installation and construction of these boreholes will be documented in the MWL Long-Term Monitoring and Maintenance Plan.	Boreholes located on the edge of the cover side slope.

CMIP = Corrective Measures Implementation Plan

ET = Evapotranspirative

MWL = Mixed Waste Landfill

NMED = New Mexico Environment Department

**Table 15**  
**Mixed Waste Landfill Final In-Place Subgrade and ET Cover Layer Soil and Rock Volume Estimates**

MWL ET Cover Layer	Volume Estimates Reflect Placed, Compacted Cubic Yards (cy)		Explanation
	CMIP Volume	As-Constructed Volume	
Subgrade	6,500	7,700	The MWL existing surface required more elevation increase than anticipated in the CMIP design.
Biointrusion Layer	4,900	6,800	The average thickness of the installed Biointrusion Layer is 0.25 feet greater than the CMIP design. The in-place surveyed volume is approximately 5,800 cy. The 1,000-cy discrepancy is most likely due to the fact that the Subgrade surface elevation was lowered approximately 1 to 2 inches during the scarification process prior to installing the rock material. The surveyed volume estimate does not account for the volume of rock penetrating down into the Subgrade.
Biointrusion Layer – Void filling and overlying 3-inch-thick soil layer	Not Estimated	3,100	Volume estimate is based on truckload tallies and represents a loose, uncompacted estimate. Volume cannot be accurately estimated due to some soil moving down into rock void space. To estimate an approximate total volume of compacted soil for the MWL ET Cover, a compaction factor of 16% was used for this thin soil layer, resulting in an estimated compacted volume of 2,600 cy.
Native Soil	13,200	17,300	The average thickness of the constructed Native Soil Layer is approximately 2.85 feet (versus 2.5 feet minimum in the CMIP) due to wedge lifts required to correct the 2% slope in the Subgrade and Biointrusion Layer.
Topsoil	3,900	5,400	The average thickness of the Topsoil Layer is approximately 0.33 feet greater than the CMIP design.
<b>Total</b>	<b>28,500</b>	<b>36,200</b>	<b>7,700 cy difference (27% increase from original estimate).</b> The 36,200-cy total does not include the 3,100 cy used for the void space filling and thin soil layer above the Biointrusion Layer.

<sup>1</sup> The CMIP estimates were based upon minimum thickness specifications for each cover layer. The greater cover layer thicknesses resulted in a larger cover footprint, increasing the volume of soil material required for the side slopes.

<sup>2</sup> The increase in soil and rock material volumes results in a thicker, larger, more protective ET Cover.

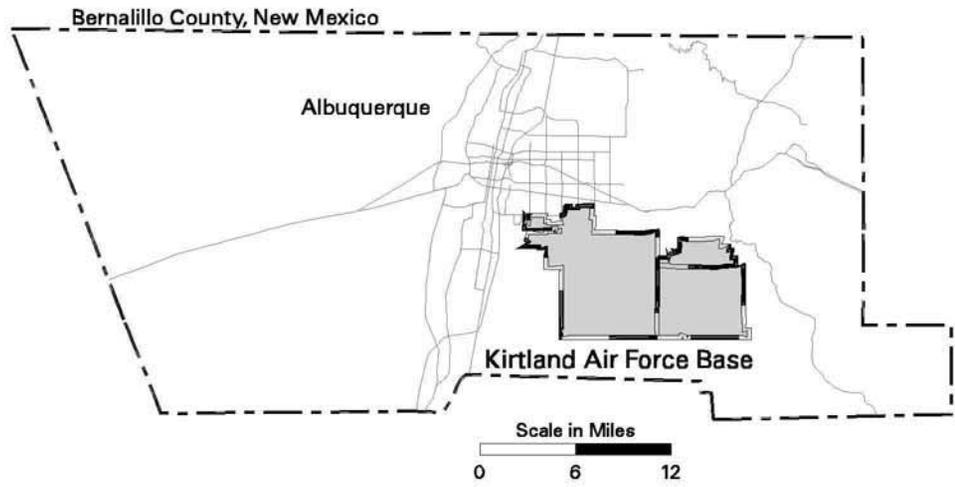
CMIP = Corrective Measures Implementation Plan

ET = Evapotranspirative

MWL = Mixed Waste Landfill

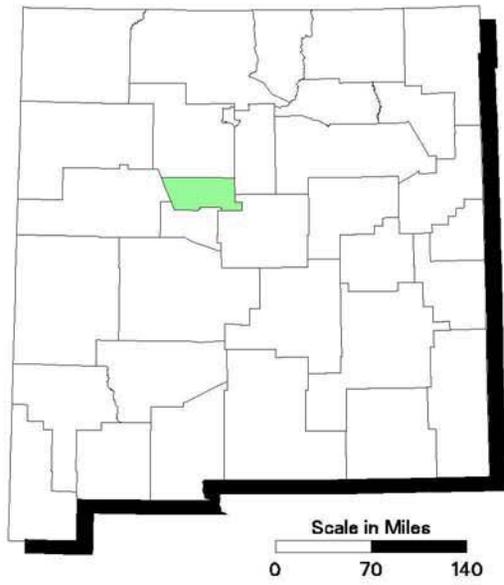
## Figures





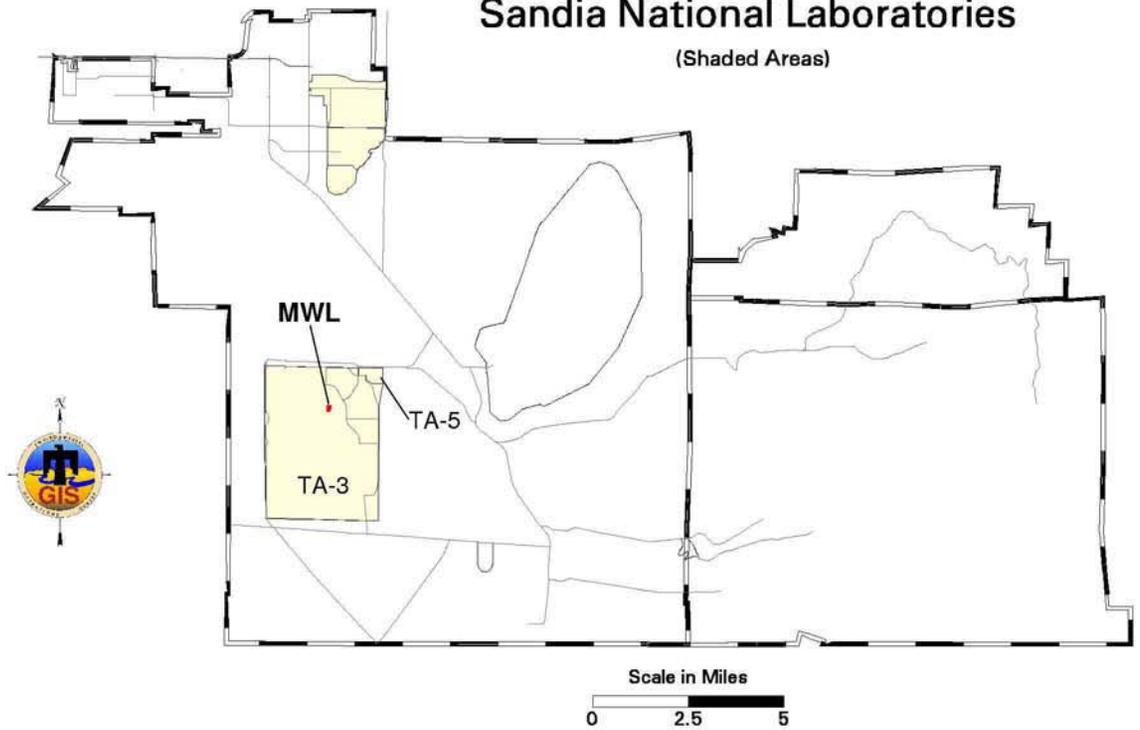
**Figure 1**  
**Location of Kirtland**  
**Air Force Base,**  
**Sandia National Laboratories,**  
**New Mexico and the**  
**Mixed Waste Landfill**

**Bernalillo County, New Mexico**

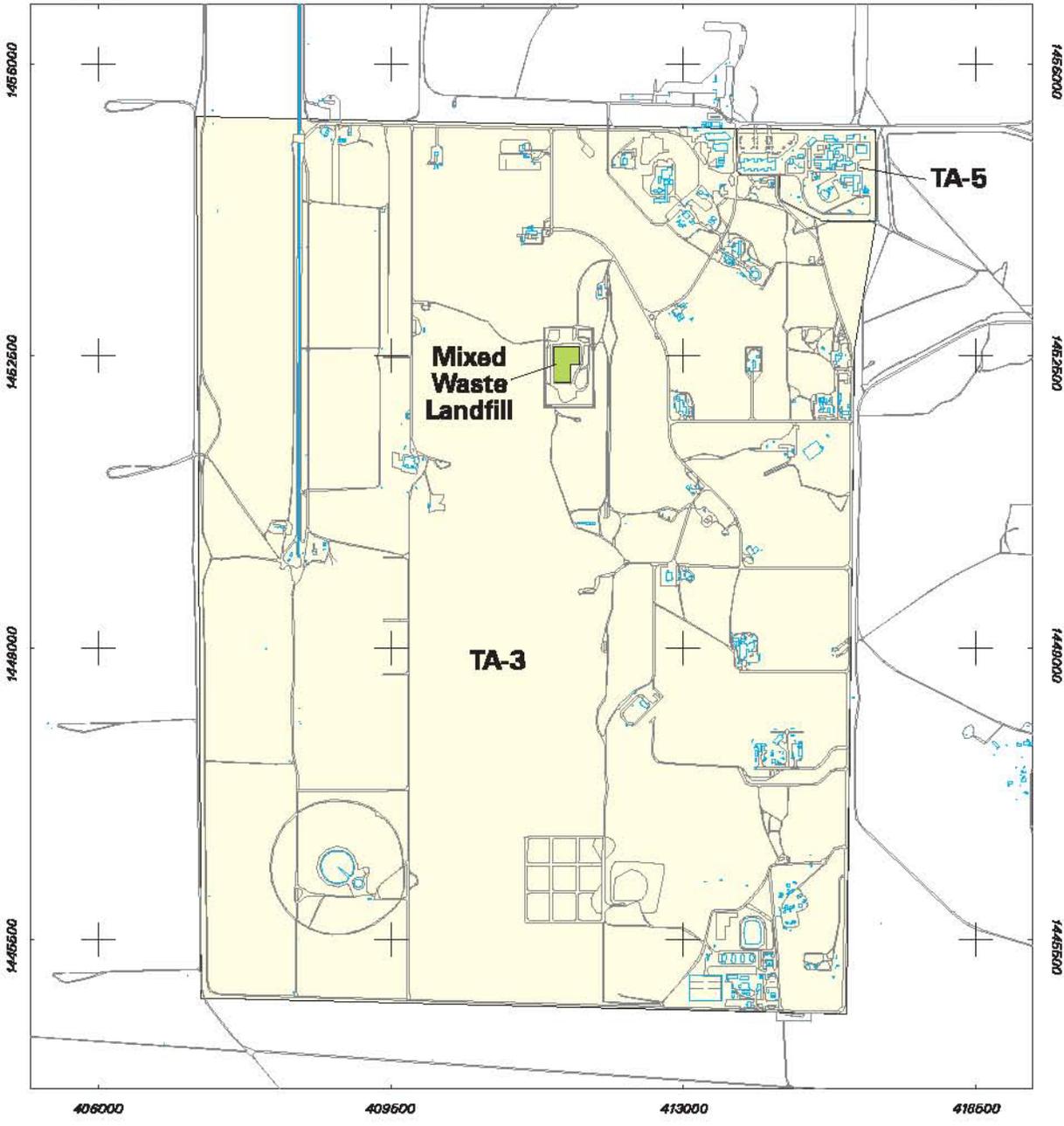


**Sandia National Laboratories**

(Shaded Areas)



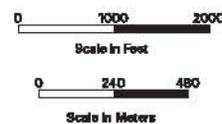


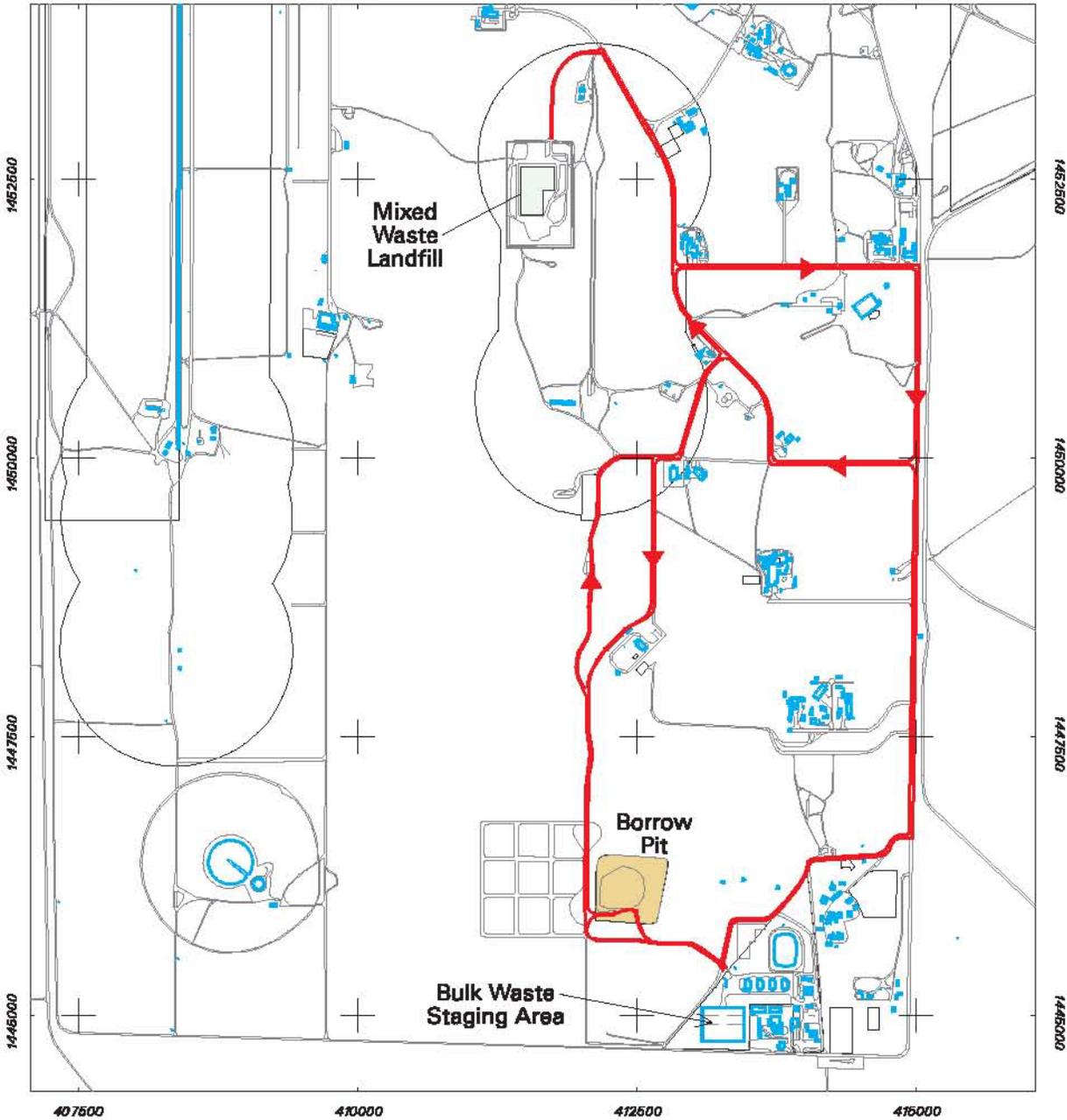


**Legend**

-  Building / Structure
-  Paved and Unpaved Road
-  SNL Technical Area 3 & 5
-  Mixed Waste Landfill

**Figure 2**  
**Location of Technical**  
**Areas 3 & 5 and the**  
**Mixed Waste Landfill**

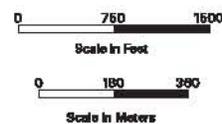


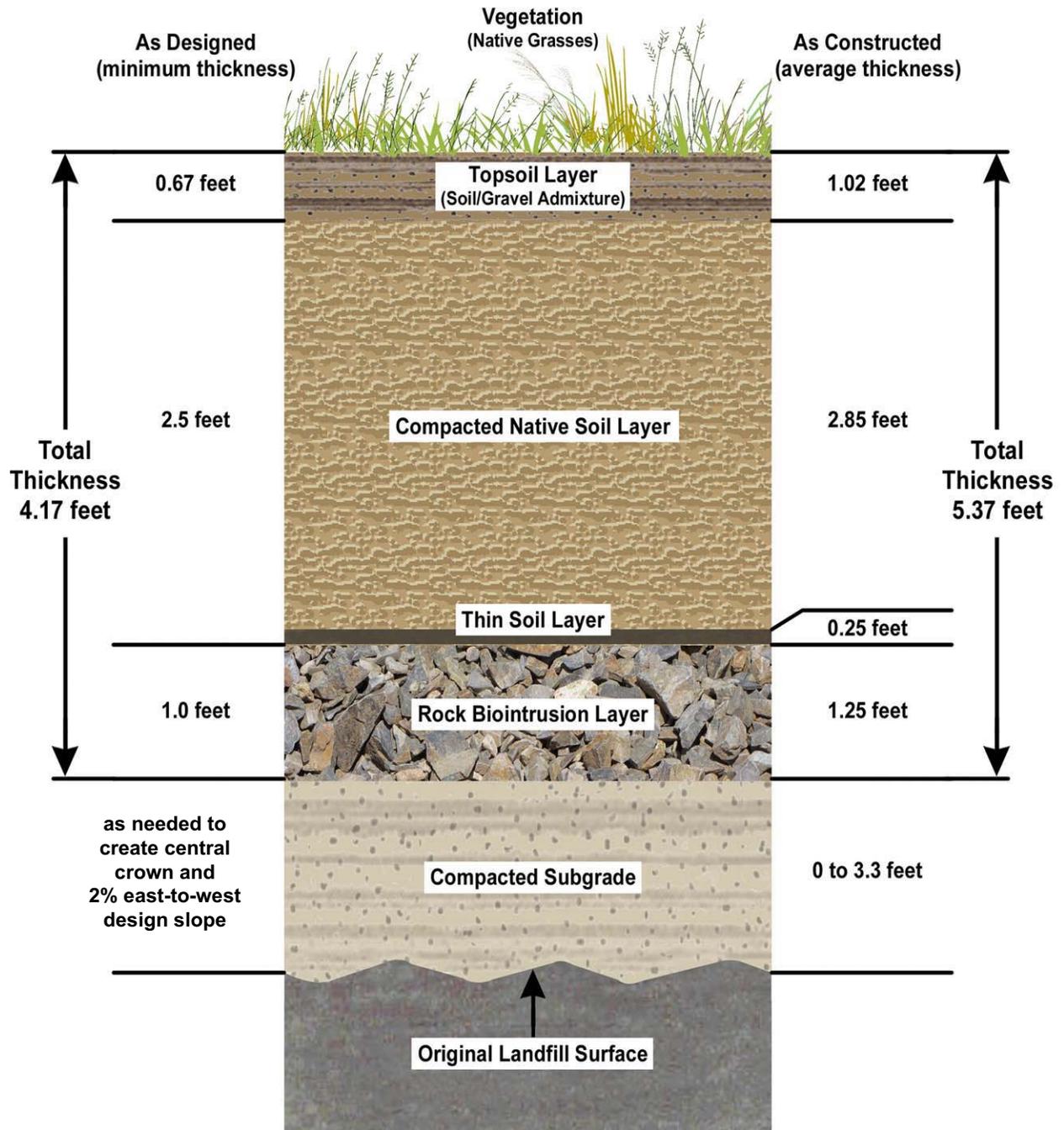


**Legend**

-  Building / Structure
-  Paved and Unpaved Road
-  Haul Route
-  Mixed Waste Landfill
-  MWL Borrow Pit

**Figure 3**  
Location of the Mixed Waste Landfill,  
Borrow Pit, Bulk Waste  
Staging Area, and  
Haul Routes





**Figure 4**  
**Schematic Diagram of the Mixed Waste Landfill Alternative Evapotranspirative Cover**

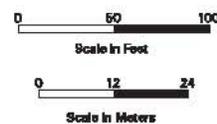


411600

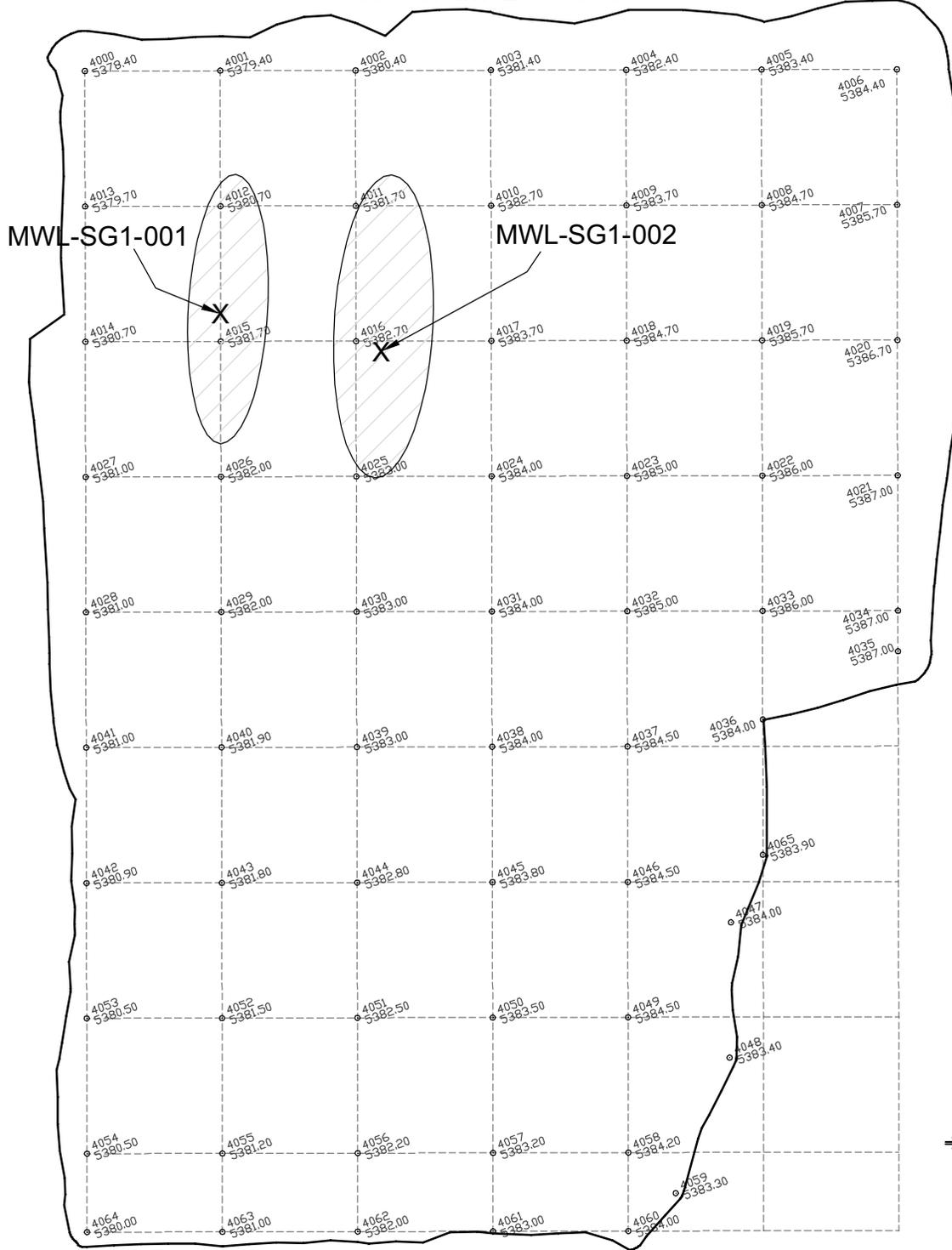
### Legend

- In-Place Field Density and Moisture Test Location
- Unpaved Road
- Mixed Waste Landfill

**Figure 5**  
**Mixed Waste Landfill**  
**2006 Existing Surface Map**



Proctor: MWL-SG-001

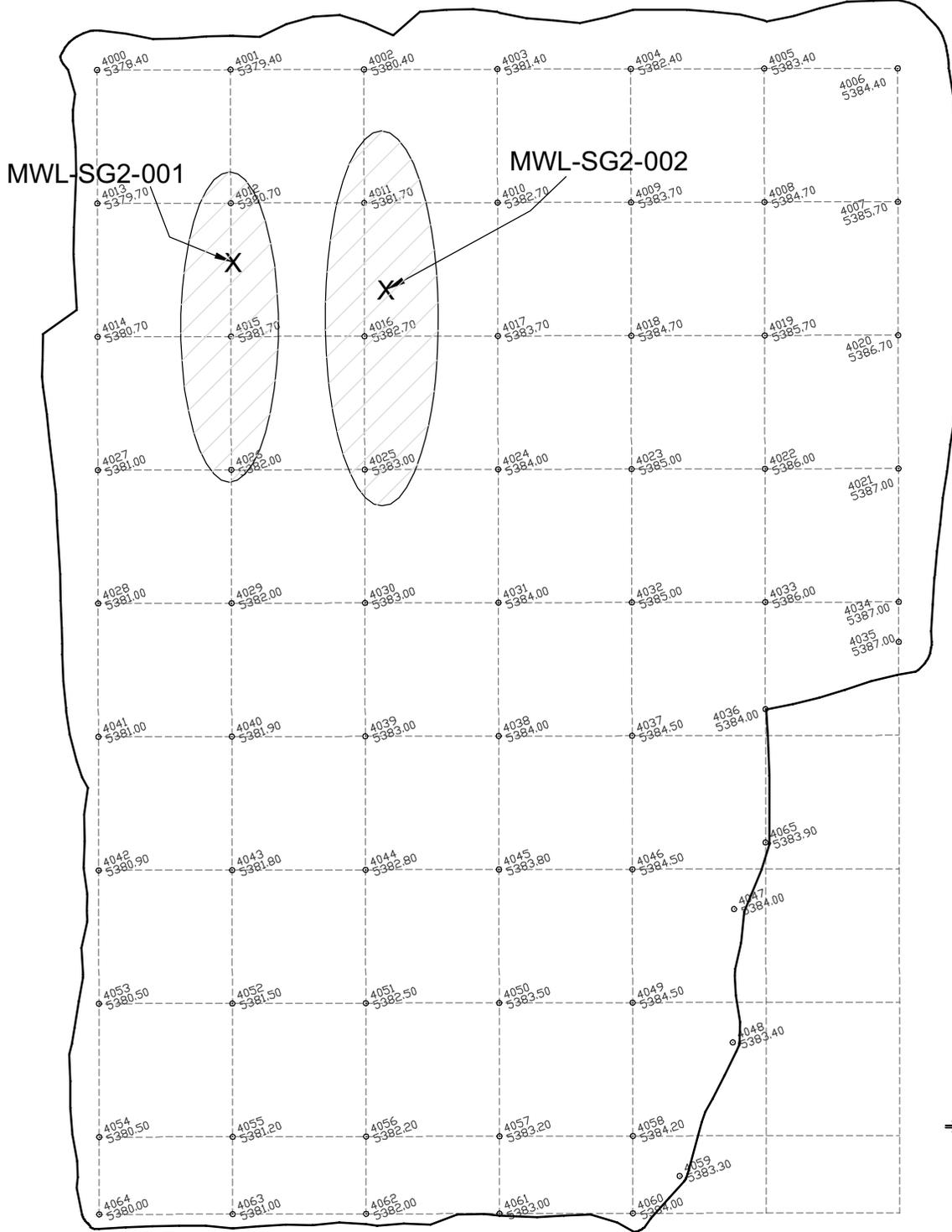


X = Compaction Test Site

Figure 6  
Mixed Waste Landfill  
Subgrade Lift 1 Map



Proctor: MWL-SG-001

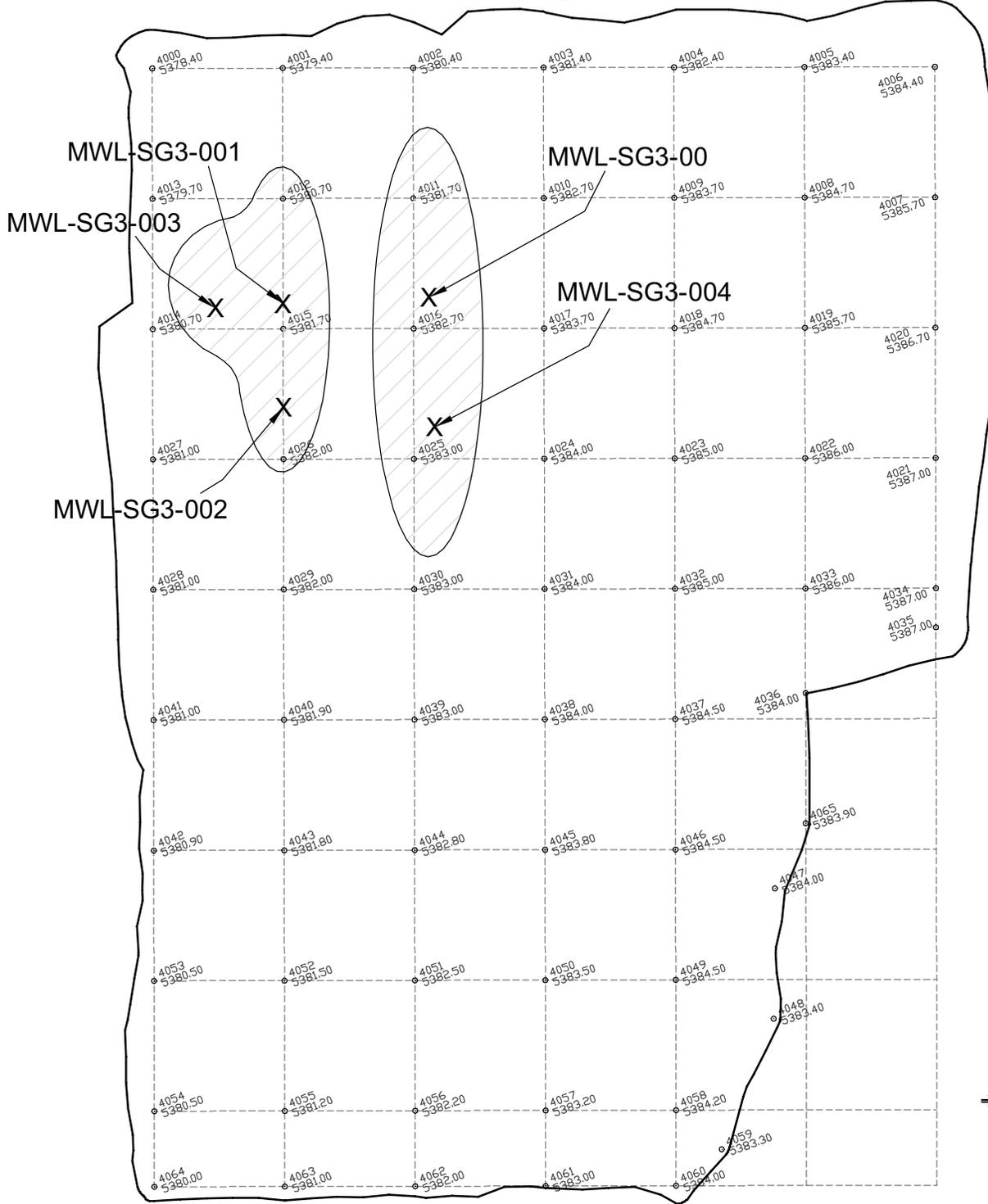


X = Compaction Test Site

Figure 7  
Mixed Waste Landfill  
Subgrade Lift 2 Map



Proctor: MWL-SG-001

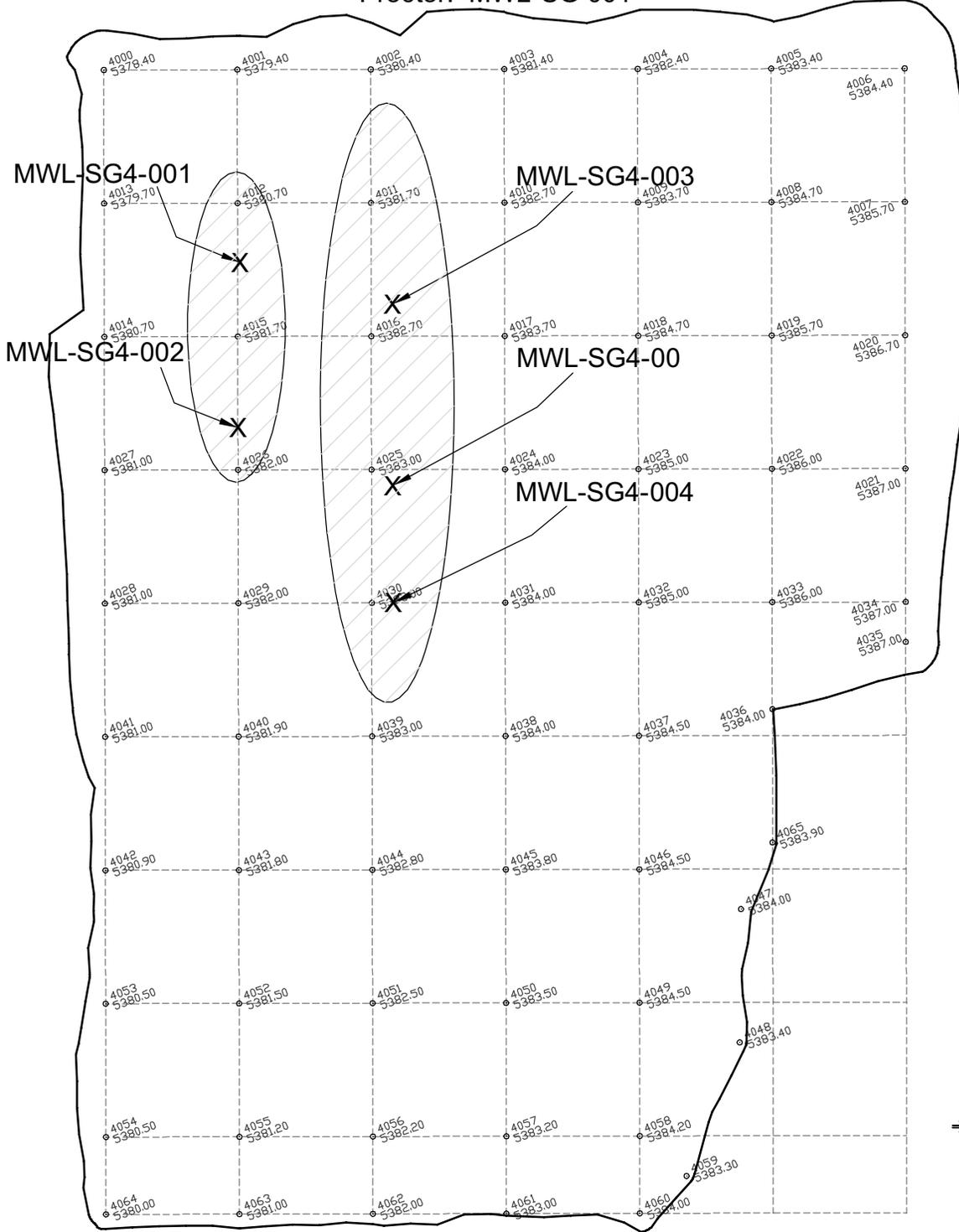


X = Compaction Test Site

Figure 8  
Mixed Waste Landfill  
Subgrade Lift 3 Map



Proctor: MWL-SG-001



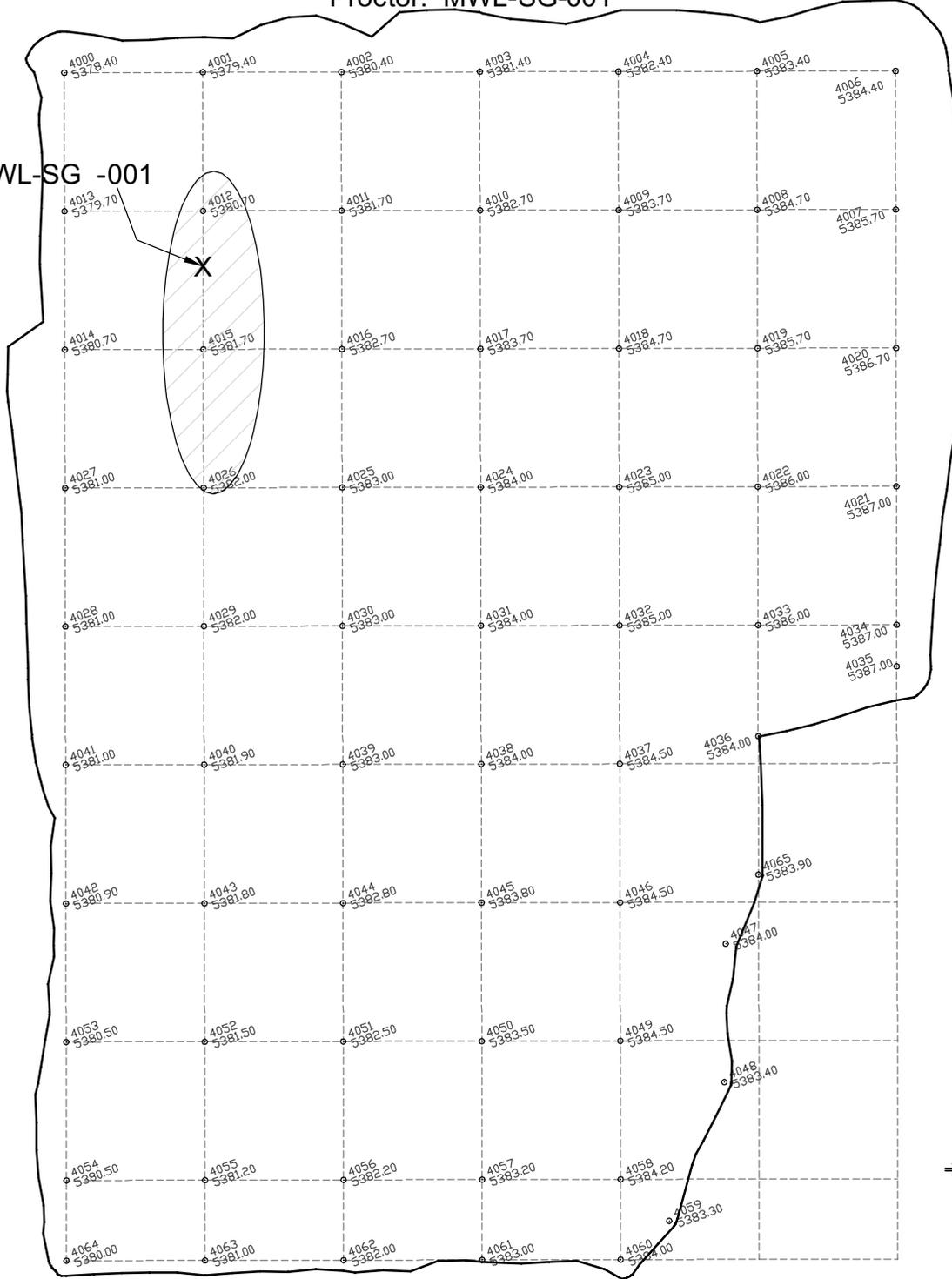
X = Compaction Test Site

Figure 9  
Mixed Waste Landfill  
Subgrade Lift 4 Map



Proctor: MWL-SG-001

MWL-SG -001

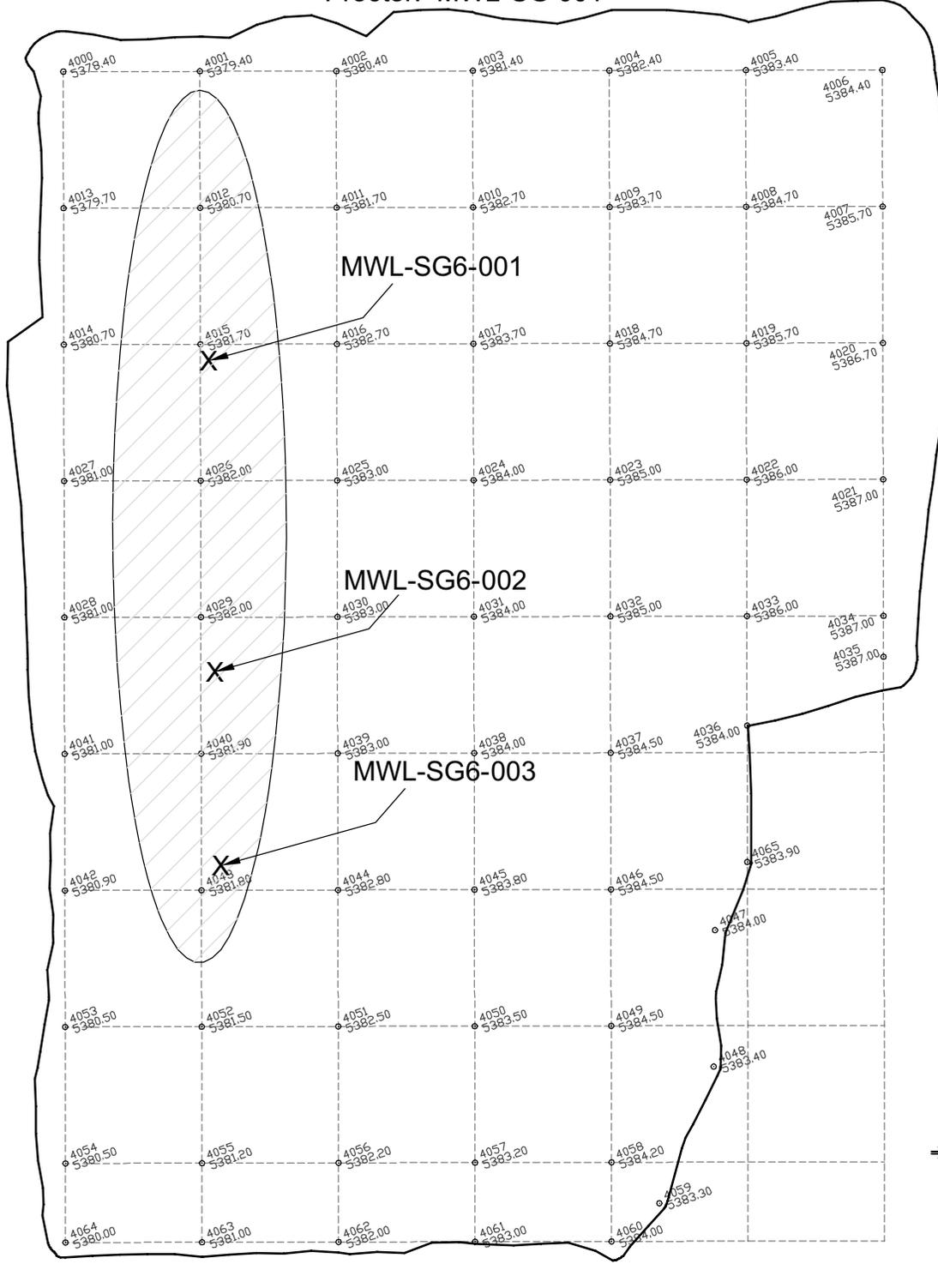


X = Compaction Test Site

Figure 10  
Mixed Waste Landfill  
Subgrade Lift 5 Map



Proctor: MWL-SG-001

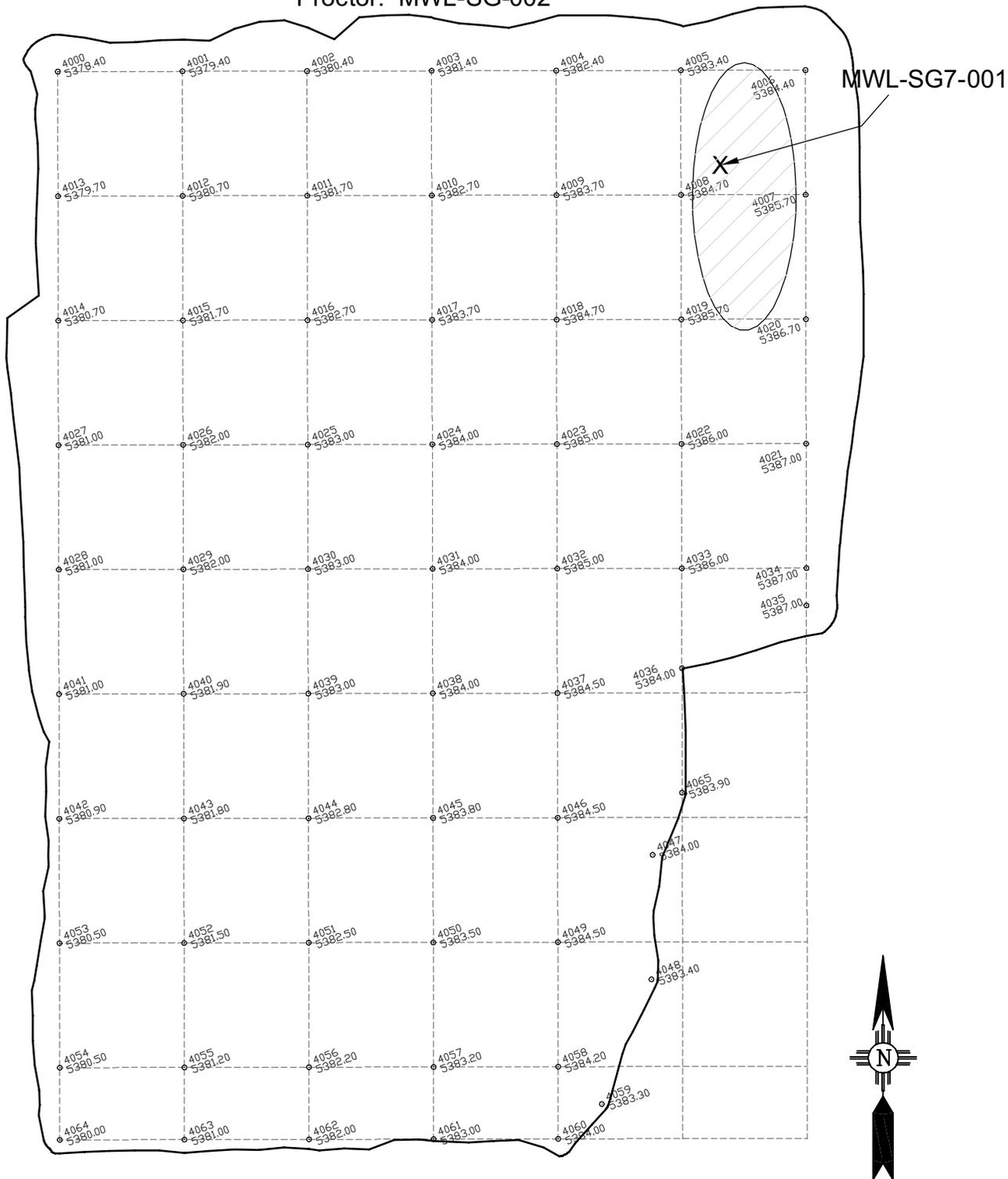


X = Compaction Test Site

Figure 11  
Mixed Waste Landfill  
Subgrade Lift 6 Map



Proctor: MWL-SG-002

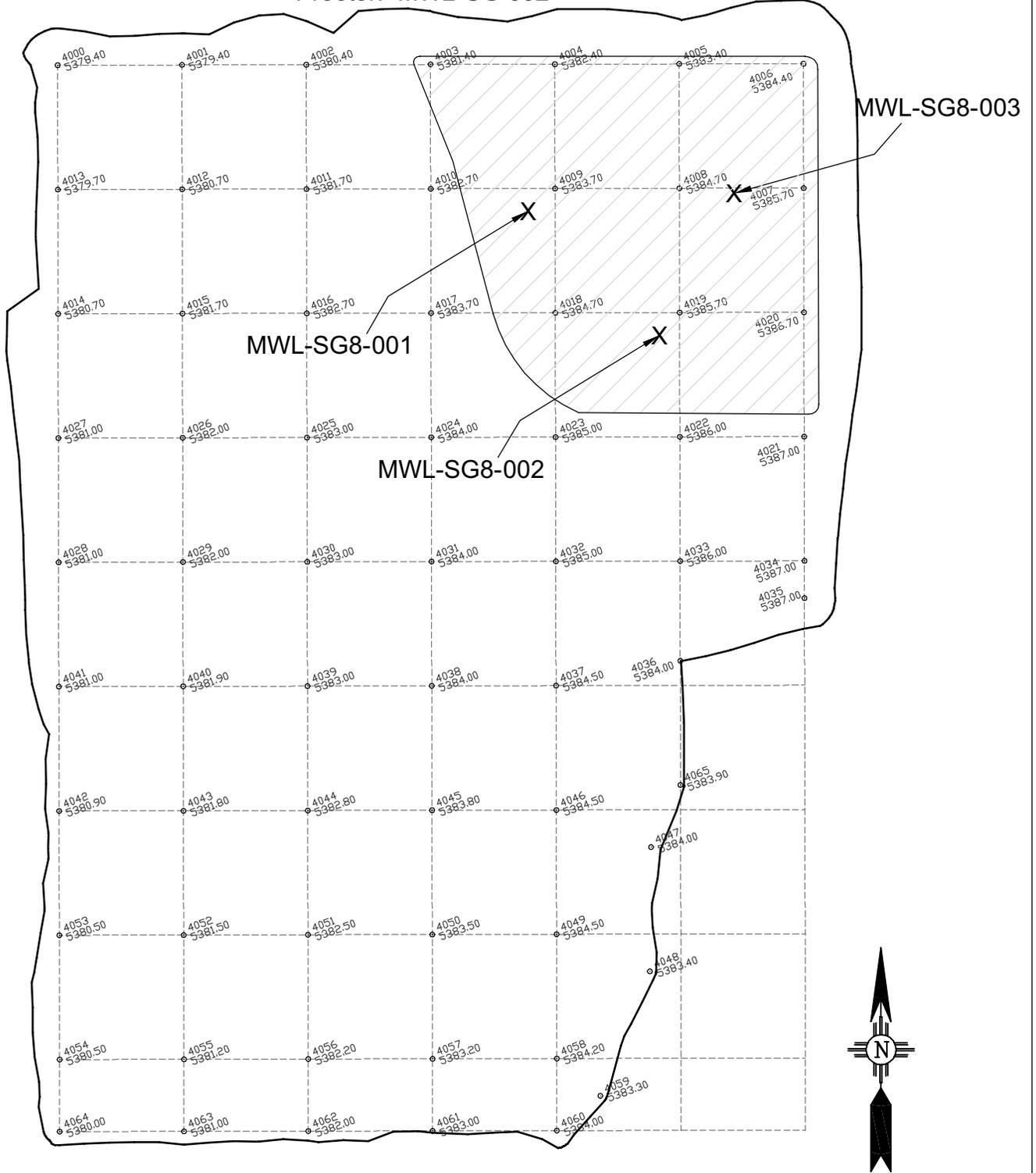


X = Compaction Test Site

Figure 12  
Mixed Waste Landfill  
Subgrade Lift 7 Map



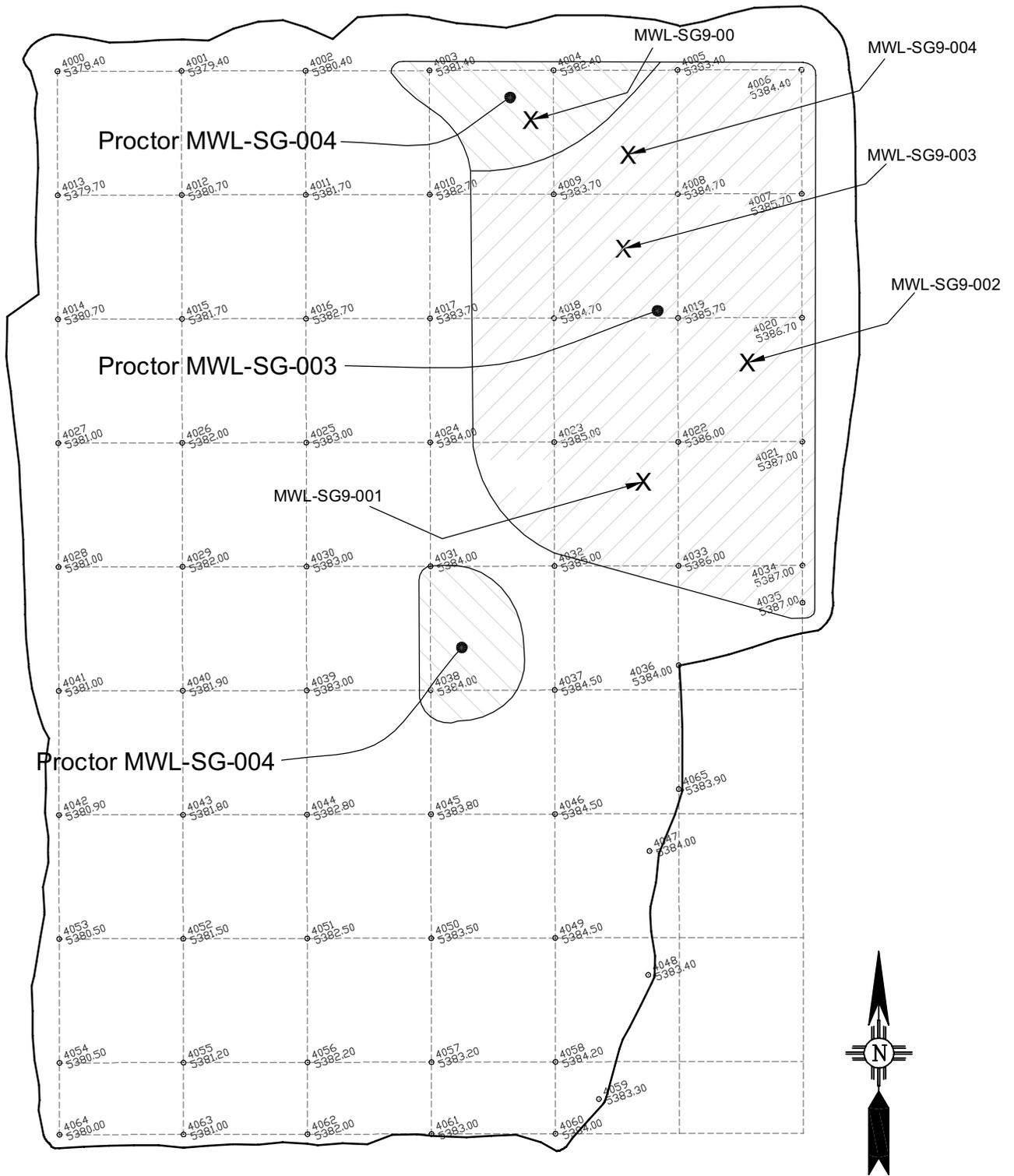
Proctor: MWL-SG-002



X = Compaction Test Site

Figure 13  
Mixed Waste Landfill  
Subgrade Lift 8 Map

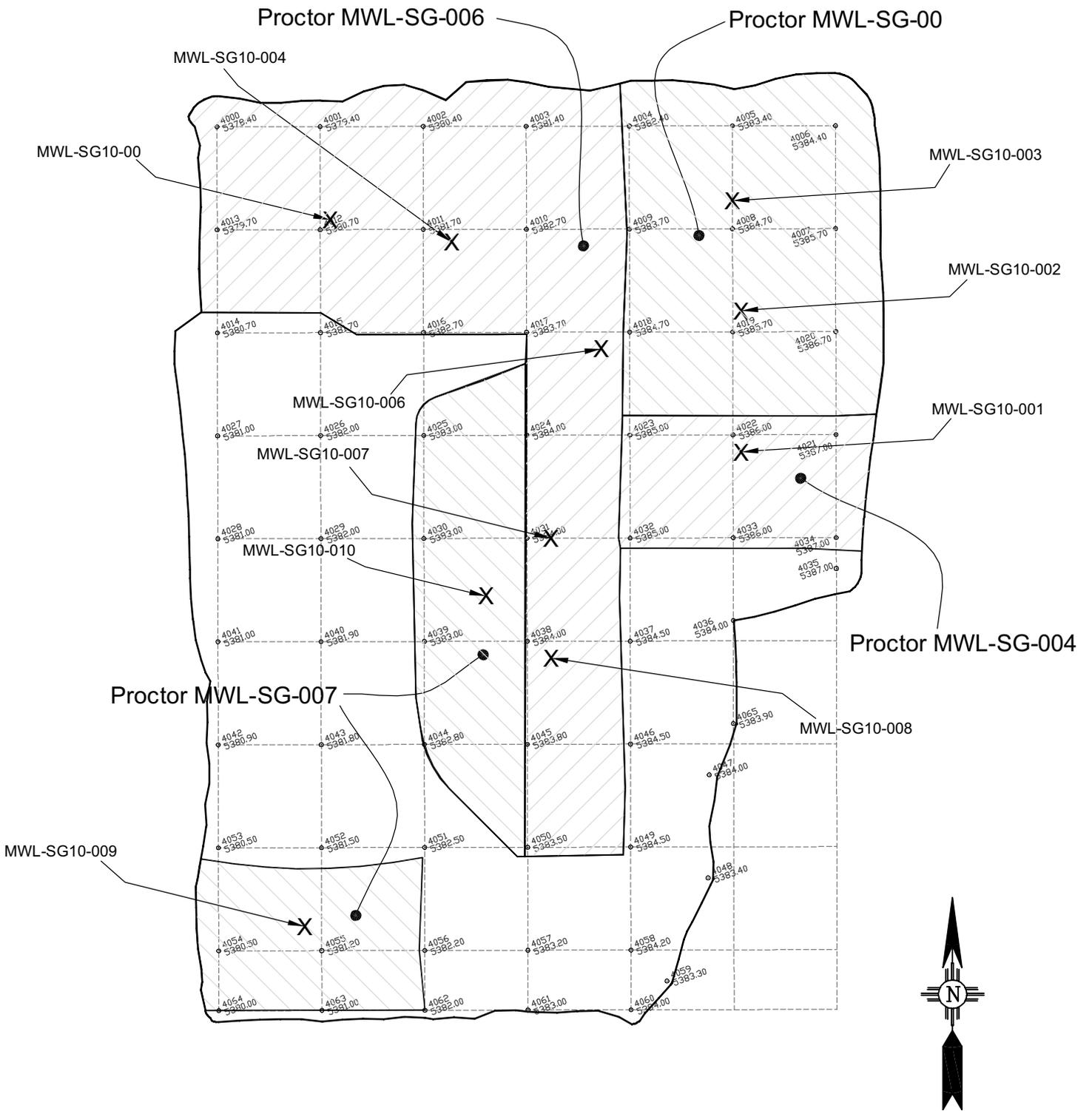




X = Compaction Test Site

Figure 14  
Mixed Waste Landfill  
Subgrade Lift 9 Map

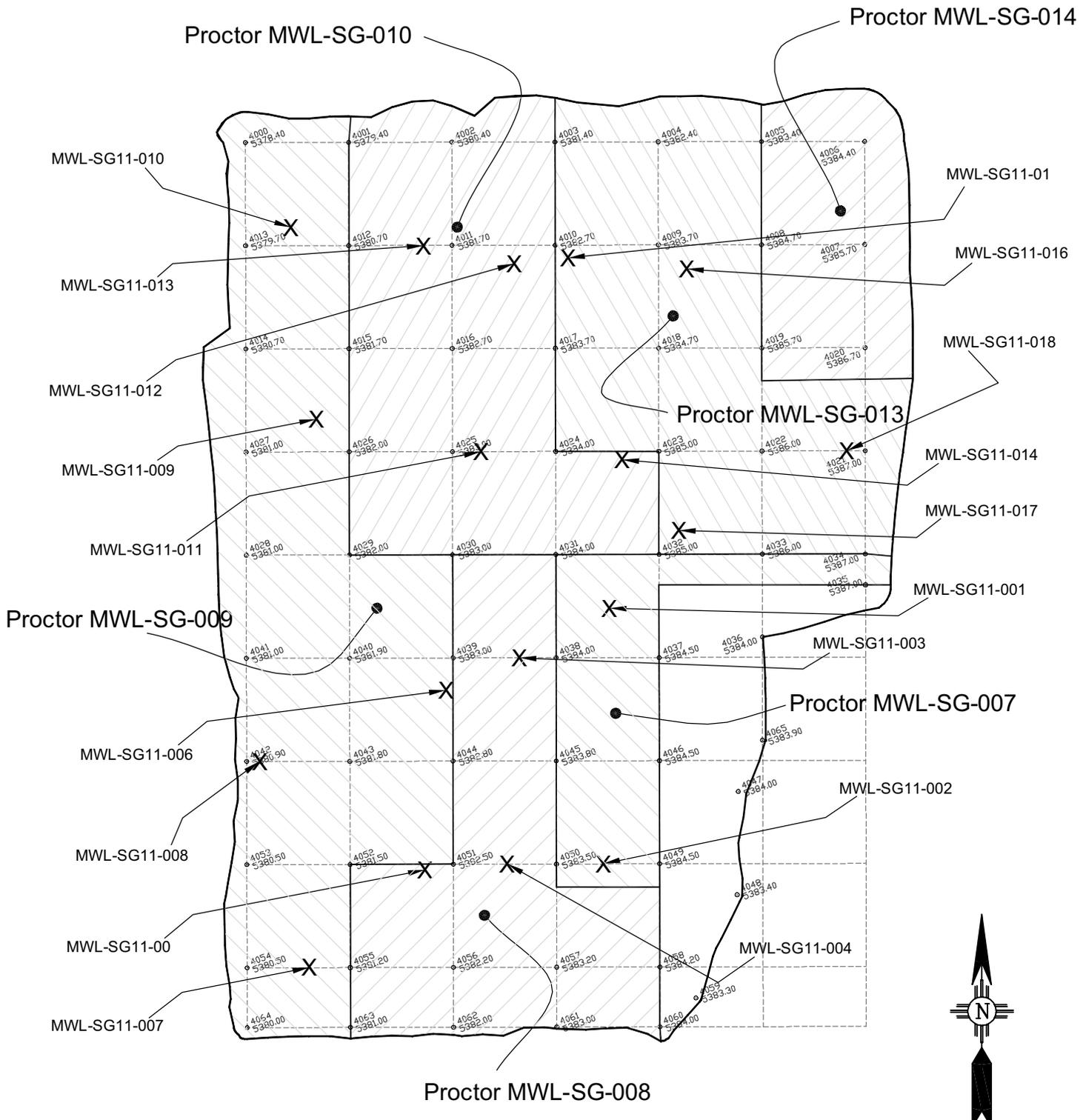




X = Compaction Test Site

Figure 15  
Mixed Waste Landfill  
Subgrade Lift 10 Map

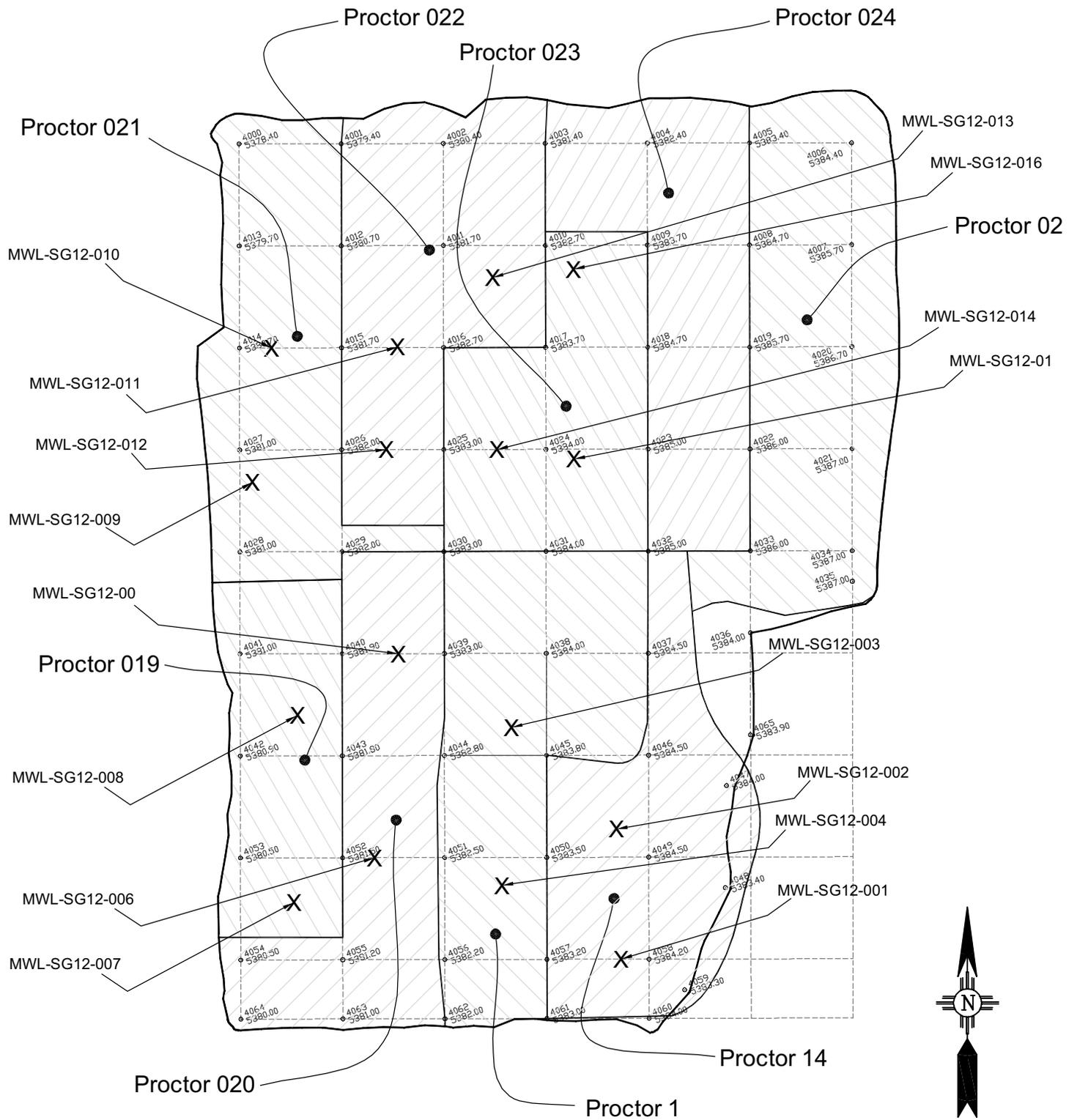




X = Compaction Test Site

Figure 16  
Mixed Waste Landfill  
Subgrade Lift 11 Map

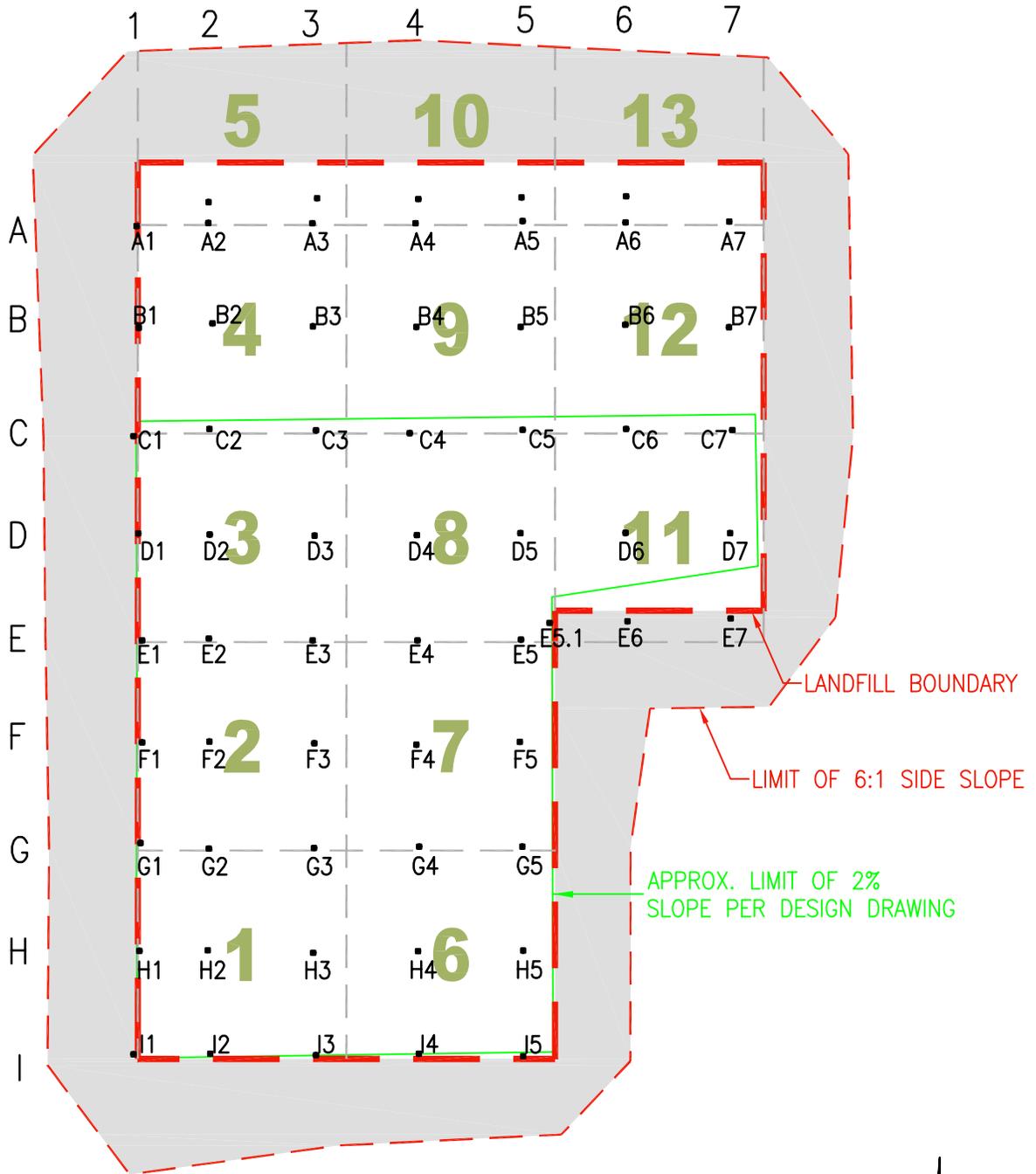




X = Compaction Test Site

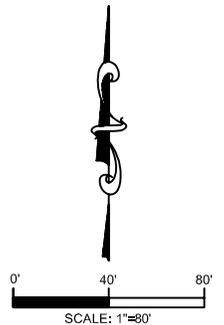
Figure 17  
Mixed Waste Landfill  
Subgrade Lift 12 Map



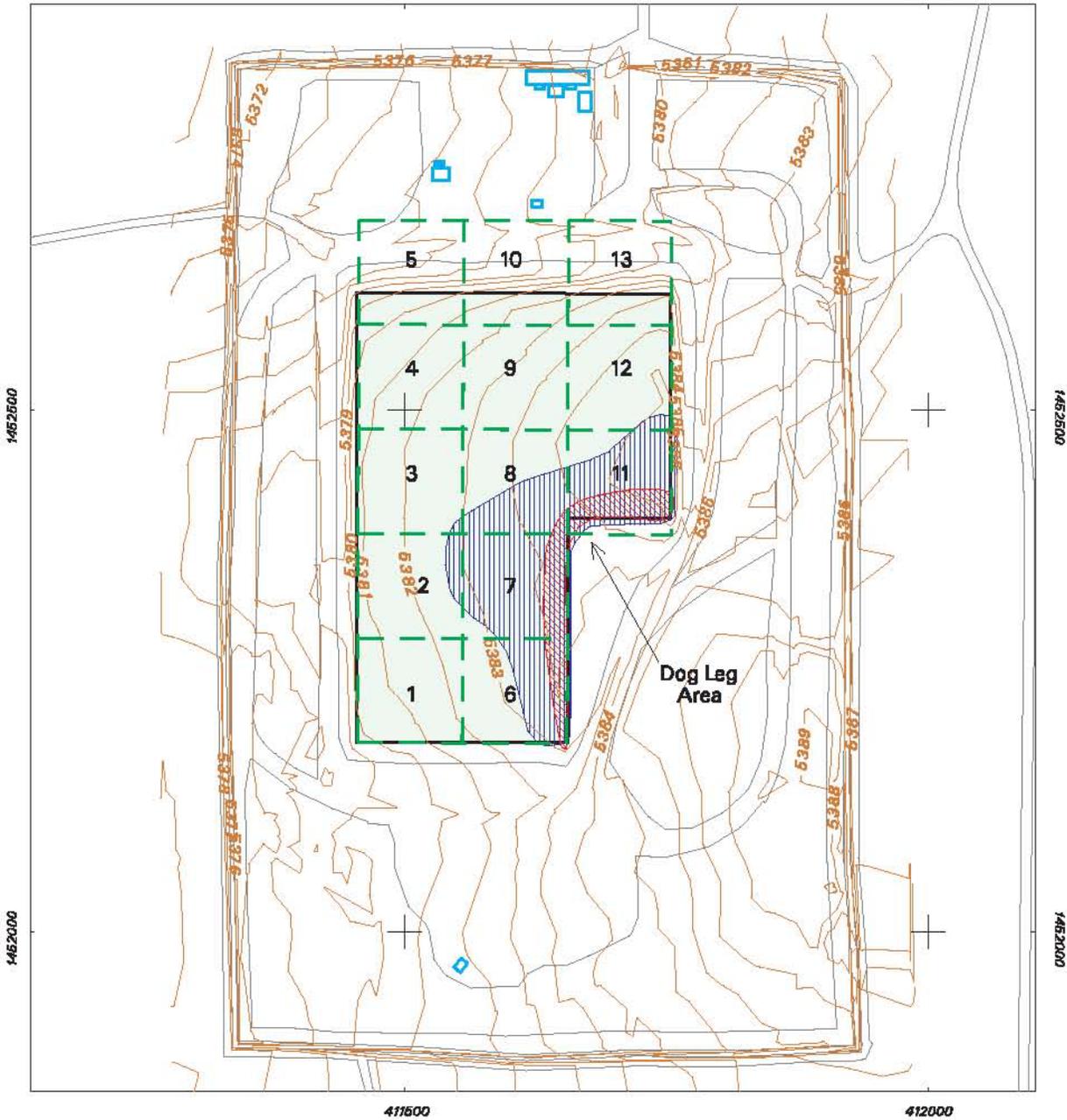


**LEGEND:**

- 6 GRID BLOCK NUMBER
- H3 QC SURVEY VERIFICATION GRID POINTS
- GRID BLOCK BOUNDARY
- — — LANDFILL BOUNDARY
- · - · - LIMIT OF SIDESLOPE (APPROX 6:1)
- ▭ SLOPE AREAS



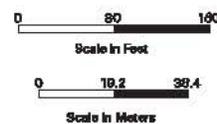
<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113		CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL SURVEY VERIFICATION GRID POINTS AND FIELD TESTING GRID BLOCKS</b>		DWN BY: BDP	DATUM: -
		CHK'D BY: CW	DATE: NOV 2009
		PROJECTION: -	PROJECT NO: 9-517-00022G SCALE: AS SHOWN FIGURE No. <b>18</b>

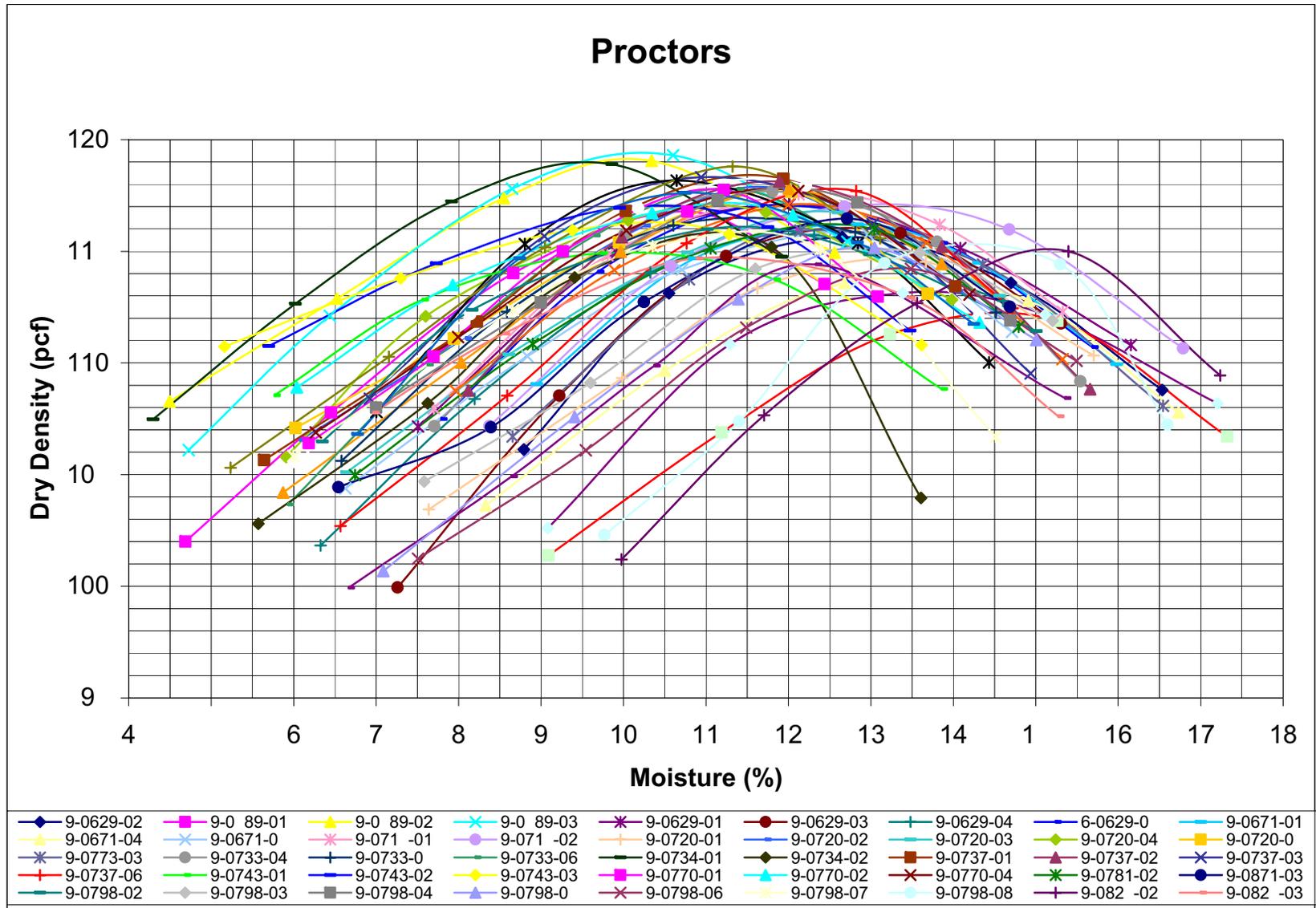


**Legend**

-  Mobile Office / Shed / Water Tank
-  1-ft. Subgrade Contour Interval
-  Edge of unpaved Road
-  100-ft. Sample Grid
-  MWL Disposal Area
-  Wedge Lift 1
-  Wedge Lift 2

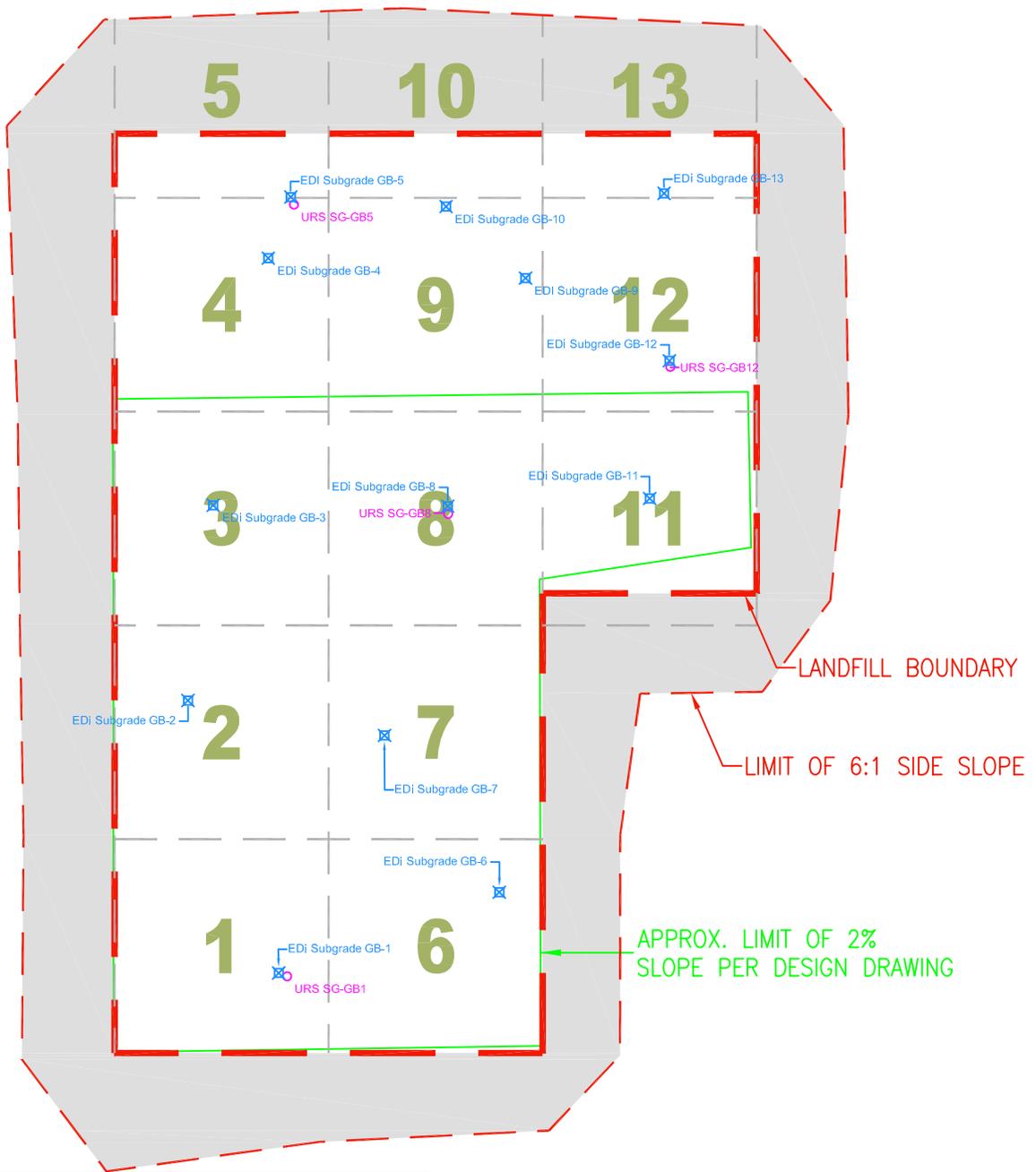
**Figure 19**  
**Mixed Waste Landfill**  
**Cover Grid Blocks and**  
**Locations of Native Soil**  
**Layer Wedge Lifts 1 & 2**





**Figure 20. Graphical Representation of all MWL Alternative Cover Standard Proctor Results**



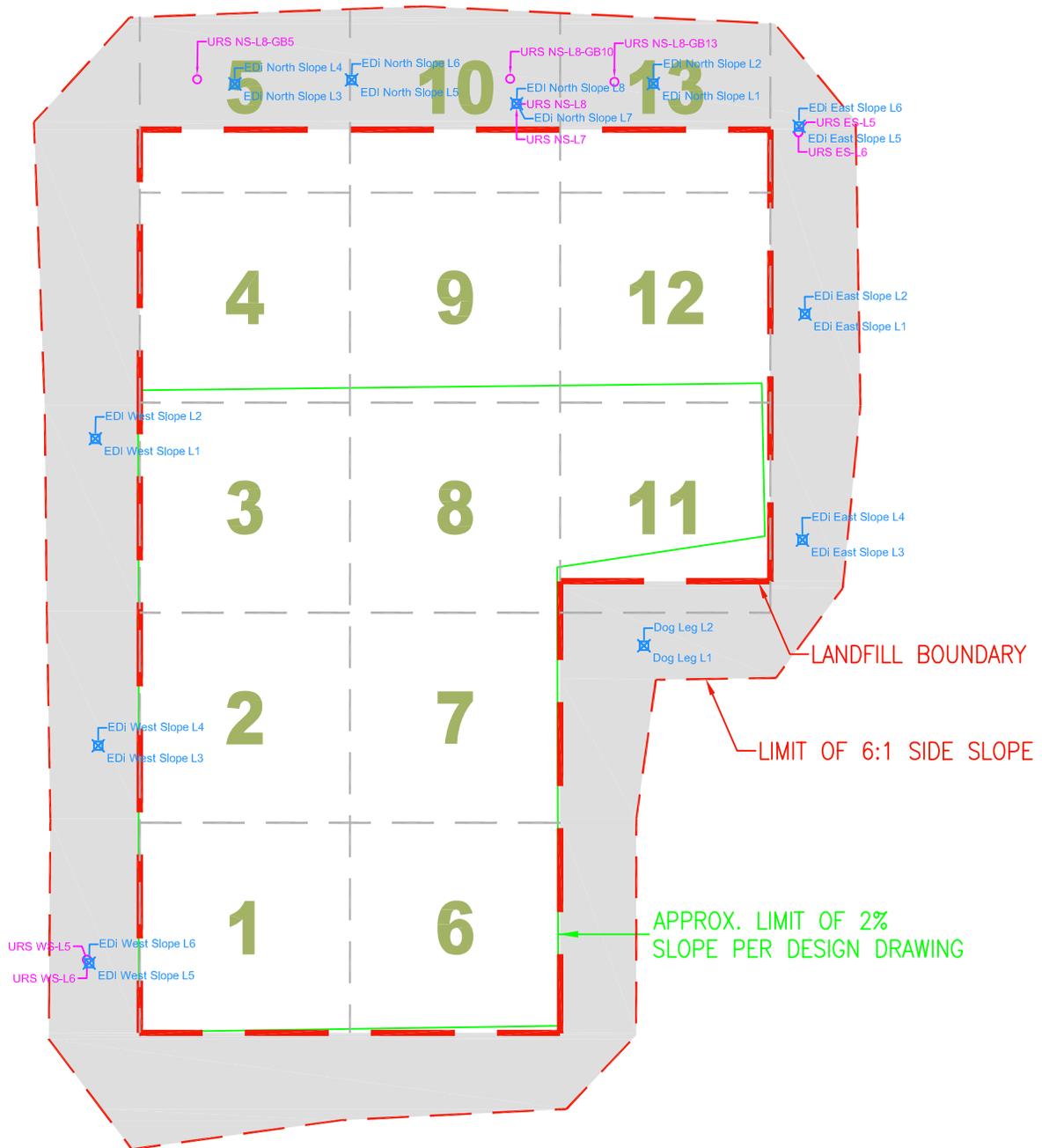


**LEGEND:**

- 6 GRID BLOCK NUMBER
- ✕ QC TEST LOCATIONS
- QA TEST LOCATIONS
- — — — — GRID BLOCK BOUNDARY
- — — — — LANDFILL BOUNDARY
- - - - - LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

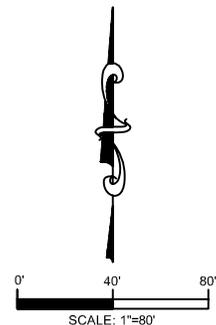


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113		CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>2009 SUBGRADE SURFACE</b>	DWN BY: BDP	DATUM: --	DATE: OCT 2009
	CHK'D BY: CW	REV. NO.: A	PROJECT NO: 9-517-00022G
	PROJECTION: --	SCALE: AS SHOWN	FIGURE No. <b>21</b>

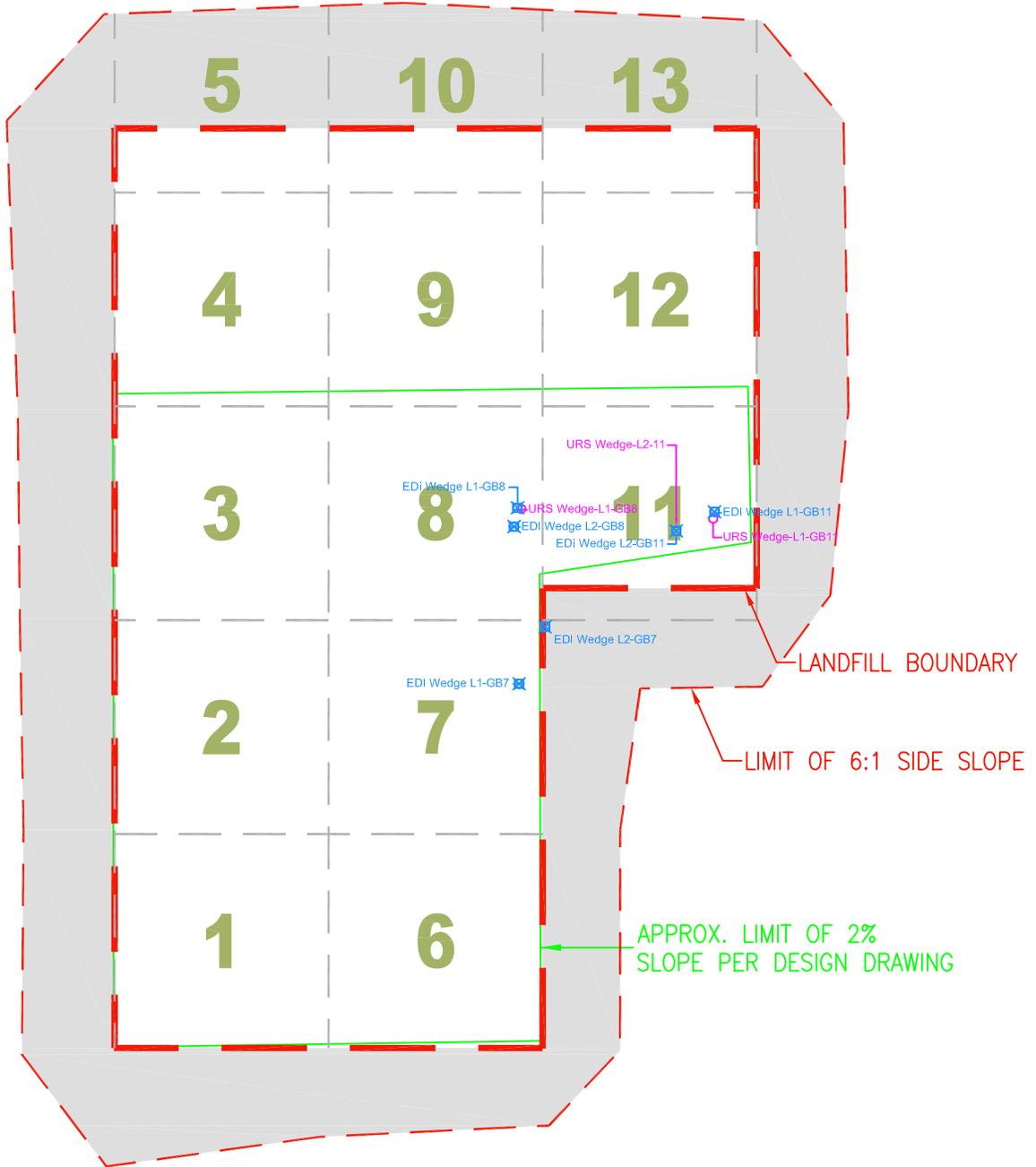


**LEGEND:**

- 6 GRID BLOCK NUMBER
- ✕ QC TEST LOCATIONS
- QA TEST LOCATIONS
- — — — — GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

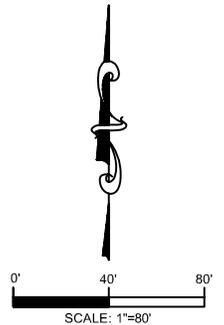


<p><b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113</p>		<p>CLIENT LOGO</p> <p>CLIENT</p> <p style="text-align: center;"><b>SANDIA NATIONAL LABORATORIES</b></p>
<p>TITLE</p> <p style="text-align: center;"><b>MIXED WASTE LANDFILL MOISTURE/DENSITY TEST LOCATIONS SIDE SLOPE LIFTS</b></p>	<p>DWN BY: BDP</p> <p>CHK'D BY: CW</p> <p>PROJECTION: --</p>	<p>DATUM: --</p> <p>REV. NO.: A</p> <p>SCALE: AS SHOWN</p>
		<p>DATE: OCT 2009</p> <p>PROJECT NO: 9-517-00022G</p> <p>FIGURE No. <b>22</b></p>

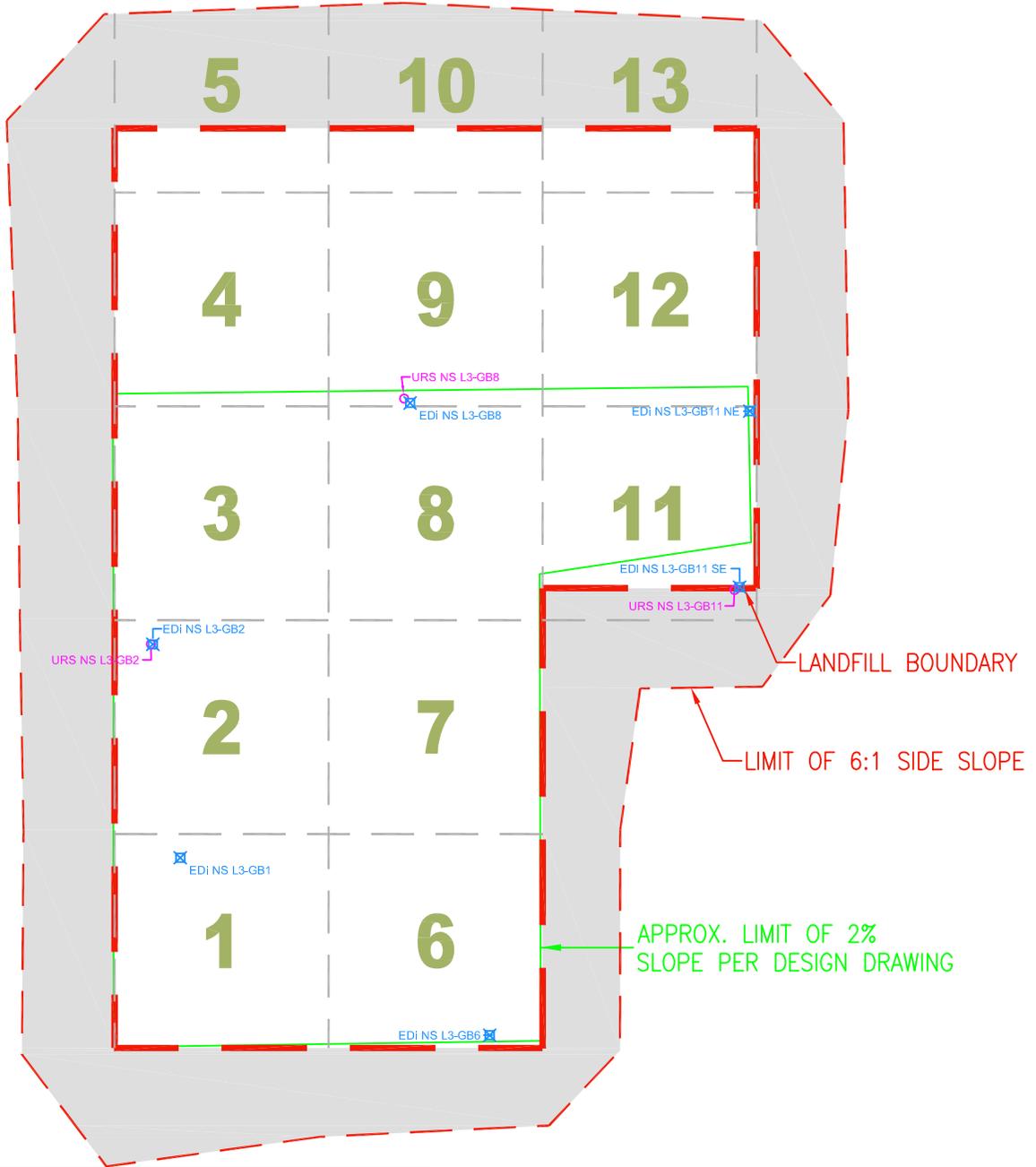


**LEGEND:**

- 6 GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- — — — — GRID BLOCK BOUNDARY
- — — — — LANDFILL BOUNDARY
- - - - - LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

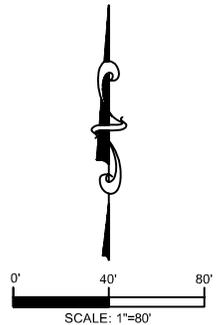


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113		CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL          MOISTURE/DENSITY TEST LOCATIONS          NATIVE SOIL LAYER WEDGE LIFTS 1 &amp; 2</b>	DWN BY: BDP CHK'D BY: CW PROJECTION: --	DATUM: -- REV. NO.: A SCALE: AS SHOWN	DATE: OCT 2009 PROJECT NO: 9-517-00022G FIGURE No. <b>23</b>

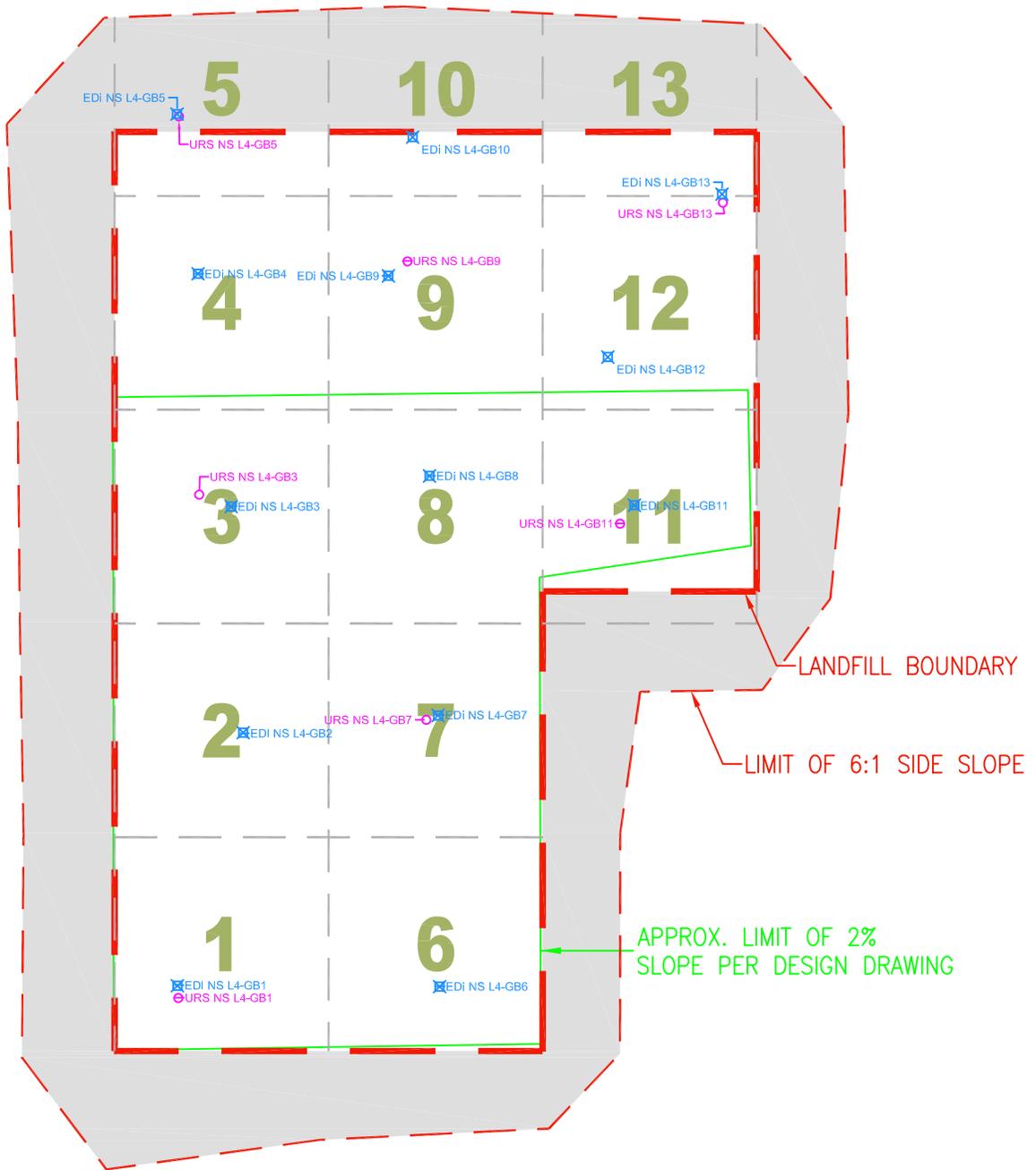


**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

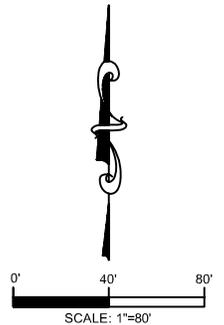


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>NATIVE SOIL LAYER LIFT 3</b>		DWN BY: BDP	DATUM: --	DATE: OCT 2009	PROJECT NO: 9-517-00022G
		CHK'D BY: CW	REV. NO.: A	SCALE: AS SHOWN	FIGURE No. <b>24</b>

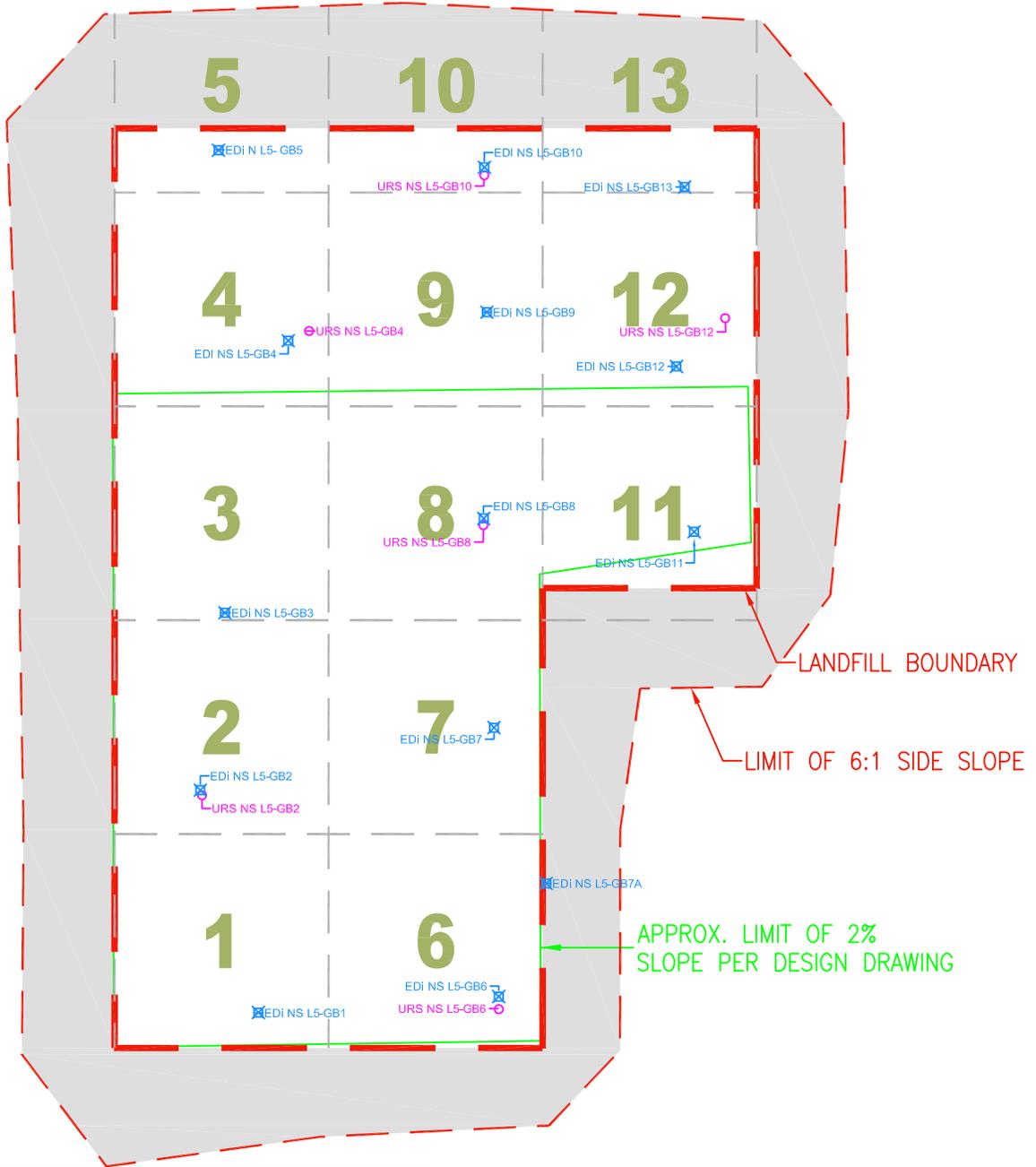


**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

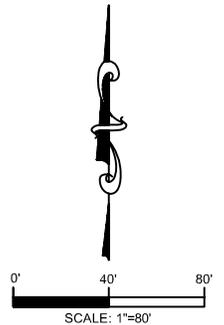


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>NATIVE SOIL LAYER LIFT 4</b>		DWN BY: BDP	DATUM: --	DATE: OCT 2009	PROJECT NO: 9-517-00022G
		CHK'D BY: CW	REV. NO.: A	SCALE: AS SHOWN	FIGURE No. <b>25</b>

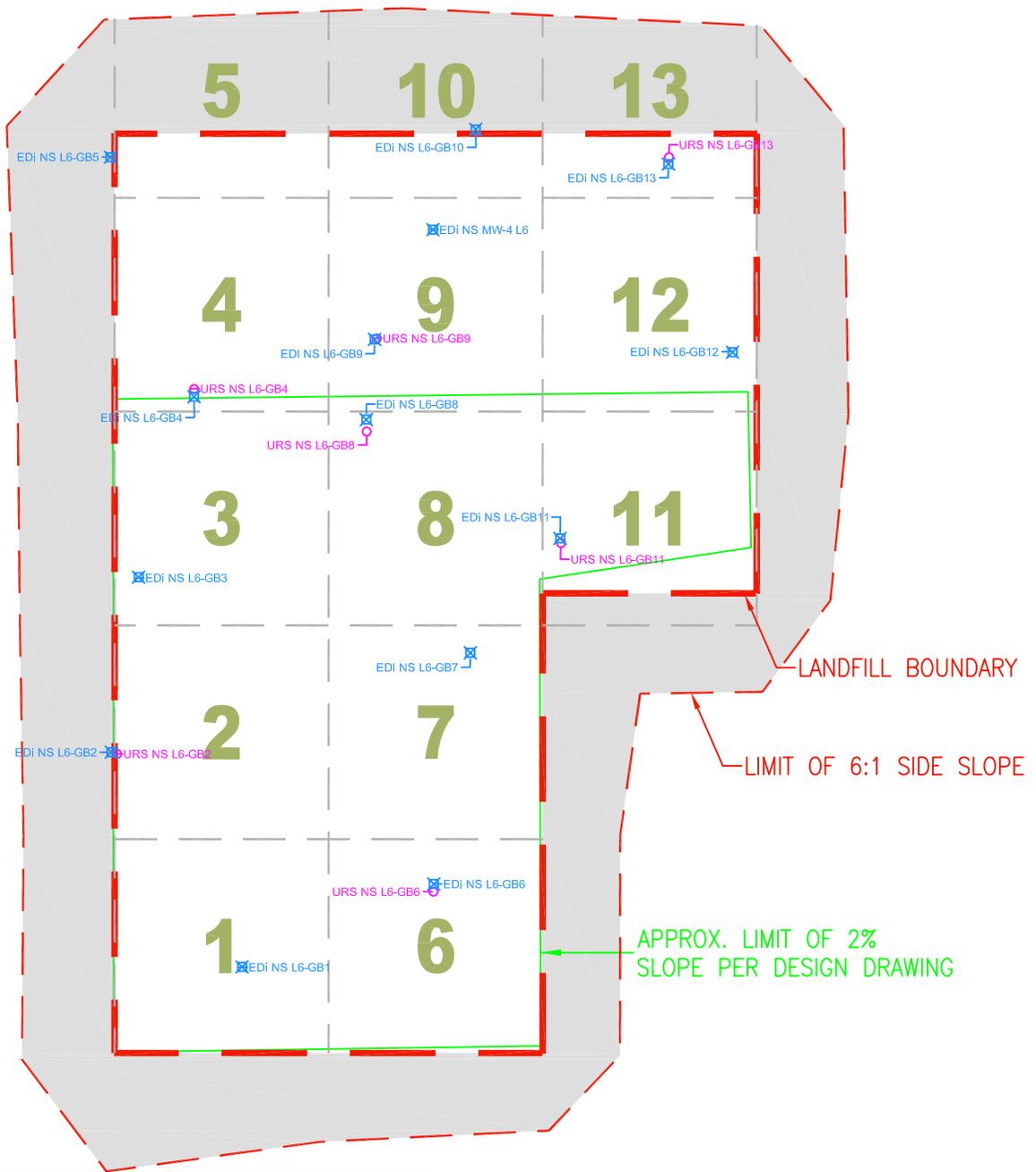


**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS



<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				<b>SANDIA NATIONAL LABORATORIES</b>	
<b>TITLE</b> MIXED WASTE LANDFILL MOISTURE/DENSITY TEST LOCATIONS NATIVE SOIL LAYER LIFT 5		DWN BY: BDP	DATUM: --	DATE: OCT 2009	
		CHK'D BY: CW	REV. NO.: A	PROJECT NO.: 9-517-00022G	
		PROJECTION: --	SCALE: AS SHOWN	FIGURE No. <b>26</b>	

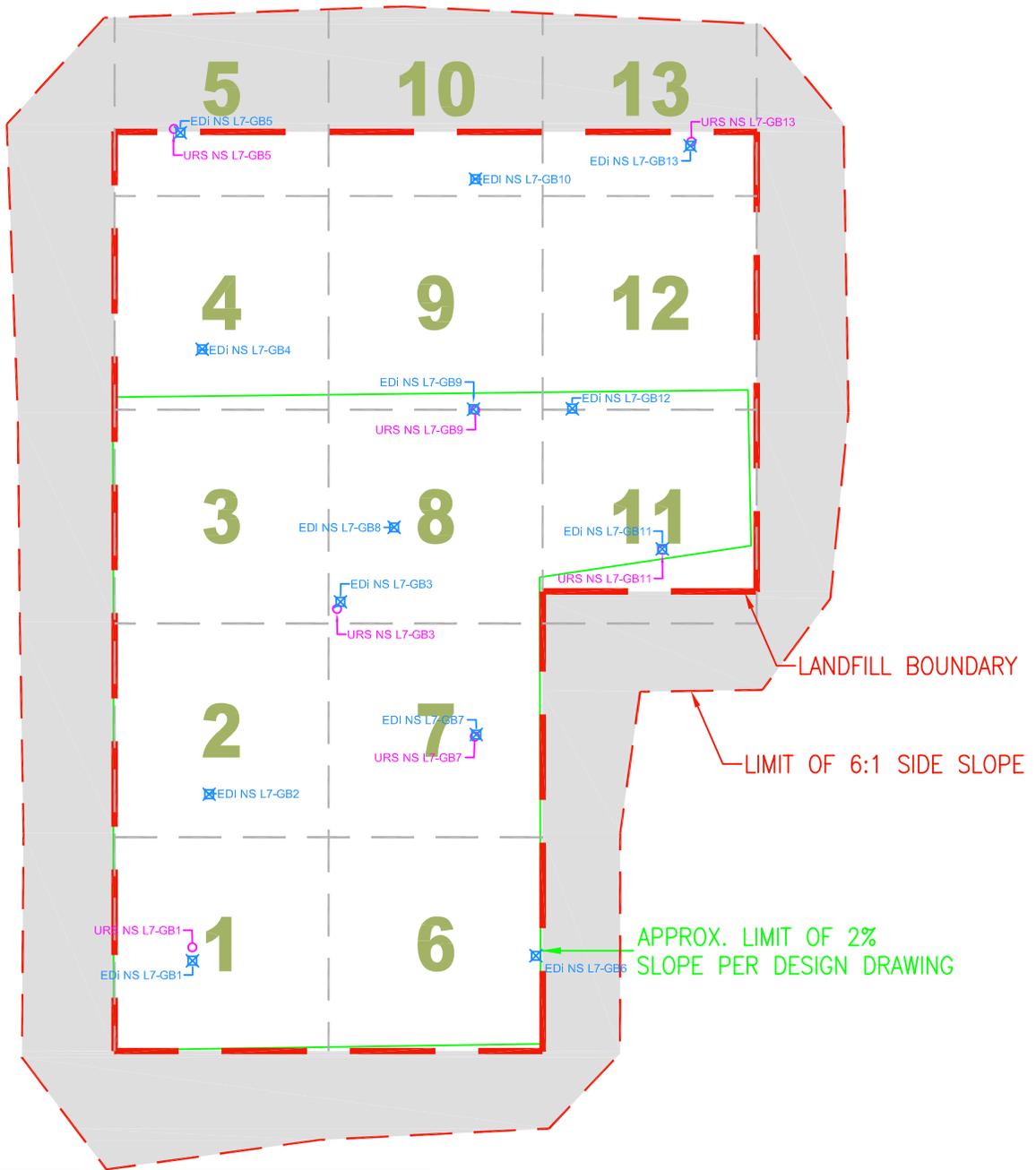


**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

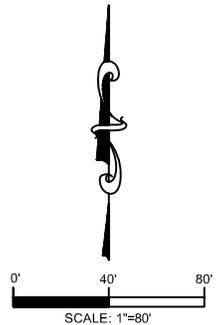


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>NATIVE SOIL LAYER LIFT 6</b>		DWN BY: BDP	DATUM: --	DATE: OCT 2009	PROJECT NO: 9-517-00022G
		CHK'D BY: CW	REV. NO.: A	SCALE: AS SHOWN	FIGURE No. <b>27</b>

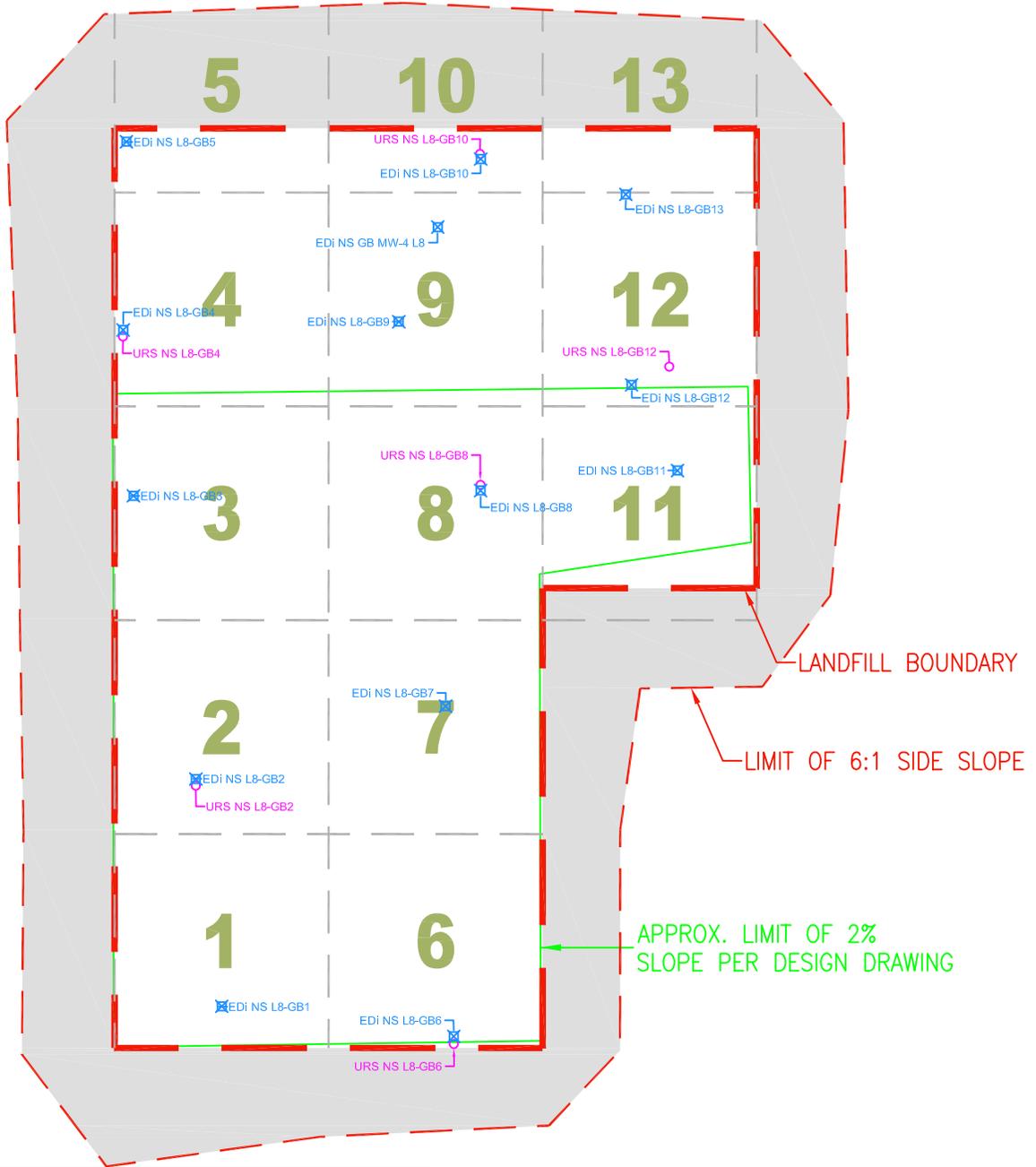


**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS

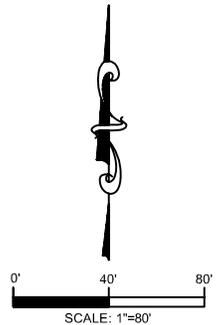


<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				CLIENT LOGO		CLIENT <b>SANDIA NATIONAL LABORATORIES</b>	
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>NATIVE SOIL LAYER LIFT 7</b>				DWN BY: BDP		DATUM: --	
				CHK'D BY: CW		DATE: OCT 2009	
				PROJECTION: --		REV. NO.: A	
				SCALE: AS SHOWN		PROJECT NO.: 9-517-00022G	
						FIGURE No. <b>28</b>	



**LEGEND:**

- 6** GRID BLOCK NUMBER
- QC TEST LOCATIONS
- QA TEST LOCATIONS
- GRID BLOCK BOUNDARY
- LANDFILL BOUNDARY
- LIMIT OF SIDESLOPE (APPROX 6:1)
- SLOPE AREAS



<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113				CLIENT LOGO	CLIENT <b>SANDIA NATIONAL LABORATORIES</b>
<b>TITLE</b> <b>MIXED WASTE LANDFILL</b> <b>MOISTURE/DENSITY TEST LOCATIONS</b> <b>NATIVE SOIL LAYER LIFT 8</b>		DWN BY: BDP	DATUM: --	DATE: OCT 2009	PROJECT NO: 9-517-00022G
		CHK'D BY: CW	REV. NO.: A	SCALE: AS SHOWN	FIGURE No. <b>29</b>



## **As-Built Drawings**



## **2006 Subgrade As-Built Drawing**

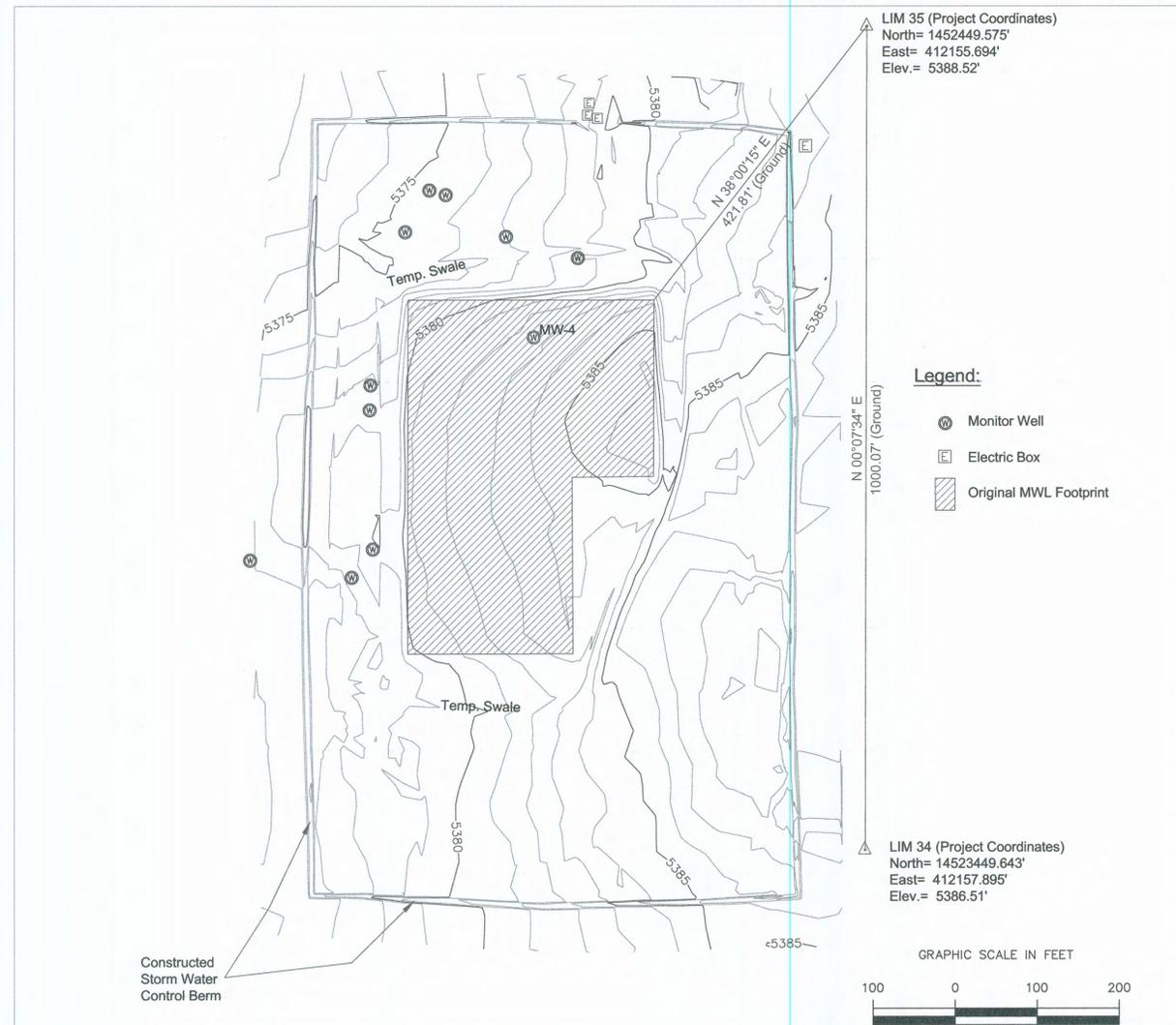


# MIXED WASTE LANDFILL FINISHED SUBGRADE SURVEY

# MWL

## TECH AREA III

**Sandia National Laboratories  
Bernalillo County, New Mexico  
August 2007**



- Legend:**
- Monitor Well
  - Electric Box
  - Original MWL Footprint

**Survey Notes:**

- 1.) "Finished Subgrade" conditions based on topographic surveys by URS Corporation April 2007.
- 2.) Elevations for this survey are based on SNL/KAFB Monument "LIM 35" with an NGVD 29 elevation of 5388.52'. Contour interval is one foot.
- 3.) Survey Control Coordinates are modified state plane (or "Ground"), based on New Mexico State Plane, Central Zone, North American Datum of 1927. A Combined Scale Factor of .999651675 was used to derive project coordinates. State Plane (or "Grid") values of Control Points Used: LIM 34 (North= 1452943.37, East= 412014.33) and LIM 35 (North= 1451943.65, East= 412012.13)
- 4.) Only surface appurtenances of underground utilities are shown. Other utilities may exist that are not shown on this survey. SNL ESD files were not incorporated into this survey.
- 5.) Distances shown are ground.
- 6.) This is not a boundary survey. No property corners or lines are shown.
- 7.) This map has been produced according to procedures that have been demonstrated to produce data that meets or exceeds the minimum standards for a topographic map compiled at a scale of 1 inch equals 100 feet with a contour interval of 1 foot.

**SURVEYOR'S CERTIFICATION**



I, RUSSELL D. ELLIOTT, NEW MEXICO PROFESSIONAL SURVEYOR No. 13838, HEREBY CERTIFY THAT A TOPOGRAPHIC SURVEY, AS SHOWN HEREON, HAS BEEN SURVEYED AND PLATTED IN ACCORDANCE WITH THE STANDARDS FOR TOPOGRAPHIC SURVEYS IN THE STATE OF NEW MEXICO, RULE 500.5, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I, FURTHER CERTIFY THAT THIS SURVEY AND PLAT DO NOT MEET THE REQUIREMENTS OF ANY (MUNICIPAL, COUNTY AND/OR STATE) SUBDIVISION ORDINANCES AND IS NOT INTENDED TO SUBDIVIDE ANY EXISTING PARCEL. THIS IS NOT A BOUNDARY SURVEY.

*Russell D. Elliott*  
RUSSELL D. ELLIOTT N.M.P.S. No. 13838 DATE 8-30-2007



P.O. OR W.O. PROJECT NO.	REV	DATE	DESCRIPTION	DWN	CKD	APP

U.S. DEPARTMENT OF ENERGY		P.O. OR W.O.
KIRTLAND AREA OFFICE ALBUQUERQUE, NEW MEXICO		PROJECT NO.
SANDIA NATIONAL LABORATORIES		DRAWN BY DW/JDL
ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA; TONOPAH, NEVADA		CHECKED BY HFB
SNL/NM MIXED WASTE LANDFILL		APPROVED BY RDE
2006 Finished Subgrade		DATE 08/07
SURVEY	SIZE DRAWING NO.	SEQ.
FILE NAME: MWL-FinishedGrade	1	1/1

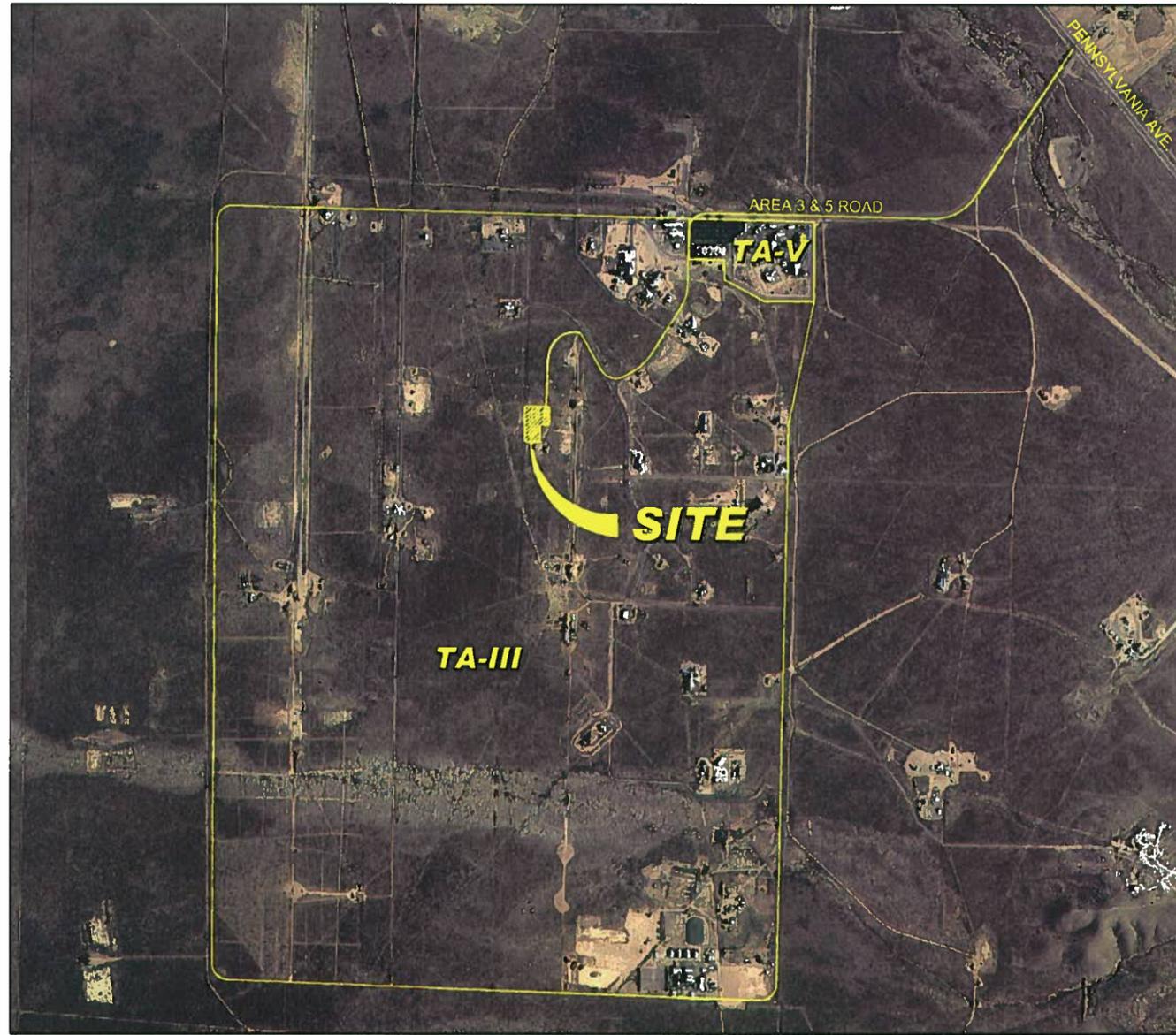


24:34284:07 Design\Survey\Finish Surface.dwg\MWL-FinishedGrade.dwg

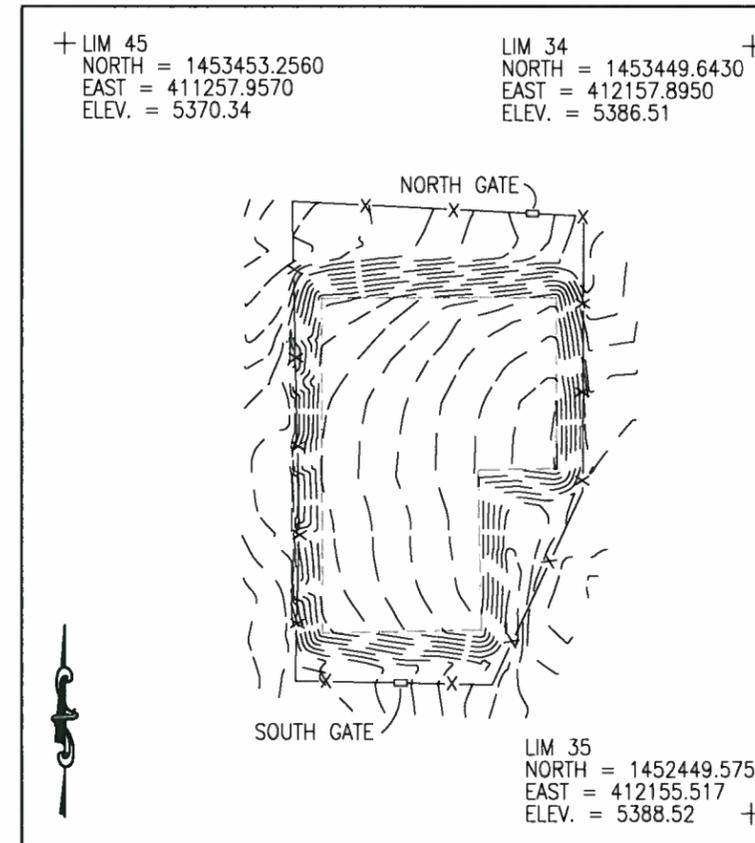
**2009 Alternative Cover  
As-Built Drawings**



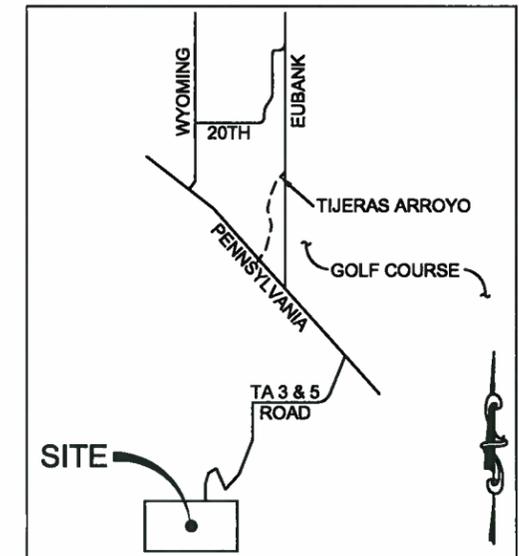
**AS-BUILT DRAWINGS**  
**MIXED WASTE LANDFILL ALTERNATIVE**  
**EVAPOTRANSPIRATIVE COVER**  
**SANDIA NATIONAL LABORATORIES**  
**ALBUQUERQUE, NEW MEXICO**  
**JULY 2010**



VICINITY MAP  
N.T.S.



BENCHMARK MAP



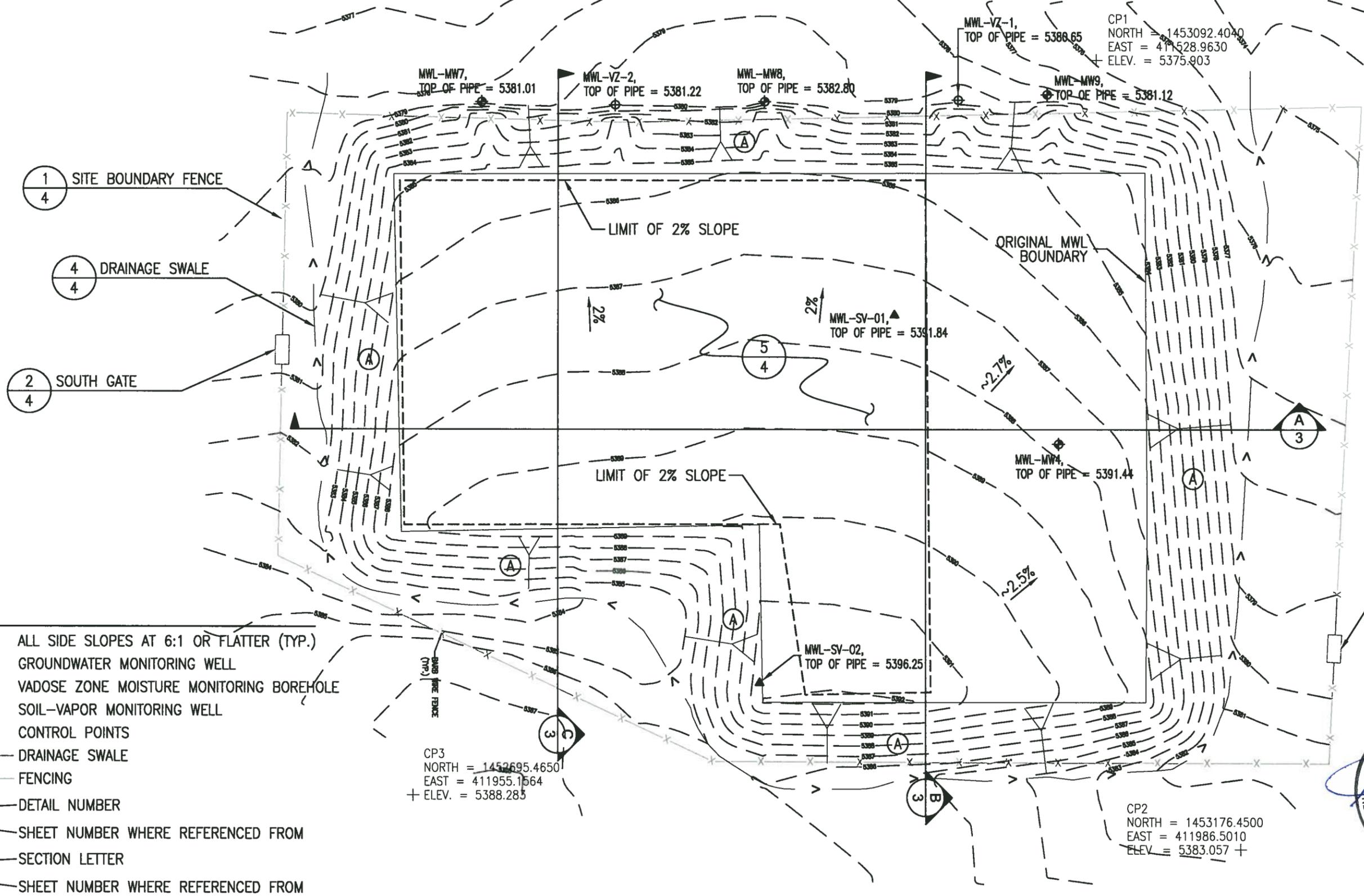
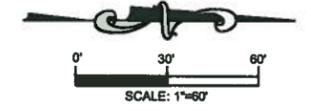
LOCATION MAP  
N.T.S.

INDEX

<u>DESCRIPTION</u>	<u>PAGE</u>
TITLE SHEET .....	1
SITE PLAN .....	2
SECTIONS .....	3
DETAILS .....	4



<b>SANDIA NATIONAL LABORATORIES</b>	DWN BY: BDP	<b>MIXED WASTE LANDFILL ALTERNATIVE EVAPOTRANSPIRATIVE COVER</b>	DATE: JUL 2011
	CHK'D BY: CW		CONTRACT NO: 9-517-00022G
<b>AMEC Earth &amp; Environmental</b> 8519 Jefferson, NE Albuquerque, NM 87113  	DATUM: N/A	<b>TITLE SHEET</b>	REV. NO.: A
	PROJECTION: N/A		FIGURE NO. <b>1</b>
	SCALE: AS SHOWN		



- LEGEND:**
- (A) ALL SIDE SLOPES AT 6:1 OR FLATTER (TYP.)
  - ⊕ GROUNDWATER MONITORING WELL
  - ⊕ VADOSE ZONE MOISTURE MONITORING BOREHOLE
  - ▲ SOIL-VAPOR MONITORING WELL
  - ⊕ CONTROL POINTS
  - - - DRAINAGE SWALE
  - - - FENCING
  - (3) DETAIL NUMBER
  - (4) SHEET NUMBER WHERE REFERENCED FROM
  - (C) SECTION LETTER
  - (4) SHEET NUMBER WHERE REFERENCED FROM



SOURCE:  
 SURVEY PROVIDED BY ALBUQUERQUE SURVEYING CO. INC.,  
 2119 Menaul Blvd. N.E., Albuquerque, New Mexico 87107  
 (1.4.2010)

**SANDIA NATIONAL LABORATORIES**

AMEC Earth & Environmental  
 8519 Jefferson, NE  
 Albuquerque, NM 87113

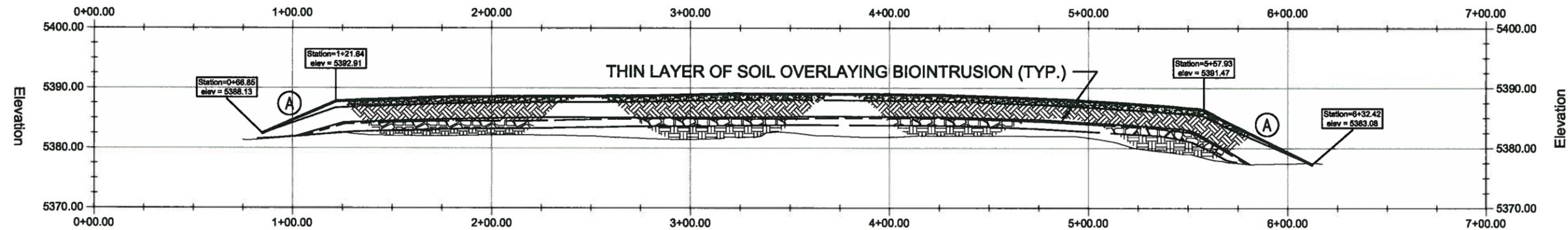


DWN BY: BDP  
 CHK'D BY: CW  
 DATUM: N/A  
 PROJECTION: N/A  
 SCALE: AS SHOWN

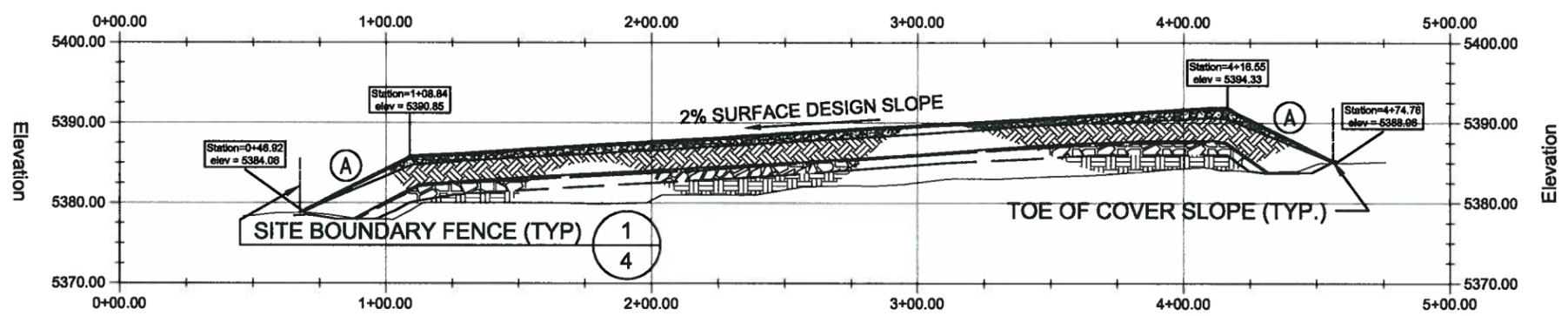
PROJECT  
**MIXED WASTE LANDFILL ALTERNATIVE  
 EVAPOTRANSPIRATIVE COVER**

TITLE  
**SITE PLAN**

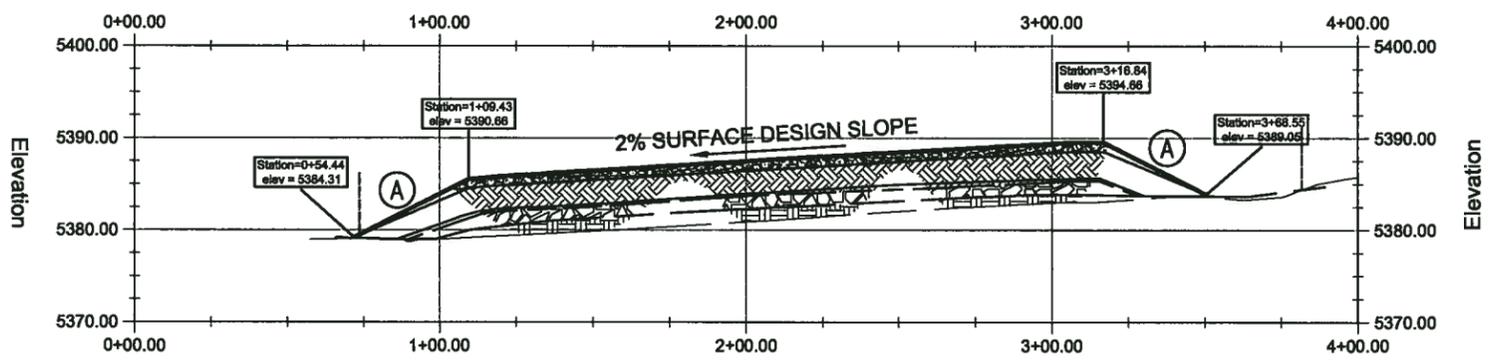
DATE: JUL 2011  
 CONTRACT NO: 9-517-00022G  
 REV. NO.: A  
 FIGURE NO. **2**



**SECTION A**  
2 SCALE: VERTICAL 1" = 20', HORIZONTAL 1" = 60'



**SECTION B**  
2 SCALE: VERTICAL 1" = 20', HORIZONTAL 1" = 60'



**SECTION C**  
2 SCALE: VERTICAL 1" = 20', HORIZONTAL 1" = 60'

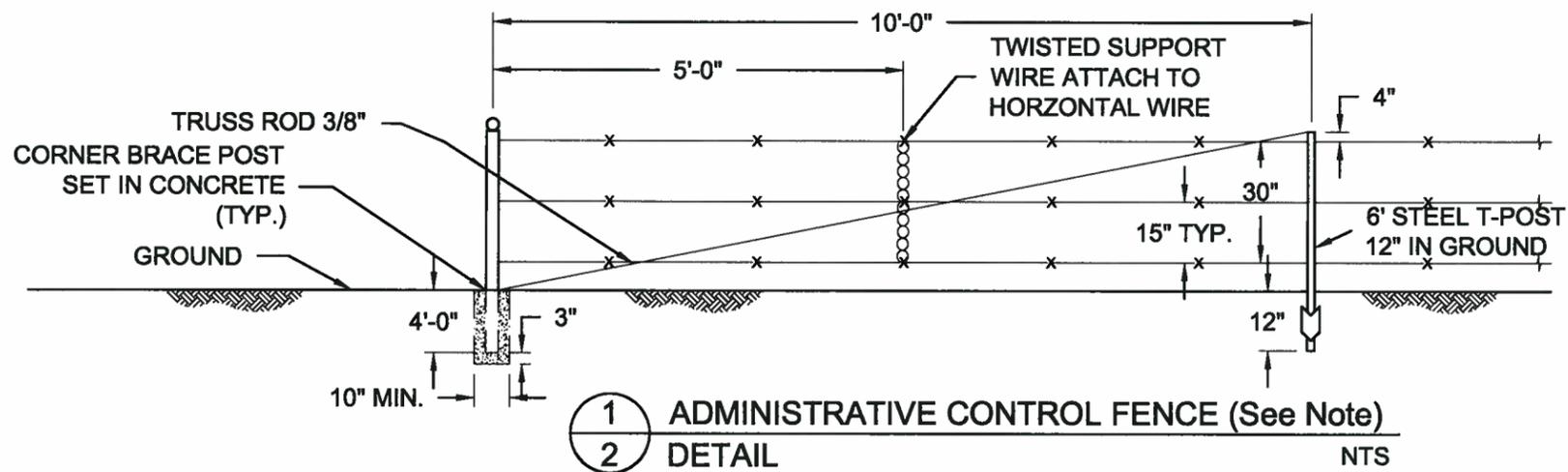
**LEGEND:**

-  TOPSOIL
-  NATIVE SOIL
-  BIOINTRUSION
-  SUBGRADE
-  EXISTING SURFACE
-  ALL SIDE SLOPES AT 6:1 OR FLATTER (TYP.)
-  SECTION LETTER
-  SHEET NUMBER WHERE REFERENCED FROM

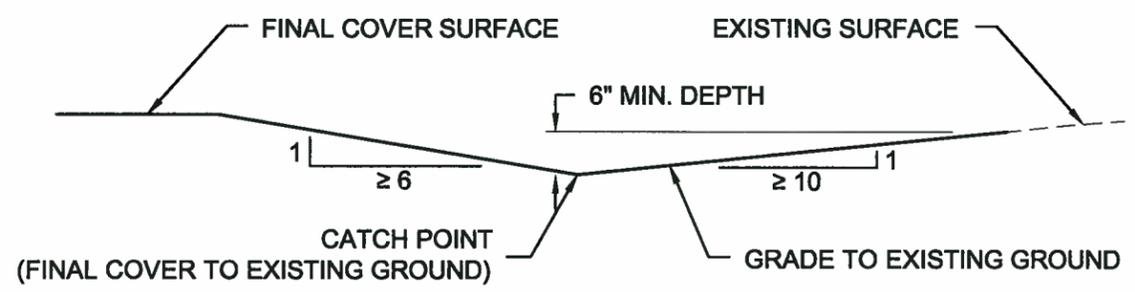


**NOTE:**  
EXISTING SURFACE BASED ON MAY 10, 2006  
PRE-CONSTRUCTION SURVEY PERFORMED BY URS CORP.

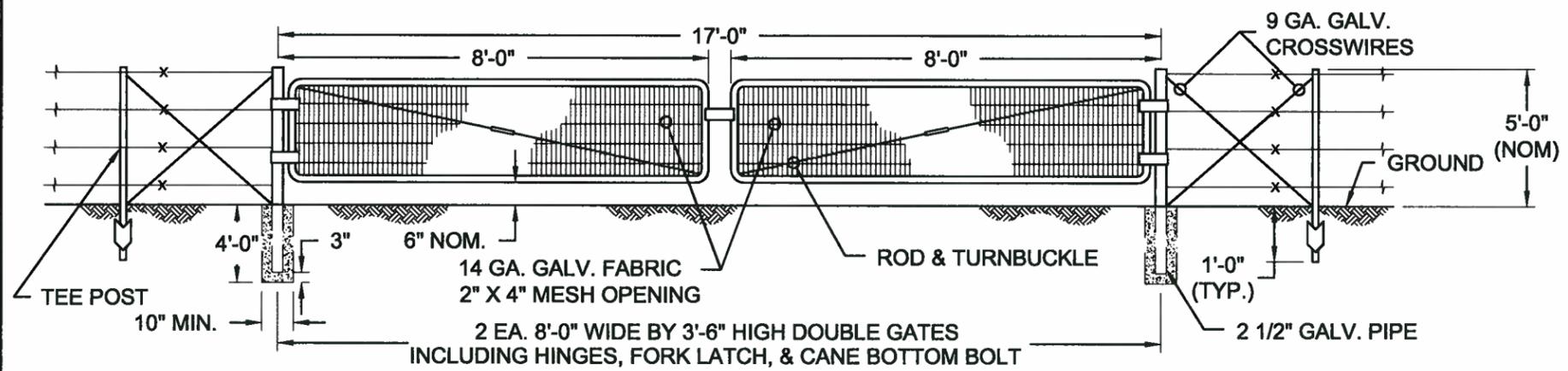
<b>SANDIA NATIONAL LABORATORIES</b>		DWN BY: BDP	<b>MIXED WASTE LANDFILL ALTERNATIVE EVAPOTRANSPIRATIVE COVER</b>	DATE: JUL 2011
		CHK'D BY: CW		CONTRACT NO: 9-517-00022G
AMEC Earth & Environmental 8519 Jefferson, NE Albuquerque, NM 87113		DATUM: N/A	<b>SECTIONS</b>	REV. NO: A
		PROJECTION: N/A		FIGURE NO: <b>3</b>
		SCALE: AS SHOWN		



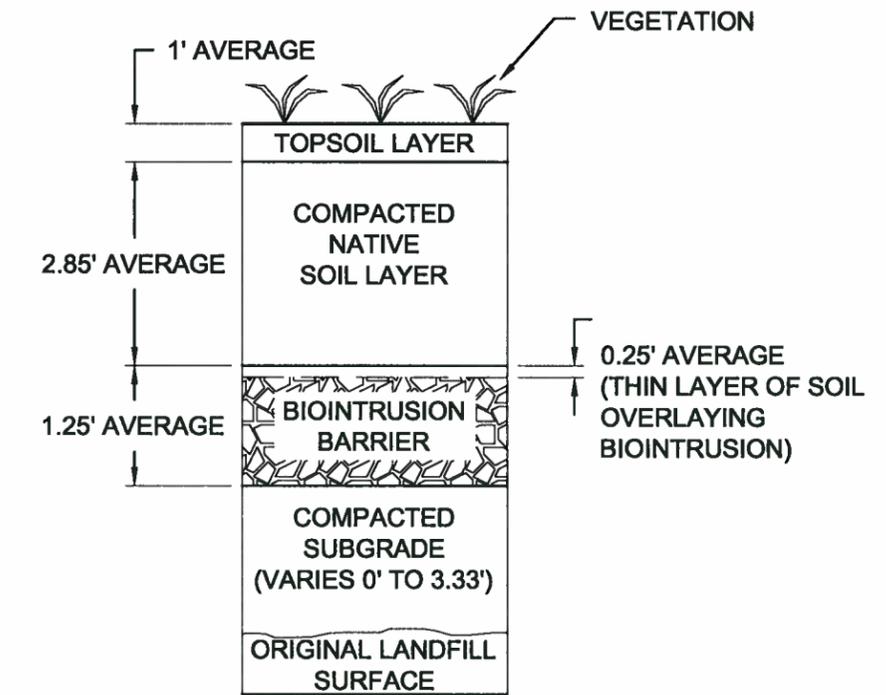
1 ADMINISTRATIVE CONTROL FENCE (See Note)  
2 DETAIL NTS



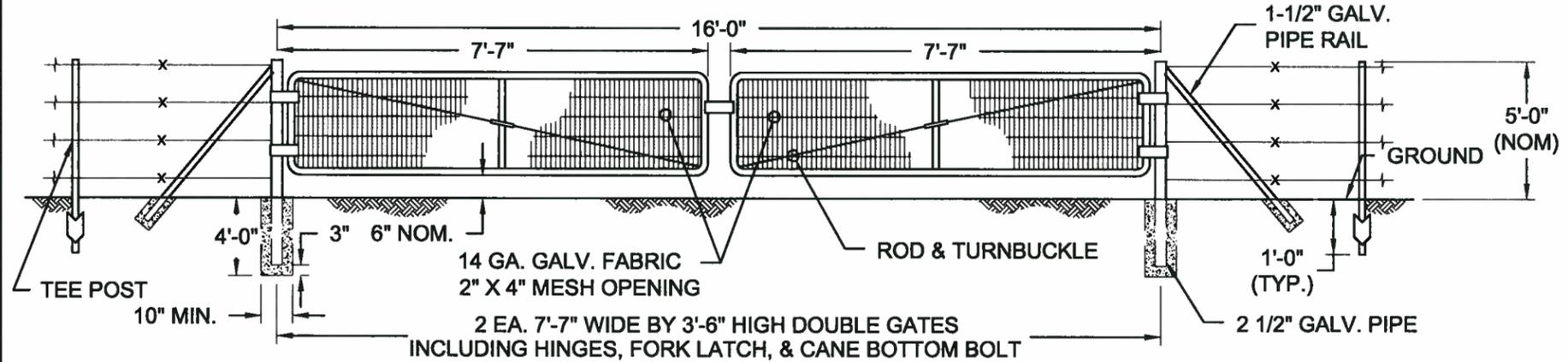
4 TYPICAL DRAINAGE SWALE SECTION  
2 DETAIL NTS



2 SOUTH GATE (See Note)  
2 DETAIL NTS



5 GENERALIZED COVER CROSS SECTION  
2 DETAIL NTS



3 NORTH GATE (See Note)  
2 DETAIL NTS

LEGEND:

- 3 - DETAIL NUMBER
- 2 - SHEET NUMBER WHERE REFERENCED FROM



NOTE:  
ADMINISTRATIVE CONTROL FENCE IS 3-STRAND BARBED WIRE WITH TEE-POSTS DRIVEN INTO THE GROUND AND STEEL CORNER POSTS SET IN CONCRETE. GATE IS A TUBULAR STEEL GALVANIZED GATE, 2-IN DIAMETER. ALL END AND CORNER POSTS ARE BRACED BY MEANS OF 3/8-IN Ø DIAGONAL TRUSS RODS.

<b>SANDIA NATIONAL LABORATORIES</b>		DWN BY: BDP	PROJECT: <b>MIXED WASTE LANDFILL ALTERNATIVE EVAPOTRANSPIRATIVE COVER</b>	DATE: JUL 2011
AMEC Earth & Environmental 8519 Jefferson, NE Albuquerque, NM 87113		CHK'D BY: CW	<b>DETAILS</b>	CONTRACT NO: 9-517-00022G
		DATUM: N/A		REV. NO.: A
		PROJECTION: N/A	<b>DETAILS</b>	FIGURE NO. <b>4</b>
		SCALE: AS SHOWN		

## **QA Verification Survey Plates**



# MIXED WASTE LANDFILL BIOINTRUSION LAYER QA SURVEY

# MWL

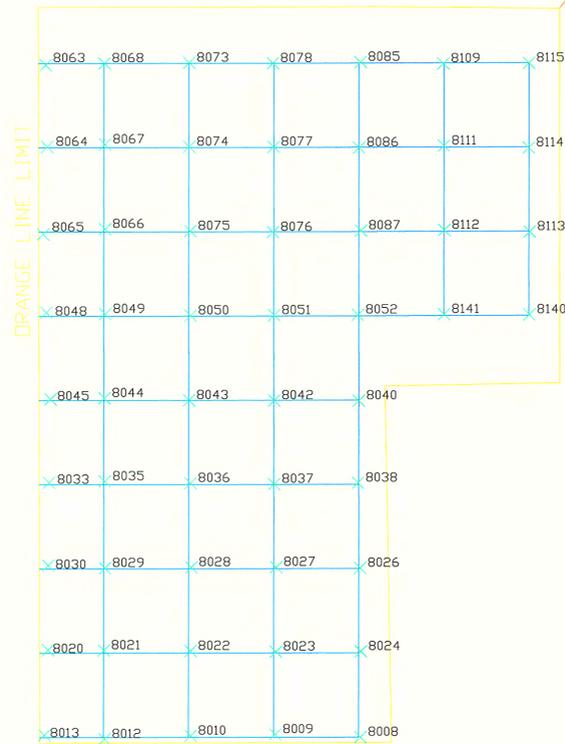
## TECH AREA III Sandia National Laboratories Bernalillo County, New Mexico June, 2009

### Legend

Original MWL Footprint

1 2 3 4 5 6 7

A  
B  
C  
D  
E  
F  
G  
H  
I



LIM 34 (Project Coordinates)  
North= 14523449.643'  
East= 412157.895'  
Elev.= 5386.51'

N 38° 00' 12" E  
416.851' (Ground)



GRAPHIC SCALE IN FEET



### URS BIO LAYER QA SHOTS

GRID	URS PT #	TOP BIO ELEV	ASCI PT #	SUB GRADE ELEV	FILL
A1	8063	5380.81	1043	5379.49	1.32
A2	8068	5381.35	1071	5380.15	1.20
A3	8073	5382.32	1080	5380.94	1.38
A4	8078	5383.27	1095	5381.97	1.30
A5	8085	5384.63	1106	5383.08	1.55
A6	8109	5385.28	1127	5383.83	1.45
A7	8115	5386.02	1139	5384.83	1.19
B1	8064	5381.59	1044	5380.16	1.43
B2	8067	5382.37	1070	5380.88	1.49
B3	8074	5383.29	1081	5382.03	1.26
B4	8077	5384.22	1094	5382.97	1.25
B5	8086	5385.35	1112	5384.18	1.17
B6	8111	5386.24	1126	5385.06	1.18
B7	8114	5387.27	1140	5386.02	1.25
C1	8065	5382.24	1048	5380.74	1.49
C2	8066	5383.02	1069	5381.65	1.37
C3	8075	5383.51	1082	5382.47	1.04
C4	8076	5384.80	1093	5383.43	1.37
C5	8087	5385.90	1113	5384.80	1.10
C6	8112	5387.14	1125	5385.76	1.38
C7	8113	5387.89	1141	5386.37	1.52
D1	8048	5382.20	1049	5381.12	1.07
D2	8049	5383.18	1068	5381.85	1.33
D3	8050	5383.83	1083	5382.71	1.12
D4	8051	5384.82	1092	5383.55	1.27
D5	8052	5385.89	1114	5384.75	1.14
D6	8141	5387.26	1124	5385.90	1.36
D7	8140	5387.72	1142	5386.36	1.36
E1	8045	5382.44	1054	5381.20	1.24
E2	8044	5383.06	1067	5381.76	1.30
E3	8043	5383.95	1084	5382.76	1.19
E4	8042	5384.68	1091	5383.58	1.10
E5	8040	5385.43	1115	5384.28	1.15
F1	8033	5382.08	1055	5380.98	1.10
F2	8035	5382.85	1066	5381.78	1.07
F3	8036	5383.82	1085	5382.73	1.09
F4	8037	5384.91	1090	5383.53	1.38
F5	8038	5385.44	1117	5384.19	1.25
G1	8030	5382.01	1058	5380.64	1.37
G2	8029	5382.58	1065	5381.27	1.31
G3	8028	5383.63	1086	5382.40	1.23
G4	8027	5385.04	1089	5383.14	1.90
G5	8026	5385.24	1118	5383.98	1.26
H1	8020	5381.70	1063	5380.35	1.35
H2	8021	5382.30	1064	5381.28	1.02
H3	8022	5383.54	1087	5382.00	1.54
H4	8023	5384.46	1088	5382.97	1.49
H5	8024	5385.04	1119	5383.87	1.17
I1	8013	5381.33	1189	5379.82	1.51
I2	8012	5381.72	1183	5380.56	1.14
I3	8010	5383.11	1180	5381.40	1.71
I4	8009	5383.93	1177	5382.56	1.37
I5	8008	5384.52	1172	5383.51	1.01
AVERAGE					1.29

### Survey Notes:

- Biointrusion Layer conditions based on spot elevations surveyed by URS, June 2009.
- Elevations for this survey are based on SNL/KAFB Monument "LIM 35" with an NGVD 29 elevation of 5388.52'.
- Survey Control Coordinates are modified state plane (or "Ground"), based on New Mexico State Plane, Central Zone, North American Datum of 1927. A Combined Scale Factor of .999651675 was used to derive project coordinates. State Plane (or "Grid") values of Control Points Used: LIM 34 (North= 1452943.37, East= 412014.33) and LIM 35 (North= 1451943.65, East= 412012.13)
- No surface appurtenances of underground utilities are shown. Other utilities may exist that are not shown on this survey. SNL ESD files were not incorporated into this survey.
- Distances shown are ground.
- This is not a boundary survey. No property corners or lines are shown.
- The table compares URS survey data (the 2 left-hand columns), shot on the top of the Biointrusion Layer with earlier ASCI survey data (the next 2 columns), shot on the top of the Subgrade. The FILL column shows the thickness of the Biointrusion Layer.
- Survey was not collected by URS on grid points E5.1, E6, and E7 for the Biointrusion Layer. See Figure 17 for Surveyed Verification Grid Points And Filed Testing Grid Blocks Description.

### SURVEYOR'S CERTIFICATION

I, KIM STELZER, NEW MEXICO PROFESSIONAL SURVEYOR No. 7482, HEREBY CERTIFY THAT A TOPOGRAPHIC SURVEY, AS SHOWN HEREON, HAS BEEN SURVEYED AND PLATTED IN ACCORDANCE WITH THE STANDARDS FOR TOPOGRAPHIC SURVEYS IN THE STATE OF NEW MEXICO, RULE 500.5, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY AND PLAT DO NOT MEET THE REQUIREMENTS OF ANY (MUNICIPAL, COUNTY AND/OR STATE) SUBDIVISION ORDINANCES AND IS NOT INTENDED TO SUBDIVIDE ANY EXISTING PARCEL. THIS IS NOT A BOUNDARY SURVEY.



Dec 29, 2009

DATE

CAD DRAWING

FILE NAME: MWL-VA SURVEY 9-4-2009

P.O. OR W.O.	REV	DATE	DESCRIPTION	DWN	CKD	APP
U.S. DEPARTMENT OF ENERGY						
KIRTLAND AREA OFFICE ALBUQUERQUE, NEW MEXICO						
SANDIA NATIONAL LABORATORIES						
ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA; TONOPAH, NEVADA						
SNL/NM MIXED WASTE LANDFILL Biointrusion Layer						
PROJECT NO.			P.O. OR W.O.			
DRAWN BY			HFB			
CHECKED BY			RDE			
APPROVED BY			RDE			
DATE			06/09			
SURVEY			SIZE (PLATE NO.): 1			
FILE NAME: MWL-VA SURVEY 9-4-2009			1/1			

# URS

## URS CORPORATION

# MIXED WASTE LANDFILL NATIVE SOIL LAYER QA SURVEY

# MWL

## TECH AREA III Sandia National Laboratories Bernalillo County, New Mexico June, 2009

### Survey Notes:

- Native Soil Layer data based on spot elevations surveyed by URS, June 2009.
- Elevations for this survey are based on SNL/KAFB Monument "LIM 35" with an NGVD 29 elevation of 5388.52'.
- Survey Control Coordinates are modified state plane (or "Ground"), based on New Mexico State Plane, Central Zone, North American Datum of 1927. A Combined Scale Factor of .999651675 was used to derive project coordinates. State Plane (or "Grid") values of Control Points Used: LIM 34 (North= 1452943.37, East= 412014.33) and LIM 35 (North= 1451943.65, East= 412012.13)
- No surface appurtenances of underground utilities are shown. Other utilities may exist that are not shown on this survey. SNL ESD files were not incorporated into this survey.
- Distances shown are ground.
- This is not a boundary survey. No property corners or lines are shown.
- The 6 columned table titled "URS NATIVE SOIL LAYER QA SHOTS" compares URS survey data (columns 2&3), shot on the top of the Native Soil Layer with earlier ASCII survey data (columns 4&5), shot on the top of the thin soil layer. The "FILL" column shows the thickness of the Native Soil Layer.
- The tables titles "URS NATIVE SOIL LAYER TOP SHOTS" and "URS NATIVE SOIL LAYER TOE SHOTS" are shown for slope verification only. No thickness can be inferred from this data.
- The northwest corner side slope of the Native Soil Layer is 4.7:1 in lieu of 6:1. The northwest corner side slope will be adjusted to 6:1 during the construction of the Topsoil Layer.
- Survey was not collected by URS on grid points B2, E5.1, E6, E7, and G2 for the Native Soil Layer. See Figure 17 for Surveyed Verification Grid Points And Field Testing Grid Blocks Description.

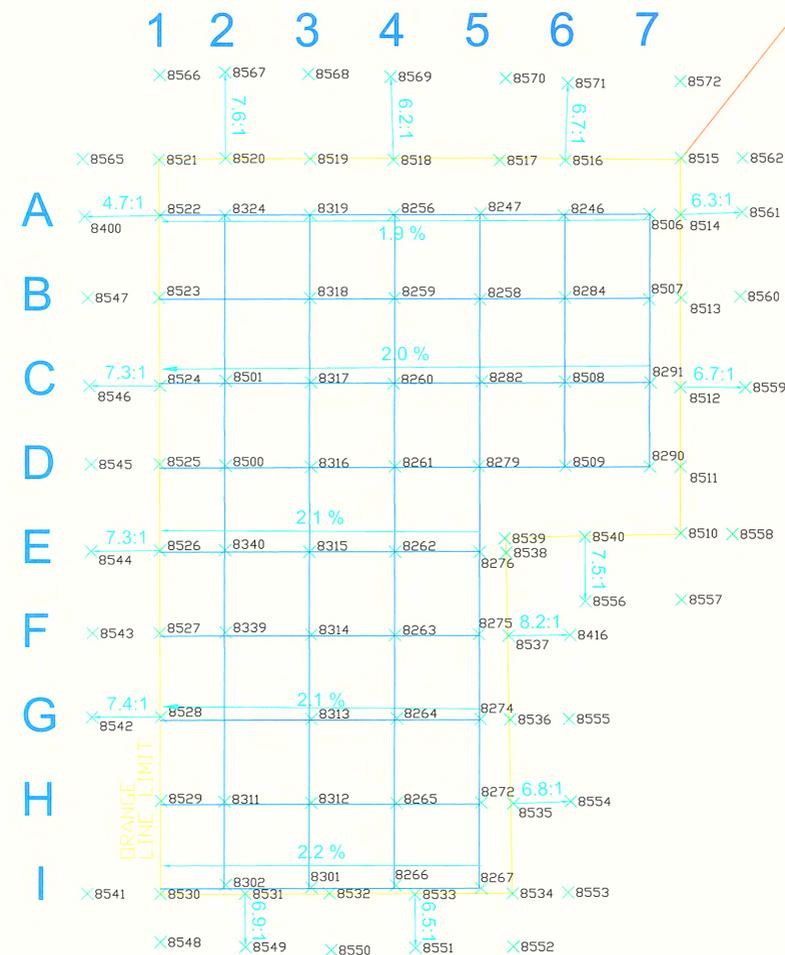
### Legend

Original MWL Footprint

7.6:1 Slopes (H:V)

LIM 34 (Project Coordinates)  
North= 14523449.643'  
East= 412157.895'  
Elev.= 5386.51'

N 38°00'12" E  
416.85' (Ground)



GRID	URS PT #	TOP NAT ELEV	ASCI PT #	TOP THIN SOIL	FILL	GRID	URS PT #	TOP NAT ELEV	ASCI PT #	TOP THIN SOIL	FILL
A1	8522	5383.37	1905	5380.94	2.43	D7	8290	5391.03	1953	5387.94	3.09
A2	8324	5384.01	1904	5381.54	2.47	E1	8435	5385.27	1882	5382.71	2.56
A3	8319	5384.87	1903	5382.43	2.44	E2	8340	5385.78	1886	5383.2	2.58
A4	8256	5386.11	1923	5383.46	2.65	E3	8315	5386.87	1883	5384.24	2.63
A5	8247	5387.27	1929	5384.78	2.49	E4	8262	5387.95	1884	5384.97	2.98
A6	8246	5387.98	1940	5385.4	2.58	E5	8276	5388.90	1885	5385.75	3.15
A7	8506	5388.88	1955	5386.35	2.53	F1	8436	5385.12	1887	5382.34	2.78
B1	8432	5384.38	1900	5381.74	2.64	F2	8339	5385.60	1880	5383.11	2.49
B3	8318	5385.95	1901	5383.51	2.44	F3	8314	5386.73	1879	5384.09	2.64
B4	8259	5387.02	1902	5384.47	2.55	F4	8263	5387.80	1878	5384.89	2.91
B5	8258	5388.10	1928	5385.61	2.49	F5	8275	5388.89	1877	5385.67	3.22
B6	8284	5388.91	1939	5386.39	2.52	G1	8437	5385.01	1868	5382.25	2.76
B7	8507	5389.81	1950	5387.26	2.55	G3	8313	5386.60	1872	5383.92	2.68
C1	8433	5384.92	1898	5382.38	2.54	G4	8264	5387.63	1873	5384.99	2.64
C2	8501	5385.69	1920	5383.15	2.54	G5	8274	5388.63	1874	5385.54	3.09
C3	8317	5386.51	1897	5384.05	2.46	H1	8438	5384.82	1866	5382.02	2.80
C4	8260	5387.72	1896	5384.94	2.78	H2	8311	5385.39	1869	5382.62	2.77
C5	8282	5388.62	1895	5386.01	2.61	H3	8312	5386.32	1864	5383.74	2.58
C6	8508	5389.78	1938	5387.26	2.52	H4	8265	5387.36	1865	5384.68	2.68
C7	8291	5390.38	1949	5387.96	2.42	H5	8272	5388.32	1863	5385.28	3.04
D1	8434	5385.07	1889	5382.59	2.48	I1	8530	5383.46	1853	5381.34	2.12
D2	8500	5385.91	1892	5383.35	2.56	I2	8302	5385.03	1855	5382.07	2.96
D3	8316	5386.76	1891	5384.07	2.69	I3	8301	5385.84	1857	5382.99	2.85
D4	8281	5387.90	1893	5385.08	2.82	I4	8266	5386.81	1861	5384.14	2.67
D5	8279	5388.73	1894	5386.01	2.72	I5	8267	5387.73	1859	5384.78	2.95
D6	8509	5389.88	1931	5387.35	2.53						
AVERAGE											2.67

### URS NATIVE SOIL LAYER TOP SHOTS

URS PT #	ELEV	URS PT #	ELEV
8255	5385.99	8520	5382.80
8510	5391.13	8521	5382.58
8511	5391.23	8531	5384.84
8512	5390.67	8532	5385.92
8513	5389.68	8533	5386.75
8514	5388.77	8534	5387.87
8515	5387.44	8535	5388.57
8516	5386.50	8536	5388.47
8517	5385.49	8537	5388.77
8518	5385.13	8538	5389.13
8519	5383.50	8539	5389.04
		8540	5390.06

### URS NATIVE SOIL LAYER TOE SHOTS

URS PT #	ELEV	URS PT #	ELEV	URS PT #	ELEV
8400	5373.96	8549	5380.24	8560	5384.31
8416	5384.39	8550	5380.94	8561	5383.02
8541	5377.84	8551	5381.86	8562	5382.15
8542	5379.20	8552	5383.03	8565	5375.88
8543	5379.76	8553	5383.44	8566	5375.41
8544	5379.44	8554	5383.62	8567	5376.12
8545	5379.16	8555	5383.79	8568	5376.76
8546	5379.02	8556	5384.93	8569	5377.18
8547	5377.59	8557	5385.57	8570	5378.88
8548	5379.21	8558	5385.93	8571	5379.68
		8559	5384.93	8572	5380.55

### SURVEYOR'S CERTIFICATION

I, KIM STELZER, NEW MEXICO PROFESSIONAL SURVEYOR No. 7482, HEREBY CERTIFY THAT A TOPOGRAPHIC SURVEY, AS SHOWN HEREON, HAS BEEN SURVEYED AND PLATTED IN ACCORDANCE WITH THE STANDARDS FOR TOPOGRAPHIC SURVEYS IN THE STATE OF NEW MEXICO, RULE 500.5, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY AND PLAT DO NOT MEET THE REQUIREMENTS OF ANY (MUNICIPAL, COUNTY AND/OR STATE) SUBDIVISION ORDINANCES AND IS NOT INTENDED TO BE MADE ANY EXISTING PARCEL. THIS IS NOT A BOUNDARY SURVEY.



DATE: Dec. 29, 2009

**URS**  
URS CORPORATION

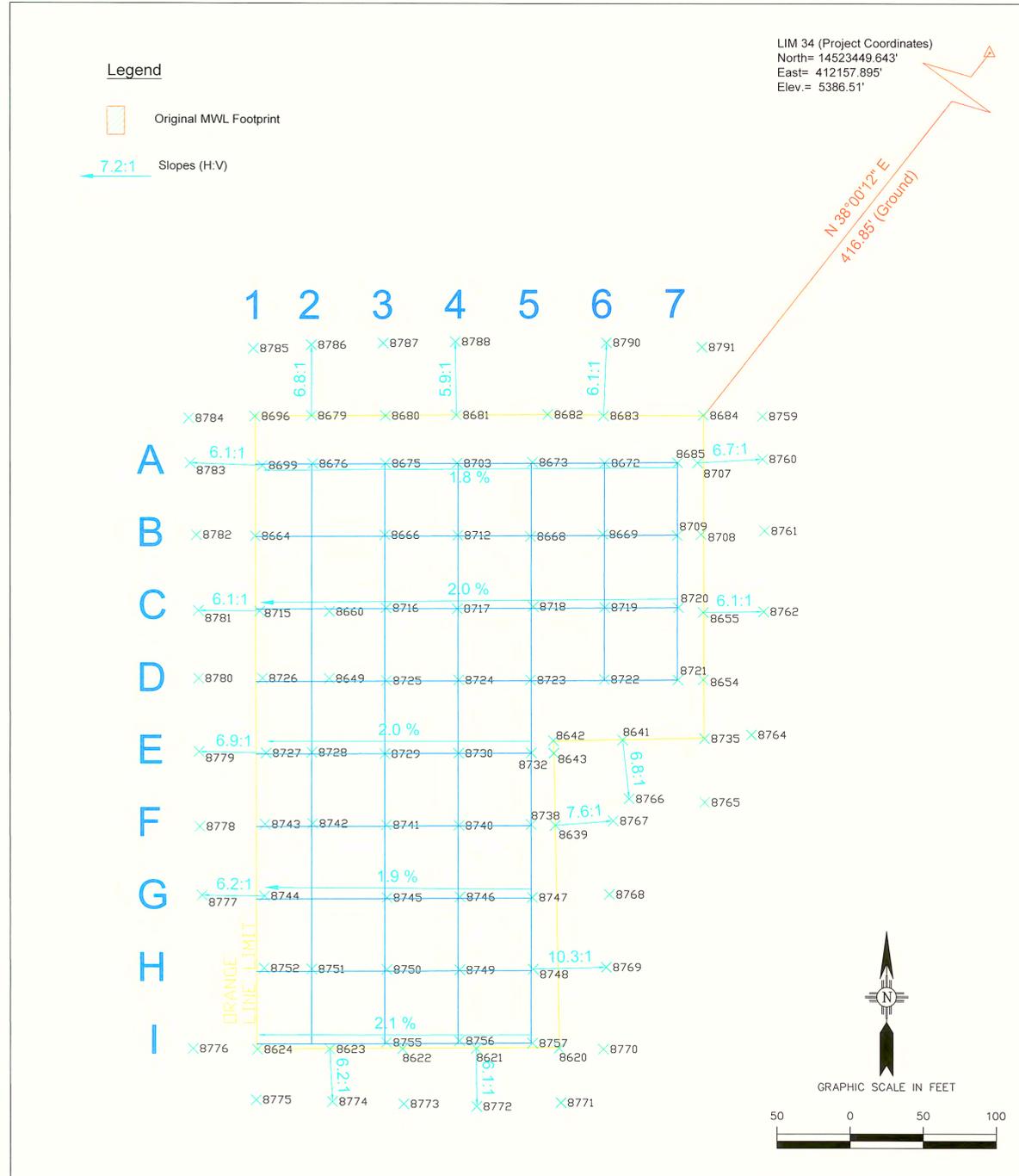
P.O. OR W.O.	REV	DATE	DESCRIPTION	DWN	CKD	APP
U.S. DEPARTMENT OF ENERGY						
KIRTLAND AREA OFFICE ALBUQUERQUE, NEW MEXICO						
ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA; TONOPAH, NEVADA						
PROJECT NO.			P.O. OR W.O.			
SURVEY			DRAWN BY: HFB			
			CHECKED BY: RDE			
			APPROVED BY: RDE			
			DATE: 06/09			
			SCALE: 1"=100'			
			SHEET: 2			
			TOTAL SHEETS: 1/1			

# MIXED WASTE LANDFILL TOPSOIL LAYER QA SURVEY

# MWL

## TECH AREA III

Sandia National Laboratories  
Bernalillo County, New Mexico  
September, 2009



URS TOPSOIL LAYER QA SHOTS

GRID	URS PT #	TOP SOIL ELEV	URS PT #	TOP NAT ELEV	FILL	GRID	URS PT #	TOP SOIL ELEV	URS PT #	TOP NAT ELEV	FILL
A1	8699	5384.54	8522	5383.37	1.17	D7	8721	5392.01	8290	5391.03	0.98
A2	8676	5385.00	8324	5384.01	0.98	E1	8727	5386.27	8435	5385.27	1.00
A3	8675	5385.89	8319	5384.87	1.02	E2	8728	5386.90	8340	5385.78	1.12
A4	8703	5387.00	8256	5386.11	0.89	E3	8729	5387.80	8315	5386.87	0.93
A5	8673	5388.28	8247	5387.27	1.01	E4	8730	5388.73	8262	5387.95	0.78
A6	8672	5389.00	8246	5387.98	1.02	E5	8732	5389.90	8276	5388.90	1.00
A7	8668	5389.76	8506	5388.88	0.88	F1	8743	5386.03	8436	5385.12	0.91
B1	8664	5385.31	8432	5384.38	0.93	F2	8742	5386.73	8339	5385.60	1.14
B3	8666	5386.97	8318	5385.95	1.02	F3	8741	5387.70	8314	5386.73	0.97
B4	8712	5388.00	8259	5387.02	0.98	F4	8740	5388.61	8263	5387.80	0.81
B5	8668	5389.07	8258	5388.10	0.97	F5	8738	5389.70	8275	5388.89	0.80
B6	8669	5389.88	8284	5388.91	0.96	G1	8744	5385.93	8437	5385.01	0.92
B7	8709	5390.63	8507	5389.81	0.82	G3	8745	5387.60	8313	5386.60	1.00
C1	8715	5385.71	8433	5384.92	0.79	G4	8746	5388.54	8264	5387.63	0.91
C2	8660	5386.87	8501	5385.69	1.17	G5	8747	5389.40	8274	5388.63	0.77
C3	8716	5387.60	8317	5386.51	1.09	H1	8752	5385.77	8438	5384.02	1.75
C4	8717	5388.55	8260	5387.72	0.83	H2	8751	5386.37	8311	5385.39	0.97
C5	8718	5389.53	8282	5388.62	0.91	H3	8750	5387.43	8312	5386.32	1.11
C6	8719	5390.57	8508	5389.78	0.79	H4	8749	5388.36	8265	5387.36	1.00
C7	8720	5391.41	8291	5390.38	1.03	H5	8748	5389.24	8272	5388.33	0.91
D1	8726	5386.08	8434	5385.07	1.01	I3	8755	5387.00	8301	5385.84	1.16
D2	8649	5387.05	8500	5385.91	1.14	I4	8756	5387.90	8266	5386.81	1.09
D3	8725	5387.80	8316	5386.76	1.04	I5	8757	5388.70	8267	5387.73	0.97
D4	8724	5388.80	8261	5387.90	0.90						
D5	8723	5389.74	8279	5388.73	1.01						
D6	8722	5390.84	8509	5389.88	0.96						
										AVERAGE	0.99

URS TOPSOIL LAYER  
TOP SHOTS

URS PT #	ELEV	URS PT #	ELEV
8620	5389.00	8655	5391.93
8621	5387.90	8679	5383.88
8622	5386.89	8680	5384.62
8623	5385.81	8681	5386.14
8624	5384.68	8682	5386.70
8639	5389.93	8683	5387.36
8641	5391.07	8684	5388.65
8642	5390.15	8696	5383.63
8643	5390.03	8707	5389.79
8654	5392.17	8708	5390.57
		8735	5391.92

URS TOPSOIL LAYER  
TOE SHOTS

URS PT #	ELEV	URS PT #	ELEV	URS PT #	ELEV
8759	5382.11	8770	5384.11	8780	5379.27
8760	5383.13	8771	5382.83	8781	5378.89
8761	5384.42	8772	5381.37	8782	5377.91
8762	5385.13	8773	5380.65	8783	5376.39
8764	5386.7	8774	5379.96	8784	5376.11
8765	5385.99	8775	5379.08	8785	5375.73
8766	5385.06	8776	5377.91	8786	5376.74
8767	5384.7	8777	5379.11	8787	5377.14
8768	5384.17	8778	5379.76	8788	5377.55
8769	5384.37	8779	5379.64	8790	5379.08
				8791	5380.54

SURVEYOR'S CERTIFICATION

I, KIM STELZER, NEW MEXICO PROFESSIONAL SURVEYOR No. 7482, HEREBY CERTIFY THAT A TOPOGRAPHIC SURVEY, AS SHOWN HEREON, HAS BEEN SURVEYED AND PLATTED IN ACCORDANCE WITH THE STANDARDS FOR TOPOGRAPHIC SURVEYS IN THE STATE OF NEW MEXICO, RULE 500.5, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY AND PLAT DO NOT MEET THE REQUIREMENTS OF ANY (MUNICIPAL, COUNTY AND/OR STATE) SUBDIVISION ORDINANCES AND IS NOT INTENDED TO SUBMIT ANY EXISTING PARCEL. THIS IS NOT A BOUNDARY SURVEY.

KIM STELZER 7482 N.M.S. No. 7482  
DATE: Dec. 29, 2009

Survey Notes:

- Topsoil Layer data based on spot elevations surveyed by URS, June 2009.
- Elevations for this survey are based on SNL/KAFB Monument "LIM 35" with an NGVD 29 elevation of 5388.52'.
- Survey Control Coordinates are modified state plane (or "Ground"), based on New Mexico State Plane, Central Zone, North American Datum of 1927. A Combined Scale Factor of .999651675 was used to derive project coordinates. State Plane (or "Grid") values of Control Points Used: LIM 34 (North= 1452943.37, East= 412014.33) and LIM 35 (North= 1451943.65, East= 412012.13)
- No surface appurtenances of underground utilities are shown. Other utilities may exist that are not shown on this survey. SNL ESD files were not incorporated into this survey.
- Distances shown are ground.
- This is not a boundary survey. No property corners or lines are shown.
- The 6 columned table titled "URS TOPSOIL LAYER QA SHOTS" compares URS survey data (columns 2&3), shot on the top of the Topsoil Layer with earlier URS survey data (columns 4&5), shot on the top of the Native Soil Layer. The FILL column shows the thickness of the Topsoil Layer above the Native Soil Layer.
- The tables titled "URS TOPSOIL LAYER TOP SHOTS" and "URS TOPSOIL LAYER TOE SHOTS" are shown for slope verification only. No thickness can be inferred from this data.
- Survey was not collected by URS on grid points B2, E5.1, E6, E7, G2, I1, and I2 for the Topsoil Layer. See Figure 17 for Surveyed Verification Grid Points And Field Testing Grid Blocks Description.

P.O. OR W.O.	REV	DATE	DESCRIPTION	DWN	CKD	APP
U.S. DEPARTMENT OF ENERGY						
KIRTLAND AREA OFFICE			ALBUQUERQUE, NEW MEXICO			
ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA; TONGVAH, NEVADA						
PROJECT NO.			P.O. OR W.O.			
SNL/NM MIXED WASTE LANDFILL Topsoil Layer			DRAWN BY: HFB			
			CHECKED BY: RDE			
SURVEY			APPROVED BY: RDE			
			DATE: 09/09			
FILE NAME: MWL-URS-QA-SURVEY-FINAL-TOPOSOIL LAYER EXHIBIT 9-28-2009.dwg			SIZE: 3		PLATE NO.: 1/1	

**URS**  
URS CORPORATION

## **Photographic Logs**



**Log No. 1**

**Mixed Waste Landfill  
2006 Subgrade Construction Photographic Log**





Date: 06/14/06                      Time: 1457

Photo Taken by: Dave Ransbarger

Description: MWL Borrow Pit Area site preparation

Facing: South



Date: 06/14/06                      Time: 1457

Photo Taken by: Dave Ransbarger

Description: MWL Borrow Area site preparation

Facing: South-Southwest



Date: 06/14/06                      Time: 1457

Photo Taken by: Dave Ransbarger

Description: Excavating soils for screening to 2-inch minus

Facing: North-Northeast



Date: 06/15/06

Time: 1029

Photo Taken by: Dave Ransbarger

Description: Screening soils to 2-inch minus at the MWL Borrow Pit Area

Facing: South-Southwest



Date: 06/15/06

Time: 1029

Photo Taken by: Dave Ransbarger

Description: Excavated soils stockpiled at the MWL Borrow Pit Area

Facing: North



Date: 06/15/06

Time: 1029

Photo Taken by: Dave Ransbarger

Description: Screening soils to 2-inch minus at the MWL Borrow Pit Area

Facing: Southwest



Date: 06/15/06

Time: 1029

Photo Taken by: Dave Ransbarger

Description: Screening soils at the MWL Borrow Pit Area

Facing: South



Date: 06/19/06

Time: 1511

Photo Taken by: Dave Ransbarger

Description: Screening soils to 2-inch minus at the MWL Borrow Pit Area

Facing: North-northeast



Date: 06/19/06

Time: 1511

Photo Taken by: Dave Ransbarger

Description: Excavating soils at the MWL Borrow Pit Area

Facing: Northeast



Date: 06/20/06

Time: 1427

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: North-northeast



Date: 06/20/06

Time: 1427

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: Northeast



Date: 06/20/06

Time: 1428

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: East



Date: 06/27/06

Time: 1509

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: Northeast



Date: 06/27/06

Time: 1511

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: East



Date: 06/27/06

Time: 1511

Photo Taken by: Dave Ransbarger

Description: Screened soil stockpile at the MWL Borrow Pit Area

Facing: East



Date: 06/27/06

Time: 1515

Photo Taken by: Dave Ransbarger

Description: Berm around the MWL Borrow Pit Area

Facing: North-northeast



Date: 06/28/06

Time: 1622

Photo Taken by: Dave Ransbarger

Description: MWL Borrow Pit Area after rain

Facing: North-northeast



Date: 06/28/06

Time: 1622

Photo Taken by: Dave Ransbarger

Description: MWL Borrow Pit Area after rain

Facing: North



Date: 10/02/06

Time: 1516

Photo Taken by: Dave Ransbarger

Description: Overhead view of MWL prior to site work

Facing: North-northeast



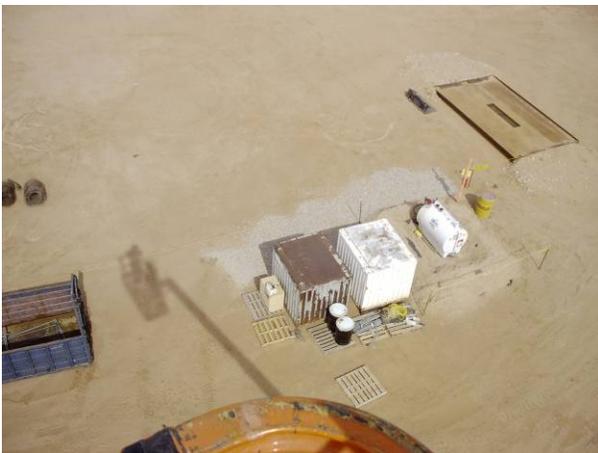
Date: 10/02/06

Time: 1517

Photo Taken by: Dave Ransbarger

Description: Screened soil stockpile at MWL

Facing: East



Date: 10/02/06

Time: 1517

Photo Taken by: Dave Ransbarger

Description: Overhead view of staging area at MWL

Facing: Northeast



Date: 10/02/06                      Time: 1007

Photo Taken by: Dave Ransbarger

Description: Removal of fence around unclassified area.

Facing: Southeast



Date: 10/04/06                      Time: 1328

Photo Taken by: Dave Ransbarger

Description: Removing fenceposts around unclassified area

Facing: North-northeast



Date: 10/04/06                      Time: 1551

Photo Taken by: Dave Ransbarger

Description: Removal of vegetation in unclassified area

Facing: East



Date: 10/04/06                      Time: 1551

Photo Taken by: Dave Ransbarger

Description: Dust control

Facing: Southeast



Date: 10/05/06                      Time: 1511

Photo Taken by: Dave Ransbarger

Description: Clearing and grubbing existing surface, unclassified area

Facing: East-southeast



Date: 10/05/06                      Time: 1511

Photo Taken by: Dave Ransbarger

Description: Clearing and grubbing existing surface

Facing: East-southeast



Date: 10/05/06                      Time: 1512

Photo Taken by: Dave Ransbarger

Description: Progress at end of day

Facing: Southeast



Date: 10/05/06                      Time: 1512

Photo Taken by: Dave Ransbarger

Description: Overhead view of existing surface after clearing/grubbing

Facing: Northeast



Date: 10/11/06                      Time: 1553

Photo Taken by: Dave Ransbarger

Description: Removal of fence around classified area.

Facing: South-southwest



Date: 10/11/06

Time: 1553

Photo Taken by: Dave Ransbarger

Description: Pulling fenceposts around classified area

Facing: South



Date: 10/11/06

Time: 1553

Photo Taken by: Dave Ransbarger

Description: Hauling fence material to staging area for radiological screening

Facing: East



Date: 10/11/06

Time: 1553

Photo Taken by: Dave Ransbarger

Description: Soil subsidence above a classified area pit before backfilling and compacting to grade

Facing: East



Date: 10/12/06

Time: 1542

Photo Taken by: Dave Ransbarger

Description: Cutting fenceposts from concrete

Facing: North



Date: 10/12/06

Time: 1542

Photo Taken by: Dave Ransbarger

Description: Screening grubbed material from classified area

Facing: South



Date: 10/12/06

Time: 1542

Photo Taken by: Dave Ransbarger

Description: Overhead view of screening/staging grubbed material

Facing: Northeast



Date: 10/18/06

Time: 1624

Photo Taken by: Dave Ransbarger

Description: Overhead view of fence material staging area

Facing: North



Date: 10/18/06

Time: 1624

Photo Taken by: Dave Ransbarger

Description: Breaking up concrete pad in SE corner of classified area

Facing: Southeast



Date: 10/18/06

Time: 1624

Photo Taken by: Dave Ransbarger

Description: Monitoring radiological conditions at concrete pad, southeast corner of classified area

Facing: East



Date: 10/18/06

Time: 1624

Photo Taken by: Dave Ransbarger

Description: Soil subsidence above a classified area pit after removal of concrete cap before backfilling and compacting to grade

Facing: East



Date: 10/18/06

Time: 1625

Photo Taken by: Dave Ransbarger

Description: Removal of concrete cap in SE corner of classified area

Facing: South



Date: 10/18/06

Time: 1625

Photo Taken by: Dave Ransbarger

Description: Area of soil subsidence in classified area after backfilling and compacting to grade

Facing: Southwest



Date: 10/23/06                      Time: 1608

Photo Taken by: Dave Ransbarger

Description: Fence material staging area

Facing: East



Date: 10/23/06                      Time: 1608

Photo Taken by: Dave Ransbarger

Description: Completion of screening and shredding material grubbed from existing surface

Facing: East



Date: 10/25/06                      Time: 0859

Photo Taken by: Dave Ransbarger

Description: Overhead view of existing surface after completion of clearing/grubbing

Facing: North-northeast



Date: 10/25/06

Time: 0859

Photo Taken by: Dave Ransbarger

Description: Performing Existing Landfill Surface and Perimeter Clear and Grub inspection.

Facing: East



Date: 10/30/06

Time: 1618

Photo Taken by: Dave Ransbarger

Description: Placement of subgrade material in low-lying areas of unclassified area, Lift 1.

Facing: West



Date: 10/30/06

Time: 1619

Photo Taken by: Dave Ransbarger

Description: Placement of stakes by URS for elevation reference in low-lying areas.

Facing: North



Date: 10/31/06

Time: 1554

Photo Taken by: Dave Ransbarger

Description: Performing compaction testing, Lifts 2 and 3.

Facing: Northwest



Date: 10/31/06

Time: 1555

Photo Taken by: Dave Ransbarger

Description: Compaction of subgrade material, Lift 3.

Facing: Northeast



Date: 11/01/06

Time: 1717

Photo Taken by: Dave Ransbarger

Description: Placement of subgrade material in low-lying areas of northern unclassified area, Lift 5.

Facing: West



Date: 11/01/06

Time: 1717

Photo Taken by: Dave Ransbarger

Description: Placement of subgrade to elevation marked by surveyors, Lift 5.

Facing: Southwest



Date: 11/02/06

Time: 1627

Photo Taken by: Dave Ransbarger

Description: Placement of subgrade material in low-lying areas of central unclassified area, Lift 6.

Facing: North-northeast



Date: 11/06/06

Time: 1716

Photo Taken by: Dave Ransbarger

Description: Continued placement of subgrade material, Lift 8.

Facing: Northeast



Date: 11/06/06

Time: 1716

Photo Taken by: Dave Ransbarger

Description: Installing subgrade, Lift 8.

Facing: Northeast



Date: 11/07/06

Time: 1552

Photo Taken by: Dave Ransbarger

Description: Performing compaction tests, Lift 9.

Facing: Northwest



Date: 11/07/06                      Time: 1552

Photo Taken by: Dave Ransbarger

Description: Screened subgrade material stockpile.

Facing: East



Date: 11/07/06                      Time: 1552

Photo Taken by: Dave Ransbarger

Description: Placement of subgrade material, Lift 9.

Facing:



Date: 11/07/06                      Time: 1552

Photo Taken by: Dave Ransbarger

Description: Installing subgrade, Lift 9.

Facing: East-Southeast



Date: 11/08/06

Time: 1723

Photo Taken by: Dave Ransbarger

Description: Compacting subgrade material, Lift 10.

Facing: Southwest



Date: 11/08/06

Time: 1723

Photo Taken by: Dave Ransbarger

Description: Installing and compacting subgrade material, Lift 10.

Facing: Northeast



Date: 11/08/06

Time: 1725

Photo Taken by: Dave Ransbarger

Description: Progress at end of day.

Facing: North-northeast



Date: 11/09/06

Time: 1647

Photo Taken by: Dave Ransbarger

Description: Continued placement of subgrade material, Lift 10.

Facing: East



Date: 11/09/06

Time: 1647

Photo Taken by: Dave Ransbarger

Description: Continued placement of subgrade material, Lift 10.

Facing: Northeast



Date: 11/09/06

Time: 1647

Photo Taken by: Dave Ransbarger

Description: Loose lift to elevation marked by surveyors.

Facing: North



Date: 11/13/06

Time: 1742

Photo Taken by: Dave Ransbarger

Description: Continued placement of subgrade material, Lift 10.

Facing: South



Date: 11/13/06

Time: 1742

Photo Taken by: Dave Ransbarger

Description: Progress at end of day.

Facing: North



Date: 11/15/06

Time: 1710

Photo Taken by: Dave Ransbarger

Description: Installation of subgrade material, Lift 11.

Facing: East-northeast



Date: 11/15/06

Time: 1711

Photo Taken by: Dave Ransbarger

Description: Installation of subgrade material, Lift 11.

Facing: East-Northeast



Date: 11/16/06

Time: 1716

Photo Taken by: Dave Ransbarger

Description: Finished surface, Classified Area Lift 11.

Facing: North



Date: 11/20/06

Time: 1648

Photo Taken by: Dave Ransbarger

Description: Screened subgrade material stockpile.

Facing: East



Date: 11/21/06

Time: 1824

Photo Taken by: Dave Ransbarger

Description: Installation of subgrade material, Lift 11.

Facing: East



Date: 11/22/06

Time: 1312

Photo Taken by: Dave Ransbarger

Description: Subgrade material stockpile.

Facing: East



Date: 11/22/06

Time: 1313

Photo Taken by: Dave Ransbarger

Description: Overhead view of unclassified area, Lift 11.

Facing: North-northeast



Date: 11/28/06                      Time: 1727

Photo Taken by: Dave Ransbarger

Description: Completed Lift 11 surface.

Facing: Northeast



Date: 11/28/06                      Time: 1727

Photo Taken by: Dave Ransbarger

Description: Beginning installation of Lift 12.

Facing: East-northeast



Date: 11/29/06                      Time: 1703

Photo Taken by: Dave Ransbarger

Description: Stockpile of soil existing prior to field operations, soil not used as subgrade.

Facing: Southeast



Date: 11/29/06

Time: 1703

Photo Taken by: Dave Ransbarger

Description: Hauling subgrade for placement in Lift 12.

Facing: Southeast



Date: 12/04/06

Time: 1712

Photo Taken by: Dave Ransbarger

Description: Placement of Subgrade material, Lift 12.

Facing: Northeast



Date: 12/04/06

Time: 1457

Photo Taken by: Dave Ransbarger

Description: Installation of Subgrade, Lift 12

Facing: North



Date: 12/18/06

Time: 1650

Photo Taken by: Dave Ransbarger

Description: Overhead view, final surface of Subgrade Lift 12 prior to final grading

Facing: North



Date: 12/20/06

Time: 1046

Photo Taken by: Dave Ransbarger

Description: No personnel on site due to snow, material too wet to perform final grading.

Facing: South



Date: 12/20/06

Time: 1046

Photo Taken by: Dave Ransbarger

Description: No personnel on site due to snow, material too wet to perform final grading.

Facing: Northeast



Date: 01/30/07

Time: 1527

Photo Taken by: Dave Ransbarger

Description: Erosion of Subgrade slopes following snow melt.

Facing: East



Date: 01/30/07

Time: 1528

Photo Taken by: Dave Ransbarger

Description: Erosion of Subgrade slopes following snow melt.

Facing: Southeast



Date: 01/30/07

Time: 1529

Photo Taken by: Dave Ransbarger

Description: Erosion of Subgrade slopes following snow melt.

Facing: East



Date: 04/03/07

Time: 1233

Photo Taken by: Dave Ransbarger

Description: Installation of erosion control blanket.

Facing: Northwest



Date: 04/03/07

Time: 1233

Photo Taken by: Dave Ransbarger

Description: Anchor trench for erosion control blanket.

Facing: West



Date: 04/03/07

Time: 1233

Photo Taken by: Dave Ransbarger

Description: Installing staple to hold erosion control blanket in place

Facing: Northeast

**Log No. 2**

**Mixed Waste Landfill  
2009 Evapotranspirative Cover Construction  
Photographic Log**





Date: 05/18/09      Time: 1445

Photo Taken by: C. M. Timm II

Description: Silt Fence Installation

Facing: South



Date: 05/20/09      Time: 0740

Photo Taken by: C. M. Timm II

Description: MWL Subgrade  
before 2009 clearing and  
preparation activities

Facing: South



Date: 05/20/09      Time: 1443

Photo Taken by: C. M. Timm II

Description: Removal of vegetation  
from the Subgrade surface

Facing: North



Date: 05/22/09      Time: 0826

Photo Taken by: C. M. Timm

Description: In-situ density and moisture tests of Subgrade

Facing: South



Date: 05/22/09      Time: 0740

Photo Taken by: C. M. Timm

Description: MWL Subgrade after vegetation was removed and prior to placement of the Biointrusion Layer rock

Facing: North



Date: 05/26/09      Time: 1150

Photo Taken by: C. M. Timm

Description: Placement of Biointrusion Layer installation test

Facing: Southwest



Date: 05/26/09      Time: 1151

Photo Taken by: C. M. Timm

Description: Surveying the biointrusion rock layer during installation test to verify thickness

Facing: Southwest



Date: 05/26/09      Time: 1159

Photo Taken by: C. M. Timm

Description: Compacting thin soil layer over Biointrusion Layer during installation test to determine effectiveness of installation approach to fill rock void

Facing: Northeast



Date: 05/28/09      Time: 0834

Photo Taken by: C. M. Timm

Description: Start of Biointrusion Layer rock installation – south-central part of MWL

Facing: Southwest



Date: 05/28/09      Time: 1517

Photo Taken by: C. M. Timm

Description: Biointrusion Layer rock placed on Subgrade surface and spread by bulldozer

Facing: South



Date: 05/28/09      Time: 0733

Photo Taken by: C. M. Timm

Description: Close up of biointrusion rock placed on Subgrade

Facing: South



Date: 06/1/09                      Time: 1026

Photo Taken by: C. M. Timm

Description: Surveyor recording elevation of the Biointrusion Layer during installation to check and control thickness

Facing: East



Date: 06/2/09                      Time: 0741

Photo Taken by: C. M. Timm

Description: View of MWL during installation of Biointrusion Layer – MWL partially covered with ~1.25 feet of biointrusion rock

Facing: North



Date: 06/03/09                      Time: 0758

Photo Taken by: C. M. Timm

Description: Delivery of biointrusion rock by dump trucks and spreading with bulldozer near northwest end of MWL

Facing: Southwest



Date: 06/08/09      Time: 0727

Photo Taken by: C. M. Timm

Description: Biointrusion rock layer over the Subgrade except the for northeast corner (classified area)

Facing: North



Date: 06/12/09      Time: 1421

Photo Taken by: J. Schermerhorn

Description: Biointrusion Layer installation completed in the northeast corner (classified area) – thin soil layer installation over the Biointrusion Layer proceeding over northeast corner

Facing: Northeast



Date: 06/08/09      Time: 0941

Photo Taken by: J. Schermerhorn

Description: Spreading the thin soil layer over the Biointrusion Layer with the grader to fill in voids and make a level surface

Facing: Southwest



Date: 06/09/09      Time: 0727

Photo Taken by: J. Schermerhorn

Description: The southern half of the MWL covered with the thin soil layer overlying the Biointrusion layer

Facing: North



Date: 06/09/09      Time: 0738

Photo Taken by: J. Schermerhorn

Description: Close up of the dry, loose soil filling voids in the upper part of the Biointrusion Layer

Facing: South



Date: 06/12/09                      Time: 1305

Photo Taken by: J. Schermerhorn

Description: Dry loose soil penetrating down into the rock layer filling the voids at the northwest corner

Facing: Southeast



Date: 06/12/09                      Time: 1259

Photo Taken by: J. Schermerhorn

Description: Biointrusion rock showing through the thin soil layer – location was scraped with the grader to make sure the overlying soil layer was as thin as possible

Facing: Southwest



Date: 06/17/09                      Time: 0718

Photo Taken by: J. Schermerhorn

Description: The completed thin soil layer overlying the Biointrusion Layer before installation of the Native Soil Layer – view of northeast corner of MWL – note steep side slopes

Facing: Southwest



Date: 06/17/09                      Time: 0814

Photo Taken by: J. Schermerhorn

Description: Soil compaction test (in-place density and moisture test) on east slope at the north end of the MWL during initial slope build up to 6 to 1 – first phase of Native Soil Layer installation

Facing: Northwest



Date: 06/18/09                      Time: 1003

Photo Taken by: J. Schermerhorn

Description: Building north end side slope of the cover during initial Native Soil Layer installation – survey stakes show extent of the slope (i.e., the toe)

Facing: West



Date: 06/18/09                      Time: 1548

Photo Taken by: J. Schermerhorn

Description: Survey stakes outlining area of Wedge Lift 1

Facing: South



Date: 06/19/09                      Time: 1050

Photo Taken by: J. Schermerhorn

Description: Compacting placed material in Wedge Lift 1

Facing: South



Date: 06/19/09                      Time: 0750

Photo Taken by: J. Schermerhorn

Description: Aerial picture of construction of Wedge Lift 1 – water truck adding moisture to soil and grader spreading the soil fill to the proper thickness

Facing: Southeast



Date: 06/23/09                      Time: 1136

Photo Taken by: J. Schermerhorn

Description: Constructing Lift 3 – grading lift to proper thickness based on survey grade stakes

Facing: South



Date: 06/23/09                      Time: 0742

Photo Taken by: J. Schermerhorn

Description: Adding water to placed soil fill material on west side of cover for Lift 4.

Facing: Southwest



Date: 06/25/09                      Time: 1412

Photo Taken by: J. Schermerhorn

Description: Compacting soil material during Lift 4 installation

Facing: Southeast



Date: 06/24/09      Time: 0731  
Photo Taken by: J. Schermerhorn  
Description: Aerial picture of Native Soil Lift 3 construction  
Facing: South



Date: 06/29/09      Time: 1358  
Photo Taken by: J. Schermerhorn  
Description: Compacting soil around the extended groundwater monitoring well MWL-MW4 with a manually-operated compactor during Native Soil Lift 4 construction  
Facing: Northeast



Date: 07/07/09      Time: 1604  
Photo Taken by: J. Schermerhorn  
Description: Adding water to increase the moisture to Lift 5 soil (grid blocks 1 and 2) after area ripped with grader scarifier shanks to a depth of ~6 inches after initial field compaction tests failed for moisture content  
Facing: South



Date: 07/15/09      Time: 0813

Photo Taken by: J. Schermerhorn

Description: Soil being placed by bottom dump truck and graded during construction of Native Soil Lift 6

Facing: South



Date: 07/15/09      Time: 0824

Photo Taken by: J. Schermerhorn

Description: Adding water to soil during grading of Native Soil Lift 6 to bring the moisture content to within 2% of the optimal moisture

Facing: North



Date: 07/17/09      Time: 1337

Photo Taken by: J. Schermerhorn

Description: Compacting Native Soil Lift 6 on the west slope – note groundwater monitoring wells in background (orange fencing surrounds them)

Facing: Southwest



Date: 07/20/09                      Time: 0835

Photo Taken by: J. Schermerhorn

Description: Grade stakes showing the thickness of soil to be placed for the next Native Soil Layer Lift (Lift 7)

Facing: Northeast



Date: 07/28/09                      Time: 0835

Photo Taken by: J. Schermerhorn

Description: Grade stakes after soil placed and compacted for native Soil Layer Lift 8

Facing: Northeast



Date: 08/06/09      Time: 0924

Photo Taken by: J. Schermerhorn

Description: Building the Topsoil Layer in one lift and applying water to moisture condition the soil and minimize dust generation

Facing: South



Date: 08/07/09      Time: 0921

Photo Taken by: J. Schermerhorn

Description: Close up of the 3/8-inch gravel in the Topsoil Layer fill

Facing: East- Northeast



Date: 08/10/09      Time: 1401

Photo Taken by: J. Schermerhorn

Description: Blue whiskers that indicate "blue topping" and final elevation of Topsoil Layer.

Facing: South



Date: 08/11/09                      Time: 0657

Photo Taken by: J. Schermerhorn

Description: MWL ET Cover after Topsoil Layer placement – final CQC and CQA survey verification of thickness and slopes completed

Facing: Northeast



Date: 08/12/09                      Time: 0933

Photo Taken by: J. Schermerhorn

Description: Scarifying the Topsoil Layer with the scarifier shanks on the grader after approval of thickness and slopes in preparation for seeding

Facing: South



Date: 08/12/09                      Time: 1238

Photo Taken by: J. Schermerhorn

Description: MWL ET Cover (Topsoil Layer surface) after scarifying and prior to seeding

Facing: South



Date: 08/20/09                      Time: 1025

Photo Taken by: J. Schermerhorn

Description: Tilling the soil prior to seed placement to break up any large clumps of soil

Facing: West



Date: 08/21/09                      Time: 0850

Photo Taken by: J. Schermerhorn

Description: Tilling to loosen the soil and help facilitate re-vegetation

Facing: Southwest



Date: 08/26/09                      Time: 0953

Photo Taken by: J. Schermerhorn

Description: Hand-broadcasting the seed according to the approved procedure to avoid compacting the soil with additional passes of the tractor/drill seeder to accommodate increased seeding rate – note supplemental watering irrigation pipe with sprinkler heads in photograph

Facing: Northeast



Date: 08/26/09      Time: 1401

Photo Taken by: J. Schermerhorn

Description: Drill seeding on the north slope of the ET Cover

Facing: Southeast



Date: 08/28/09      Time: 0904

Photo Taken by: J. Schermerhorn

Description: Blowing straw mulch to cover the planted grass seed and help retain moisture in the soil.

Facing: Southeast



Date: 08/28/00      Time: 1024

Photo Taken by: J. Schermerhorn

Description: Crimping the straw mulch into the soil on the north slope of the ET Cover to keep it from blowing away

Facing: Southwest



Date: 08/31/09      Time: 1443

Photo Taken by: J. Schermerhorn

Description: MWL ET Cover after seeding and crimping the straw mulch in place – irrigation piping for the supplemental watering system visible in photograph

Facing: North



Date: 09/1/09      Time: 1148

Photo Taken by: J. Schermerhorn

Description: Installing the T-posts for the barbed wire Administrative Security Fence around the site

Facing: West



Date: 09/02/09      Time: 1140

Photo Taken by: J. Schermerhorn

Description: The barbed wire Administrative Security Fence and gate (background) on the north end of the ET Cover

Facing: East



Date: 05/27/09      Time: 1251

Photo Taken by: C. M. Timm

Description: Groundwater monitoring well MWL-MW4 PVC casing being extended prior to installation of Biointrusion Layer on this part of the ET Cover – outer steel casing cut near ground surface (yellow) and white extended PVC well casing shown

Facing: East



Date: 05/27/09      Time: 1434

Photo Taken by: C. M. Timm

Description: MWL-MW4 outer steel protective casing extended to accommodate the ET Cover thickness

Facing: East



Date: 08/05/09      Time: 1314

Photo Taken by: J. Schermerhorn

Description: Installation of Soil-Vapor Well MWL-SV2 in the northeast corner of the MWL during Topsoil Layer installation prior to seeding and mulching

Facing: East



Date: 08/05/09      Time: 1303

Photo Taken by: J. Schermerhorn

Description: Aerial picture of installation of Soil-Vapor Well MWL-SV2 Soil-Vapor Well MWL-SV2

Facing: Southeast



Date: 08/06/05      Time: 1352

Photo Taken by: J. Schermerhorn

Description: Installing Soil-Vapor Well MWL-SV2

Facing: Southeast



Date: 08/06/09      Time: 1524

Photo Taken by: J. Schermerhorn

Description: Installation of Soil-Vapor Well MWL-SV1

Facing: South



Date: 08/07/09      Time: 0842

Photo Taken by: J. Schermerhorn

Description: Installation of Soil-Vapor Well MWL-SV1

Facing: Southwest



Date: 05/26/09                      Time: 0843

Photo Taken by: C. M. Timm

Description: Constructing the drive-off pad on the south side of the MWL Borrow Pit

Facing: South



Date: 06/30/09                      Time: 1329

Photo Taken by: J. Schermerhorn

Description: Loading native soil fill into a bottom-dump truck at the MWL Borrow Pit for transport to the MWL site

Facing: South



Date: 07/06/09                      Time: 1333

Photo Taken by: J. Schermerhorn

Description: Screening soil to 2-inch minus and stockpiling at the MWL Borrow Pit

Facing: West



Date: 07/09/09      Time: 0912

Photo Taken by: J. Schermerhorn

Description: Pug Mill operation used to mix 3/8-inch gravel and topsoil fill at a 25% by volume ratio to produce the topsoil fill used to construct the Topsoil Layer of the ET Cover

Facing: West



Date: 07/15/09      Time: 0905

Photo Taken by: J. Schermerhorn

Description: Pug Mill operation (background), native soil and topsoil excavation and screening to 2-inch minus (foreground), screened soil stockpiles, and native soil loading in bottom-dump trucks (background) for transport to MWL site

Facing: Southeast



Date: 08/20/09      Time: 1139

Photo Taken by: J. Schermerhorn

Description: MWL Borrow Pit after completion of construction activities and grading to ensure proper drainage

Facing: Southeast



Date: 08/13/09                      Time: 1508

Photo Taken by: J. Schermerhorn

Description: MWL ET Cover with irrigation pipe installed for the supplemental watering system

Facing: South



Date: 08/18/09                      Time: 0953

Photo Taken by: J. Schermerhorn

Description: Testing of the supplemental watering system prior to seeding and mulching

Facing: South



Date: 09/10/09                      Time: 1317

Photo Taken by: J. Schermerhorn

Description: Close up of grass growing on the north slope of the cover

Facing: West



Date: 09/22/09                      Time: 1108

Photo Taken by: J. Schermerhorn

Description: MWL ET Cover with seed and mulch in place – grass seedling growth indicated by green areas

Facing: South



Date: 09/22/09                      Time: 1110

Photo Taken by: J. Schermerhorn

Description: Close up of grass seedling growth on surface of the ET Cover with the supplemental watering system in place

Facing: Southeast

## **APPENDIX A**

### **Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report January 2010 Revision 1**

### **Volume 2 Attachments**

**(provided electronically on compact disc)**

Attachments in Volume 2 of Appendix A are provided in electronic format (PDF files) on a CD. Separately bound hard copies of Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico); the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico); and the SNL/NM Customer Funded Records Center (formerly known as the ES&H and Security Records Center).

## **List of Attachments**

---

<b>Attachment</b>	<b>Title</b>
1	Record of Meetings and Approvals 2006 Meetings 2009 Meetings
2	CQA Submittals and Approvals 2009 QA Submittal Cover Pages 2009 Cover Layer Approval Forms
3	Daily Quality Control Reports 2006 Daily Quality Control Reports 2009 Daily Quality Control Reports
4	Receiving Inspection Forms and Documentation 2005 Biointrusion Rock 2009 Biointrusion Rock 2009 Aggregate 2009 Seed and Mulch 2009 Seed Bag Labels
5	Construction Inspection Forms 2006 Construction Inspection Forms 2009 Construction Inspection Forms
6	Testing Inspection Forms 2006 Testing Inspection Forms 2009 Testing Inspection Forms
7	Laboratory and Field Test Results and Supporting Data 2006 Standard Proctor, Gradation, and Classification Tests 2006 Density and Moisture Tests 2009 Standard Proctor, Gradation, and Classification Tests 2009 Density and Moisture Tests 2009 Saturated Hydraulic Conductivity Tests
8	Summary Report for the Extension of Monitoring Well MWL-MW4 at the Mixed Waste Landfill



**Sandia  
National  
Laboratories**

---

---

**Sandia National Laboratories/New Mexico  
Environmental Restoration Project**

**MIXED WASTE LANDFILL  
CORRECTIVE MEASURES  
IMPLEMENTATION REPORT**

**JANUARY 2010  
Revision 1**

**APPENDIX A  
VOLUME 2 – ATTACHMENTS**



United States Department of Energy  
Sandia Site Office



## **APPENDIX A**

**Mixed Waste Landfill Alternative Cover  
Construction Quality Assurance Report  
January 2010  
Revision 1**

**Volume 2  
Attachments**



## **List of Attachments**

---

<b>Attachment</b>	<b>Title</b>
1	Record of Meetings and Approvals 2006 Meetings 2009 Meetings
2	CQA Submittals and Approvals 2009 QA Submittal Cover Pages 2009 Cover Layer Approval Forms
3	Daily Quality Control Reports 2006 Daily Quality Control Reports 2009 Daily Quality Control Reports
4	Receiving Inspection Forms and Documentation 2005 Biointrusion Rock 2009 Biointrusion Rock 2009 Aggregate 2009 Seed and Mulch 2009 Seed Bag Labels
5	Construction Inspection Forms 2006 Construction Inspection Forms 2009 Construction Inspection Forms
6	Testing Inspection Forms 2006 Testing Inspection Forms 2009 Testing Inspection Forms
7	Laboratory and Field Test Results and Supporting Data 2006 Standard Proctor, Gradation, and Classification Tests 2006 Density and Moisture Tests 2009 Standard Proctor, Gradation, and Classification Tests 2009 Density and Moisture Tests 2009 Saturated Hydraulic Conductivity Tests
8	Summary Report for the Extension of Monitoring Well MWL-MW4 at the Mixed Waste Landfill



## **ATTACHMENT 1**

### **Record of Meetings and Approvals**



## **2006 Meetings**





# RECORD OF MEETING

DATE: 6-5-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO.: 06-22-0011 \_\_\_\_\_

RECORDED BY: Kelly Peil and Corey Woods \_\_\_\_\_

ATTENDANCE (Name and Company):

(Attendance log attached to this meeting record)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez \_\_\_\_\_

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Pre-construction Meeting \_\_\_\_\_

ITEMS DISCUSSED: Meeting agenda attached to this meeting record. Items discussed include:

Joe Fritts:

- 1) Presented project organization charts (attached to this meeting record).
- 2) The COA Fugitive Emissions Permits (2) covers the two borrow areas to be used for collection of subgrade cover material.
- 3) The Excavation Permit is complete and includes the two borrow areas. It was noted that some of the areas will be undisturbed and the personnel should watch for unusual items.
- 4) The Stormwater Permit should be approved this week.

Tim Goering:

- 5) Presented a site history
- 6) Discussed the Corrective Measures Implementation Plan (CMIP), which is awaiting approval by NMED. Reviewed the design drawing and specifications contained in the CMIP. Stated the reason for a partial construction contract thru the subgrade only is the possibility of NMED changing the cover design for the layers above the subgrade.
- 7) The existing contaminant of concern is tritium which is currently measured below action levels. The activities will be monitored by RCT staff until the concern can be mitigated.
- 8) The security fence around the classified area of the MWL will be removed for the subgrade work and the Sandia security staff will be more involved until another fence is constructed. A security plan will describe the required procedures for personnel.

- 9) The grubbed vegetation may contain tritium and will be mulched and stored for placement with the topsoil at a later time.

Dick Fate:

- 10) As Sandia's responsible manager for the project, Dick reminded the team that the MWL is the last of the 268 ER sites for remediation at Sandia. The project will be visited by DOE and NMED and what they see could influence the completion schedule for the site. The key concern for the project is the team's safety.

Don Schofield:

- 11) The schedule for the subgrade work was developed from past experience of similar work and has a completion of Dec 12, 2006. If the total cover was installed without unscheduled delays the completion would be June 14, 2007 (not including demob and the final report).

Ben Martinez:

- 12) Presented a map of the haul route from the borrow areas to the MWL soil stockpile area. The route will require coordination with the security base of operations and the short sled track personnel.
- 13) The total quantity of material to be moved and the number of miles for the trucks was presented.
- 14) Will start the soil excavation and screening as early as this week.

Anthony Martinez:

- 15) Alternate H&S Officer will be Dave Ransbarger.
- 16) Will have daily tailgate meetings to discuss hazards, proper PPE, days events.
- 17) Presented map of evacuation route, Sandia Medical Clinic, and muster areas.
- 18) Will have site radios for everyone which are used for emergency notice.
- 19) Emergency contact information will be posted inside the trailer.
- 20) Everyday sign in and out sheet for personnel on location.
- 21) Weather information will be printed daily; shut-downs for high winds and lightning.
- 22) Copy of site HASP is available for reading and signing for verification of training.
- 23) Air and noise monitoring instruments will be used to determine the need for PPE.
- 24) Personnel should be aware of high risk for grass fires caused by vehicles. Extinguishers are available in all vehicles and the office trailers.

Kelly Peil:

25) Reviewed the CQA Plan to present the major areas of:

- The Plan purpose and objectives
  - The qualifications and responsibilities of each project team entity
  - The importance of Team communication and the documentation of meetings and decisions
  - The inspection checklists for the various project activities and tests
  - The importance of everyone reading the ten project specifications
  - Reporting of nonconformances and the corrective actions
  - Documentation of the project.
- 
-

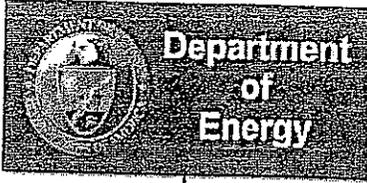
# MWL SUBGRADE START-UP MEETING

JUNE 5, 2006

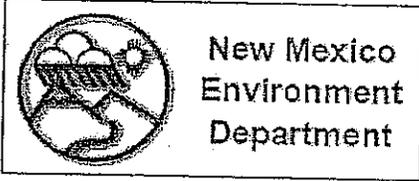
0900

## AGENDA

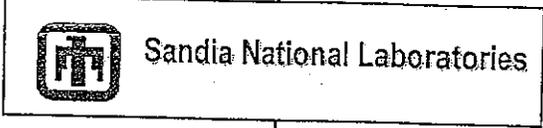
WELCOME AND ORGANIZATION	Joe
COA FUGITIVE EMISSIONS PERMIT	Joe
EXCAVATION PERMIT	Joe
REVIEW SITE HISTORY DESIGN DRAWINGS	Tim
MGR COMMENTS	Dick
SCHEDULE	Don
STRATEGY BY THE NUMBERS HAUL ROUTE ETC	Ben
HASP	Anthony
CONSTRUCTION QUALITY ASSURANCE PLAN	Kelly



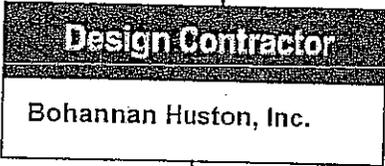
**Department  
of  
Energy**



**New Mexico  
Environment  
Department**

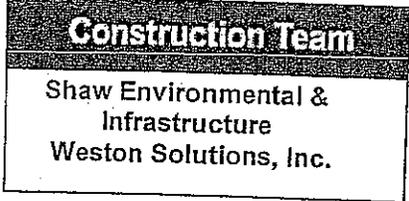


**Sandia National Laboratories**



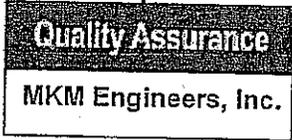
**Design Contractor**

**Bohannon Huston, Inc.**



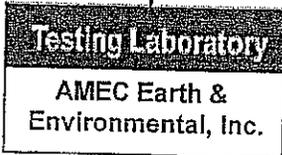
**Construction Team**

**Shaw Environmental &  
Infrastructure  
Weston Solutions, Inc.**



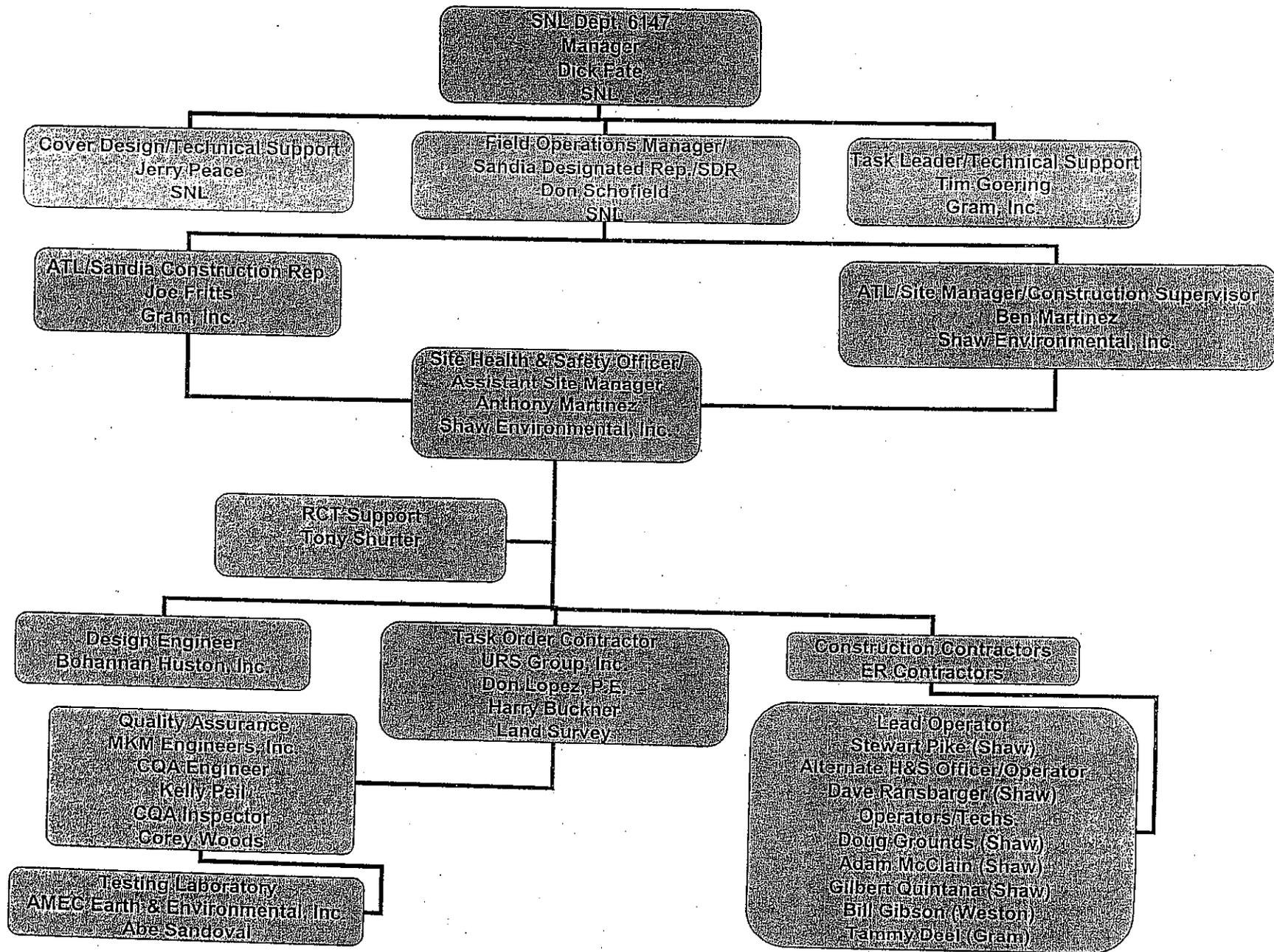
**Quality Assurance**

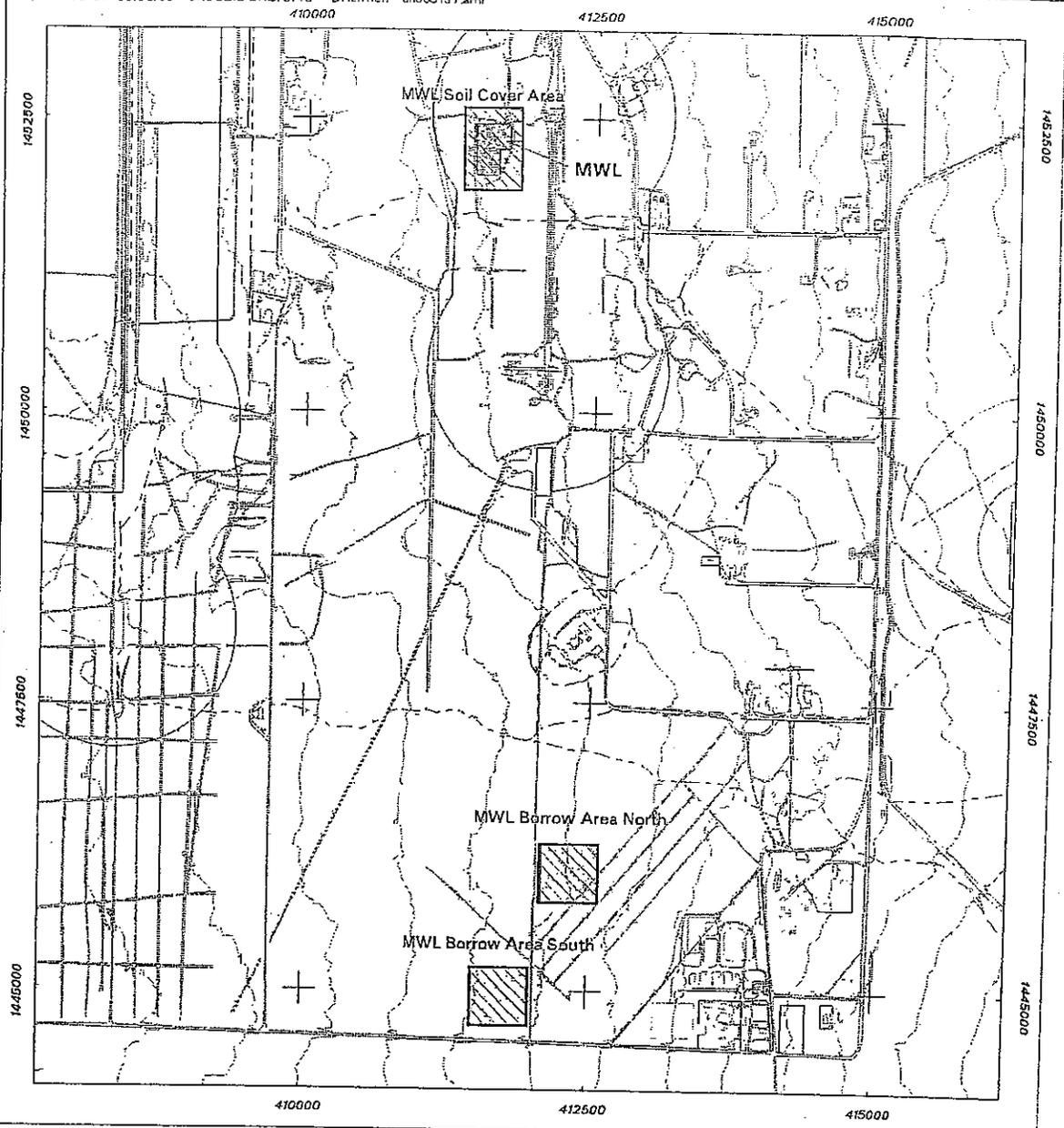
**MKM Engineers, Inc.**



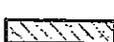
**Testing Laboratory**

**AMEC Earth &  
Environmental, Inc.**





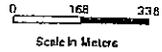
**Legend**

-  Surface Drainage
-  Road
-  10-ft. Contour
-  Other SWMU Boundary
-  Area of Possible Soil Disturbance
-  SWMU 76, MWL

**Soil Cover Area and  
Borrow Pit Areas for  
SWMU 76, Mixed Waste Landfill**



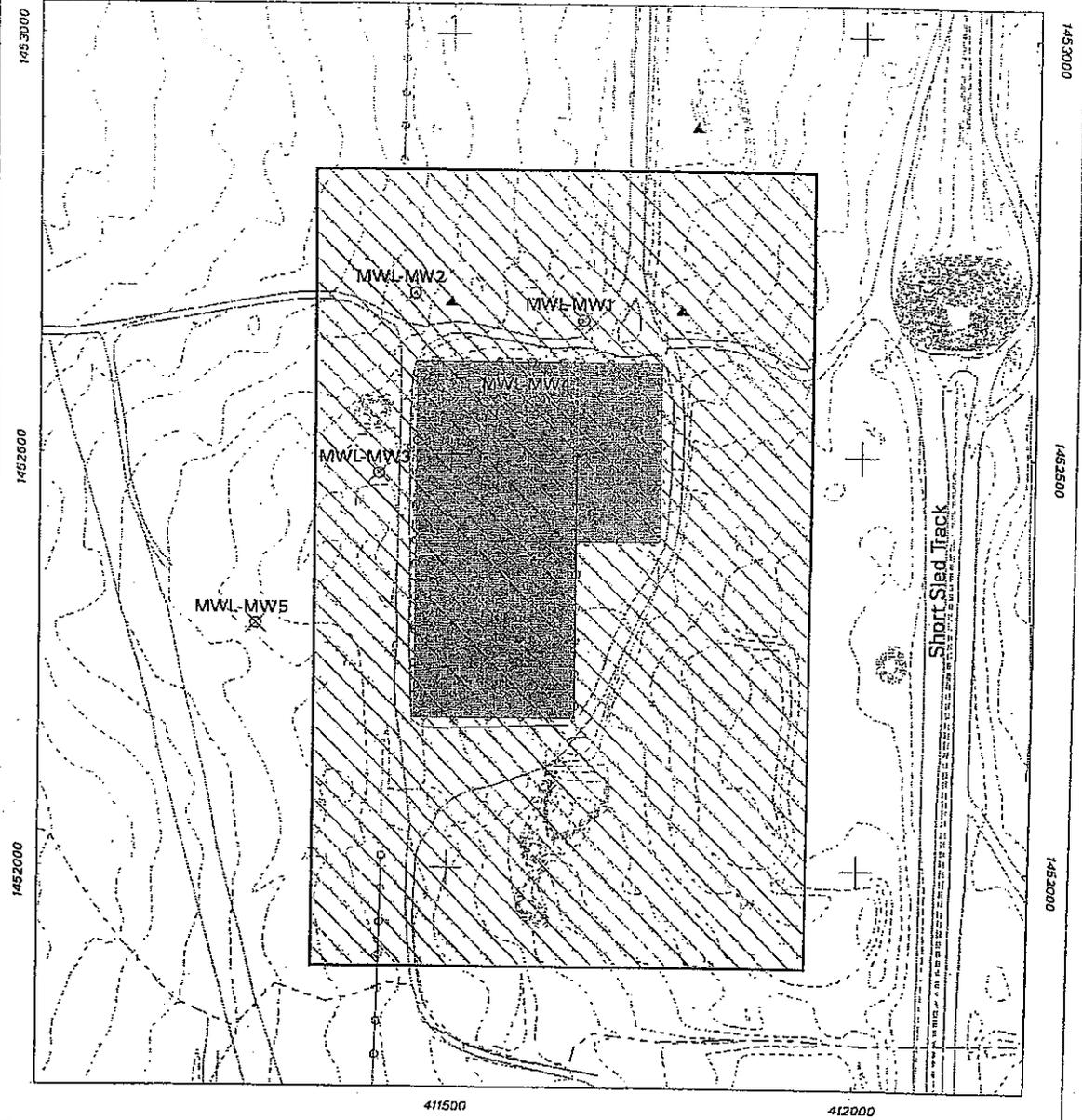
Scale in Feet



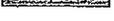
Scale in Meters



Sandia National Laboratories, New Mexico  
Environmental Geographic Information System



Legend

-  Air Sampling Station
-  Monitoring Well
-  Fence
-  Unpaved Road
-  1-ft. Contour
-  Surface Drainage
-  Area of Possible Soil Disturbance
-  SWMU 76, MWL

Soil Cover Area at  
SWMU 76, Mixed Waste Landfill



Sandia National Laboratories, New Mexico  
Environmental Geographic Information System



ALBUQUERQUE ENVIRONMENTAL HEALTH DEPARTMENT - AIR QUALITY DIVISION (DEPARTMENT)  
 11850 SUNSET GARDENS SW - ALBUQUERQUE, NEW MEXICO 87121  
 (505) 768 - 1930 (VOICE) (505) 768 - 2482 (TTY) (505) 768 - 1977 (FAX)



APPLICATION FOR A FUGITIVE DUST CONTROL PERMIT IN BERNALILLO COUNTY  
 ALBUQUERQUE - BERNALILLO COUNTY AIR QUALITY CONTROL BOARD REGULATION 20.11.20 NMAC  
 [CONSTRUCTION PERMIT FOR SURFACE DISTURBANCE/DEMOLITION (NON-PROGRAMMATIC)]

DIVISION RECEIPT STAMP BELOW THIS LINE

EFFECTIVE DATE OF THIS FORM: 3/1/04

**COPY**  
 SUBMITTAL DATE/TIME

8/13/04

RECEIVED BY

Felicia

PERMIT #

348-10-2925 CAA  
10-348-2925

**PERMIT APPLICATION - PART A. - PROJECT INFORMATION AND GENERAL ACTIVITIES (20.11.20.15) (PRINT OR TYPE)**

1. PROJECT NAME Tech Area III Borrow Site Cell No. 1

2. PROJECT LOCATION Sandia National Laboratories Tech Area III

SUBMIT AS AN ATTACHMENT TO THIS APPLICATION, AT MINIMUM, AN (8 1/2" x 11" OR 11" x 17") SITE MAP OR PLAT OF PROJECT LOCATION

3. PROJECT STREET ADDRESS (if available) Not Applicable - See Map

4. MAJOR CROSS STREETS OR INTERSECTION NEARBY Not Applicable - See Map

UNIFORM PROPERTY CODE(S) (required information): Not Applicable

6. LATITUDE/LONGITUDE (if available): NORTH 34° 58' 20.26" WEST 106° 32' 33.78"

7. UNIVERSAL TRANSVERSE MERCATOR (UTM Coordinates), if available: ask Jeremy NORTHING EASTING

8. SCOPE OF PROJECT (check all that apply):  NEW BUILDING(S) CONSTRUCTION  SUBDIVISION DEVELOPMENT  UTILITY IMPROVEMENTS

STRUCTURE DEMOLITION/RENOVATION  ROADWAY DEVELOPMENT  OTHER (please describe) Borrow Site Concrete & Asphalt Accumulation

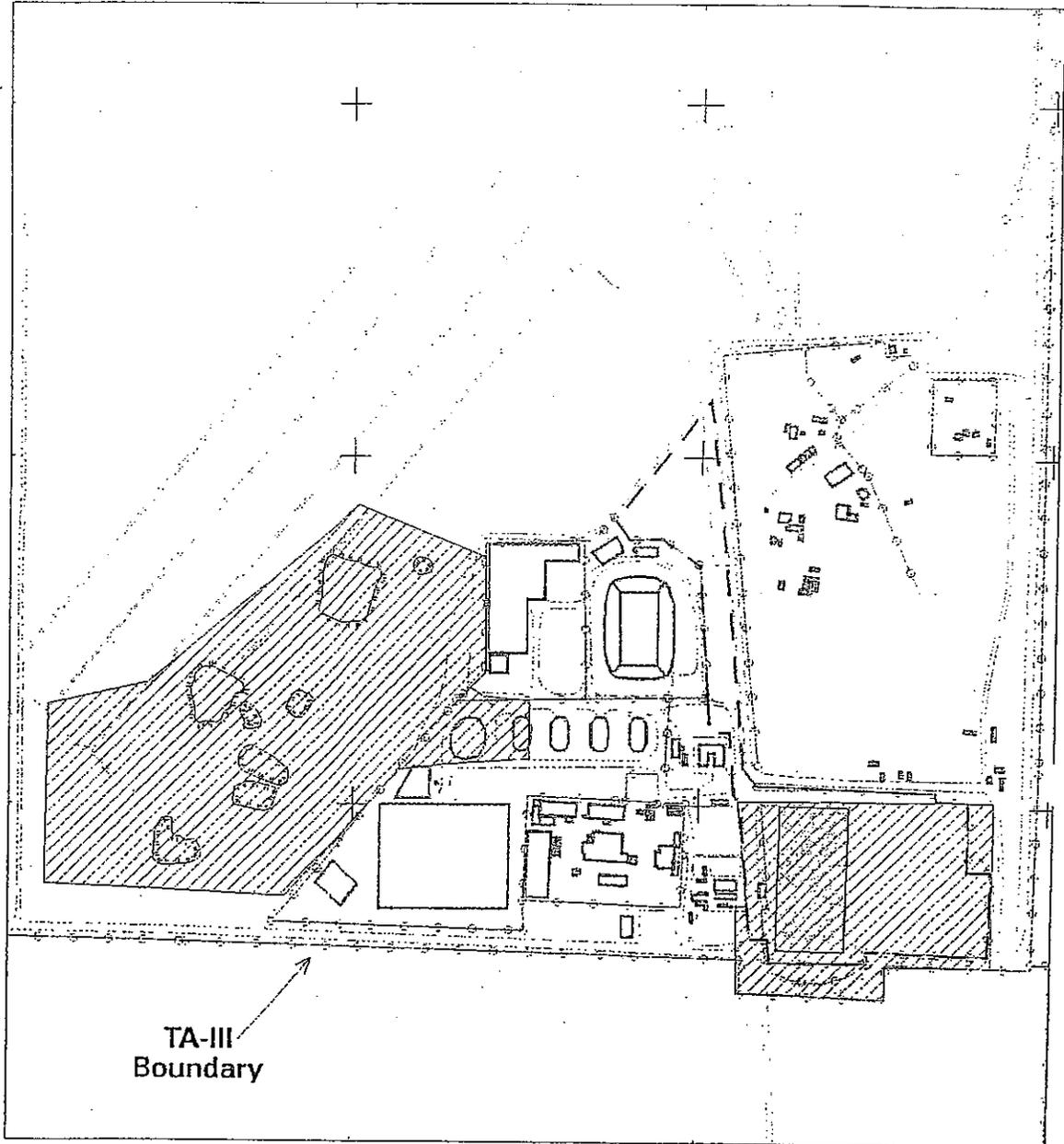
9. ACTIVE OPERATIONS (check all that apply):  SURFACE DISTURBANCE  BULK MATERIAL HAULING OR HANDLING  UNPAVED ROADS  PAVED ROADS  UTILITY REMOVAL/INSTALLATIONS  STRUCTURE DEMOLITION/RENOVATION  MILLING/GRINDING/CUTTING OF SURFACES  OTHER (please describe)

10. TOTAL AREA TO BE DISTURBED (acres or square feet) 17.5 acres; ft<sup>2</sup>, or, FOR DEMOLITION: TOTAL CUBIC FEET ft<sup>3</sup>

NOTE: A FUGITIVE DUST CONTROL PERMIT APPLICATION IS REQUIRED FOR A BUILDING DEMOLITION PROJECT OF OVER 75,000 FT<sup>3</sup> AND MUST BE RECEIVED BY THE DEPARTMENT 10 BUSINESS DAYS BEFORE THE ANTICIPATED PROJECT START DATE. ASBESTOS NOTIFICATION FOR DEMOLITION/RENOVATION OF ANY COMMERCIAL BUILDING, RESIDENTIAL BUILDING OF 5 OR MORE DWELLINGS, OR RESIDENTIAL STRUCTURE TO BE DEMOLISHED TO BUILD A NON-RESIDENTIAL STRUCTURE MUST BE RECEIVED BY THE DEPARTMENT, USING A SEPARATE FORM, 10 WORKING DAYS BEFORE THE ANTICIPATED PROJECT START DATE. BUILDING DEMOLITIONS IN BERNALILLO COUNTY REQUIRE DEPARTMENT SIGNATURES FOR PROPER DUST CONTROL AND ASBESTOS NOTIFICATION BEFORE A DEMOLITION PERMIT WILL BE ISSUED BY THE CITY OR COUNTY (20.11.20.22).

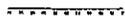
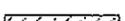
11. A FUGITIVE DUST CONTROL PERMIT APPLICATION, FOR TOTAL AREA TO BE DISTURBED OF 3/4 ACRE UP TO 25 ACRES, MUST BE RECEIVED BY THE AIR QUALITY DIVISION 10 BUSINESS DAYS BEFORE THE ANTICIPATED PROJECT START DATE. A FUGITIVE DUST CONTROL PERMIT APPLICATION, FOR TOTAL AREA TO BE DISTURBED OF MORE THAN 25 ACRES, MUST BE RECEIVED BY THE AIR QUALITY DIVISION 20 BUSINESS DAYS BEFORE THE ANTICIPATED PROJECT START DATE. ANTICIPATED PROJECT START DATE IS: 08/06/2004 9/1/04

AN APPROVED FUGITIVE DUST CONTROL PERMIT SHALL BE VALID FOR 1 YEAR FROM THE DATE OF APPROVAL BY THE DEPARTMENT OR THE ANTICIPATED PROJECT COMPLETION DATE, WHICHEVER IS LONGER, BUT NO MORE THAN 5 YEARS. IF THE SCOPE OF PROJECT, PROJECT ACTIVITIES, EXPIRATION DATE, TOTAL AREA TO BE DISTURBED, OR PROPOSED CONTROL MEASURE CHANGE IN ANY MANNER THAT ARE DETERMINED BY THE DEPARTMENT TO REQUIRE ADDITIONAL CONDITIONS, THEN A NEW FUGITIVE DUST CONTROL PERMIT SHALL BE REQUIRED.



TA-III  
Boundary

### Legend

-  Borrow Pit Piles
-  Fence
-  Paved & Unpaved Road
-  CWL Operational Boundary
-  Building / Structure
-  Chemical Waste Landfill
-  Area of Possible Penetration

### CWL Penetration Permit Boundaries



# EXCAVATION PERMIT

NUMBER: 0502-264

This Section Completed by Requestor

Requestor: <u>Joe Fritts</u>	Org./Company: <u>6146</u>	Date: <u>2/15/05</u>
Telephone: <u>845-8703</u>	Project/Task or Service Order #: <u>7221.02.02.03</u>	
Proposed Start Date: <u>3/7/05</u>	Proposed Completion Date: <u>7/29/05</u>	
Task: <input checked="" type="checkbox"/> Soil Excavation	<input type="checkbox"/> Asphalt Removal	<input type="checkbox"/> Sidewalk Removal
<input checked="" type="checkbox"/> Other (see description)		
Location, Depth, and Description of Work: (site drawings required with this request)		
An engineered soil cover will be placed over a remediated landfill (CWL) near the SE corner of TA III. Attached map indicates the affected area. Dirt from borrow piles (west side of map) will be moved to the east side of the map. Questions to Joe Fritts at 845-8703. <i>Site 74</i>		

## Investigation Results

Utilities have been identified in the area of work. If yes, composite drawings MUST BE ATTACHED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Operations are on or near an Environmentally Sensitive Site. If yes, a Jobsite Hazard Evaluation MUST BE ATTACHED. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> ER Reviewer: <u>Ernie Vincent</u> <u>2/16/05</u>
<input type="checkbox"/> Drawings <input checked="" type="checkbox"/> FGIS	Drawing #s: _____
<b>Utilities Identified / Spotted</b>	
<input type="checkbox"/> Power Distribution <input type="checkbox"/> Gas Distribution <input type="checkbox"/> Steam Distribution	<input type="checkbox"/> Chiller Distribution <input type="checkbox"/> Water Distribution <input type="checkbox"/> Storm Drain Lines <input type="checkbox"/> Communication Lines <input type="checkbox"/> Other (see description) <input type="checkbox"/> Sanitary Sewer Lines

Exercise caution when excavating, as unknown or uncharted utilities may exist. Wear personal protective equipment as appropriate. Electrically rated gloves and eye protection are required for jack hammering and saw cutting operations. Dielectrically tested boots are required for saw cutting operations. Verify location of utilities by hand digging or potholing within 5 feet of spotted utilities.

Mechanical Spotter's Comments:	<u>NO KNOWN BELOW UTILITIES LOCATED</u>
Spotter's Name & Initials:	<u>JH &amp; MZ</u>
Date:	_____
Electrical Spotter's Comments:	<u>NO POWER DETECTED</u> <u>USE CAUTION</u>
Spotter's Name & Initials:	<u>NW</u>
Date:	_____

### NOTICE TO PROCEED

(Not valid without signature of Utility Coordinator, Excavation Coordinator & Authorizing Supervisor)

List all attachments: \_\_\_\_\_

Utility Coordinator's Signature: <u>[Signature]</u>	Phone # <u>844-9992</u>	Date: <u>2/23/05</u>
SNL Excavation Coordinator: _____	Phone # _____	Date: _____
Supervisor Authorizing Excavation: _____	Phone # _____	Date: _____

# EXCAVATION PERMIT

Supervisor Authorizing  
Excavation: \_\_\_\_\_

Phone # \_\_\_\_\_

Date: \_\_\_\_\_

1. This permit is task specific (see side one).
2. This permit is required for each excavation activity over 12 inches or any excavation beneath concrete sidewalks or asphalt.
3. This permit is valid from the proposed start date to the proposed completion date. **Excavator is responsible for maintaining spotter's marks after permit is issued. Request a Re-Spot if spotter's marks are not clearly visible.**
4. This permit and all attachments **MUST BE KEPT AT THE EXCAVATION SITE** during excavation activities.
5. This permit is not intended to be a complete work release document. Other documents or attachments may be required (e.g. Job-site Hazard Evaluation, ER Site work release) prior to work.

**Caution** – SNL has taken reasonable steps to identify hidden hazards prior to excavation activities necessary to complete the assigned work. The possibility exists, however, that unidentified hazards may be encountered. To mitigate risk, the Excavator is responsible for completing a site investigation utilizing methods that would not penetrate hidden hazards (e.g. visual inspection) prior to performing excavation activities identified on this permit, and using appropriate caution when utility locations cannot be identified.

**Personnel assigned this activity must wear the appropriate Personal Protective Equipment and use equipment that is in good working order and properly grounded.**

## SUSPEND WORK!!!

Any and all personnel working under this permit are authorized and required to stop any activity if:

- Conditions differ from those that have been investigated
- Unusual odors are discovered during excavation activities
- Soils are stained
- Buried debris or visible signs of contamination are observed
- There is any question about the validity of this permit or accuracy of the spotting or utility location

Notify the SNL Excavation Coordinator (e.g. Construction Observer) immediately for instructions.

Obtain an excavation permit for any of the following activities:

1. Digging, saw cutting, drilling, coring, or trenching into soil, concrete sidewalks, or asphalt to a depth greater than 12 inches or into soil beneath concrete sidewalks or asphalt.
2. Excavation into subsurface soil in buildings beneath slabs.
3. Scraping, blading, or excavation of any area previously undisturbed or that appears to be undisturbed, such as areas covered with native vegetation, and blading or improvements to previously unimproved roads or paths.

## System Contacts:

EMERGENCY..... 911 or 845-0911 for cellular phones  
Power distribution and perimeter lighting..... 844-3477  
Communications ..... 284-2009  
Gas, steam, water, and sanitary/storm sewers..... 844-3222  
Off-hour emergencies ..... 844-8881 or 844-3842  
Environmental Restoration..... 845-0836





# RECORD OF MEETING

DATE: 6-26-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil and Corey Woods \_\_\_\_\_

## ATTENDANCE :

Don Schofield \_\_\_\_\_

Tim Goering

Joe Fritts \_\_\_\_\_

Ben Martinez

Anthony Martinez \_\_\_\_\_

Dick Fate

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Corrections to the SWPPP borrow pit berm design were made; the size was decreased per the text, there will be no rock layer or straw mat over the berm.
- 2) The SWPPP features and work area will be inspected per the requirements, the inspector will be Joe Fritts or his designee, the rainfall will be recorded, and the forms will be filed as records.
- 3) The gravel for the borrow pit entrance/exit drives is on order.
- 4) Recent samples and analyses by the Sandia lab and Severn Trent indicated no tritium in the borrow area soils. These results will be filed as records.
- 5) Don Schofield will conduct weekly inspections of the work areas as requested by the Sandia Construction Safety Advisory Board. The results will be used by the Board to watch for trends in performance. The inspection reports will be filed as records for the project.
- 6) The CMIP referenced quarterly progress reports prepared by Sandia for NMED. Dick Fate will develop the format and prepare the reports.
- 7) The water usage allowance was increased to over one million gallons.
- 8) Anthony stated that daily safety briefing begin at 7:30 am.
- 9) Corey will request AMEC to take samples of the screened soil by gradation testing. Dave Ransbarger and Corey will coordinate the photographic record log.
- 10) Next meetings will be Wednesday, July 5 at 1:30 pm at the CWL building.



# RECORD OF MEETING

DATE: 7-5-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Pell and Corey Woods \_\_\_\_\_

## ATTENDANCE :

Don Schofield \_\_\_\_\_

Tim Goering

Joe Fritts \_\_\_\_\_

Ben Martinez

Anthony Martinez \_\_\_\_\_

Dick Fate

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) The SWPPP borrow pit berm was completed and has performed as designed during the recent two rain events.
- 2) The SWPPP features and work area were inspected by Joe Fritts after the two rainfall events of at least 0.5 inches.
- 3) The borrow pit entrance/exit pad was constructed and is operational.
- 4) Approximately 2600 cyds of soil has been excavated, screened and stock piled.
- 5) The soil stabilization solution (MgCl) tank was delivered and will be set-up next week.
- 6) There have been no safety issues.
- 7) The RWP has been signed and the RCT will begin attending the progress meetings when activities begin at the MWL site.
- 8) The CMIP referenced quarterly progress reports prepared by Sandia for NMED have been investigated by Tim Goering and he will continue to pursue if the MWL can be included with the standard quarterly ER reports or if a separate submittal needs to be prepared for NMED.
- 9) Corey will request AMEC to take samples of the screened soil for gradation testing next week.
- 10) Dick Fate reported that the presentation to NMED last week went well. Sandia will submit a letter stating the reasons why the total MWL cover should be constructed without a break in the schedule.
- 11) Next meeting will be Monday, July 17 at 1:30 pm at the CWL building.



# RECORD OF MEETING

DATE: 7-17-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil *Kelly Peil*

### ATTENDANCE :

Don Schofield \_\_\_\_\_

Tim Goering

Joe Fritts \_\_\_\_\_

Ben Martinez

Tony Shurter \_\_\_\_\_

Johnny Ethridge

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #5 \_\_\_\_\_

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Approximately 6550 cyds of soil has been excavated, screened and stockpiled as of the meeting time. A total of 8750 cyds will be stockpiled by COB this Thursday and this task will be complete.
- 2) The soil stabilization solution (MgCl) tank has been placed, bermed and filled with solution.
- 3) Action by Don: have the screen relocated to the soil staging area at MWL. The existing soil stockpile will be screened for use in the berm around the staging area.
- 4) Action by Don and Ben: mark the corners of the soil staging area on the south of MWL.
- 5) Action by Don: check with facilities concerning the maintenance of the haul road while soil movement of the soil is underway.
- 6) Action by Don: order radiological posting signs for the MWL area.
- 7) Action by Tony: collect soil samples around the MWL buffer zone for baseline data on any radiological contaminants.
- 8) Next weeks schedule will include the screening of the soil staging area berm material, clearing of the staging area, and identification and marking of the area. The hauling of the subgrade material from the borrow pit to the staging area will begin the first week of August.
- 9) AMEC collected screened soil samples for gradation testing.
- 10) There have been no safety issues.

- 11) Dick Fate conducted an audit last week of the safety tailgate meeting and the project work environment. The report will be filed.
- 12) It was determined that the CMIP referenced quarterly progress reports prepared by Sandia for NMED are not required until the work on the MWL cover begins.
- 13) Action by Joe: notify the biologists to perform a review of the MWL area for potential important bird habitat areas.
- 14) Tony delivered the site copies of the approved RWPs. The permits are effective when the existing MWL fence is removed (approx Sep 6<sup>th</sup>). Training on the RWPs will be conducted before that date.
- 15) Next meeting will be Monday, July 24 at 1:30 pm at the CWL building.

# JULY 17 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Scho, Joe, Tim, ~~Anthony~~, Ben, Kelly

## AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

QA Kelly

## ADDITIONS TO AGENDA

## NEXT MEETING

## ACTION ITEMS



# RECORD OF MEETING

DATE: 7-24-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil and Corey Woods \_\_\_\_\_

## ATTENDANCE :

Don Schofield \_\_\_\_\_

Dick Fate

Joe Fritts \_\_\_\_\_

Ben Martinez \_\_\_\_\_

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #6 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Approximately 8600 cyds of soil has been excavated, screened, stockpiled and is ready to be transported to the MWL staging area.
- 2) Action completed by Joe: a biologist will review the MWL area for potential important bird nesting areas this week.
- 3) Action completed by Don: the screen was relocated to the soil staging area at MWL and the existing soil stockpile is being screened for use in the berm around the staging area.
- 4) Action completed by Don and Ben: the corners of the MWL area and the soil staging area have been located and marked.
- 5) Action completed by Don: Sandia facilities agreed that we would maintain the haul road while soil movement is underway.
- 6) Action completed by Don: radiological posting signs for the MWL area will be ordered this week.
- 7) Action completed by Tony Shurter: some soil samples were collected last week and the remaining ones will be this week for baseline data on any radiological contaminants around the MWL buffer zone.
- 8) The three dump trucks arrive this week for the hauling of the subgrade material from the borrow pit to the staging area.
- 9) Action by Don: to check on the safety requirements for a truck driver working only in non-rad areas.

- 10) There have been no safety issues.
- 11) The excavation permit has been approved.
- 12) The attorneys for DOE, Sandia, and NMED have decided that the Citizens Action lawsuit against NMED does not affect the decision to construct the final cover on the MWL.
- 13) The Construction Team will begin preparatory work for removing the existing MWL security fence. Action by Don: review the CMI for the method of removing the fence posts and leaving the footers.
- 14) Next meeting will be Monday, July 31 at 1:30 pm at the CWL building.

# JULY 24 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Scho, Joe, ~~Anthony~~, Ben, Kelly, Correy, Tony, Dick

## AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

PERMIT STATUS Joe

QA Kelly

## ADDITIONS TO AGENDA

*Ditch fate - cover*

## NEXT MEETING

## ACTION ITEMS



# RECORD OF MEETING

DATE: 7-31-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil *K. Peil*

## ATTENDANCE :

Don Schofield

Dick Fate

Tim Goering

Joe Fritts

Anthony Martinez

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #7 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Started hauling soil from the borrow area to the MWL staging area.
- 2) Fuel tank was installed and bermed and the staff was trained in its use.
- 3) A biologist reviewed the area around the MWL footprint and cleared the area for potential important bird nesting areas.
- 4) The soil staging area at MWL was cleared, the existing soil stockpile was screened, and 500 cyds of the soil was used to construct berms on three sides of the staging area. Approx 960 cyds of soil remains.
- 5) The Construction Team and Don will move temporary trailers to the MWL area for worker meeting and break space.
- 6) The radiological posting signs for the MWL area were ordered.
- 7) The remaining soil samples were collected for baseline data on any radiological contaminants around the MWL buffer zone. Data should be available late this week.
- 8) Action by Don: to acquire DOE "No Trespassing" signs for the fence.
- 9) There have been no safety issues.
- 10) The Security Plan has been approved. The projects participants need to abide by several requirements when the existing fence is removed.
- 11) The existing MWL security fence will be removed by pulling the posts from the ground and cutting the metal from the concrete footers above ground.
- 12) Next meeting will be Monday, August 7 at 1:30 pm at the CWL building.



# RECORD OF MEETING

DATE: 8-7-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil & Corey Woods \_\_\_\_\_

## ATTENDANCE :

Dick Fate

Tim Goering

Joe Fritts

Anthony Martinez

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #8 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Hauled 1592 cyds of soil from the borrow area to the MWL staging area last week.
- 2) Fuel tank now filled and ready to use.
- 3) BMPs were inspected after significant rain and everything was in good shape.
- 4) Action by Don: DOE "No Trespassing" signs will be relocated from the existing fence, when it is removed, to the new fence.
- 5) Safety meetings have increased attention to foot and vehicle traffic along the haul route.
- 6) Staff from NMED will visit the site on August 8<sup>th</sup> for a progress review.
- 7) Next meeting will be Monday, August 14 at 1:30 pm at the CWL building.

## AUGUST 7 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Anthony, Kelly, Correy, ~~Fony~~, Dick, Tim

### AGENDA

PROGRESS AT SITE          Anthony

SAFETY                      Anthony

NMED VISIT                Tim

### ADDITIONS TO AGENDA

### NEXT MEETING

### ACTION ITEMS



# RECORD OF MEETING

DATE: 8-14-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: *K. Peil* Kelly Peil & Corey Woods \_\_\_\_\_

ATTENDANCE :

Ben Martinez                      Tim Goering                      Joe Fritts                      Anthony Martinez  
Don Schofield

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez  
Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #9 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Hauled approx. 3400 cyds of soil in first two weeks from the borrow area to the MWL staging area.
- 2) Rains for past two weeks have effected the schedule. Several SWPPP inspections have been required and the BMPs have worked well.
- 3) A MWL site trailer has been found and work at the site will begin with electrical, clearing and pad construction for the trailer, storage units, and parking.
- 4) There have been no safety concerns.
- 5) Staff from NMED visited the site on August 8<sup>th</sup> for a status/information review and left with a positive impression of the ongoing work, the site appearance, and the bio-barrier rock.
- 6) Next meeting will be Monday, August 21 at 1:30 pm at the CWL building.

## AUGUST 14 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Anthony, Kelly, Correy, ~~Tony~~, Tim

### AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

NMED VISIT RESULTS Tim/Joe

### ADDITIONS TO AGENDA

### NEXT MEETING

### ACTION ITEMS



# AUGUST 22 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Anthony, Kelly, Correy, Tim

## AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

SWPPP INSPECTIONS Joe

## ADDITIONS TO AGENDA

## NEXT MEETING

## ACTION ITEMS



# RECORD OF MEETING

DATE: 8-31-06 *Km Deal* JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Feil & Corey Woods \_\_\_\_\_

ATTENDANCE :

Ben Martinez                      Joe Fritts                      Anthony Martinez

Don Schofield                      Brian Foskett

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #11 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Hauled approx. 7300 cyds of soil as of August 30<sup>th</sup> from the borrow area to the MWL staging area and are close to the original schedule even with the rain delays.
- 2) The electrical costs for the site trailer were reduced, therefore, the trailer will be installed and will not need a generator.
- 3) A list of site work was discussed for next weeks activities.
- 4) There have been no safety concerns.
- 5) Brian Foskett will be the site RCT when Tony Shurter is unavailable.
- 6) A numbering system and log of each fence post will be utilized when they are removed and surveyed for rad contamination.
- 7) The next meeting will be a training session for all site staff and include the RWP, Security Plan, site layout, logistics, HASP, access, and other required details. The meeting will be Monday, September 11 at 10:00 am at the CWL building.

## AUGUST 31 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Anthony, Kelly, Correy, ~~Tim~~ Brian F.

### AGENDA

PROGRESS AT SITE Ben

TAKIN DOWN THE FENCE All

SAFETY Anthony

### ADDITIONS TO AGENDA

### NEXT MEETING

### ACTION ITEMS

8/31

DOCUMENT EXISTING LANDMARKS - Hellock completed

TRAILER PAD - Gravel will be placed around trailer for walkways after delivery

PERSONEL EXIT/ENTRANCE

TRAILER, CONNEX - Trailer to arrive Tuesday, connexes on site

DECON PAD

RELOCATE WATER TOWER - Facilities to complete next week

ROLLOFFS

P/U INSTALL WATER HOSE - P/U'd, needs to be installed

INSTALL TPOSTS/ROPE - T-posts installed, rope not

RAD/NO TRESPASSING SIGNS - signs arrived, not put up

PERIMETER ROAD - completed, needs some work (grading/compaction)

NOTIFY SECURITY - Tim will notify (Planned <sup>fence removal</sup> week of 9/11)

BIO SURVEY - To be completed next week.

Geophysical Survey: contract not yet in place, planned for late September



## RECORD OF MEETING

DATE: 9-26-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: *Km Peil* Kelly Peil & Corey Woods \_\_\_\_\_

ATTENDANCE : See attached attendance list

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez

Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Training to prepare for MWL fence removal and site clear and grub;  
Meeting #12

---

ITEMS DISCUSSED: The staff currently working on the MWL subgrade project was in attendance for the training. New staff will be trained as required. Items reviewed and discussed include:

- 1) Sandia ER reorganization: New Division number 6791. Line Manager is David R. Miller and the Program Manager is Paul Freshour. The Division has new ES&H and Security Managers.
- 2) Security Plan: Implementation of the Plan begins immediately when work starts to remove the existing MWL site fence. Tim Goering reviewed the Plan using the attached key elements list. A copy of the Plan is available in the MWL site office.
- 3) Health and Safety Plan: Anthony Martinez reviewed the attached Task Hazard Analysis for the fence removal operation. The HASP and the THA are available in the MWL site office.
- 4) Radiological Work Plans: Tony Shurter presented the two RWPs; one is required if a rad situation is encountered; the second RWP is for the currently scheduled eight project tasks. The RWP describes the PPE requirements, release procedures for fence or other material, precautions for existing surface penetration limits, daily signature of RWP required, and incidental workers require an escort.
- 5) Waste Management Plan: Craig Wood highlighted the following items; PPE is deposited in marked drums and tested for Rad contamination before disposal, water for decon needs to be collected and tested before disposal, any fuel spills need to be reported, and batteries for disposal are hazardous and are disposed in marked containers.
- 6) Corrective Measures Implementation Plan: The November 2005 Plan is the Work Plan for the project. Appendix A contains the construction specifications and should be reviewed by the staff. Appendix B is the Construction Quality Assurance Plan which was updated with the May

2006 version (bound separately). Two testing and surveying procedures were stressed for the existing surface: AMEC should not penetrate the surface when using the nuclear gage for soil density measurements; the surveyors will pre-mark the stakes for six inches and not drive the stakes into the surface any further than that mark.

7) The fence removal should begin on October 2<sup>nd</sup>.

Attachments:

Agenda

Attendance list

Key elements of the Security Plan

Task Hazard Analysis for fence removal

MWL TAKE DOWN THE FENCE MEETING

September 26, 2006

0900

ITEMS TO COVER

SECURITY PLAN

Tim

HASP

Anthony

RWP

Tony

WASTE MANAGEMENT PLAN

Joe/Craig

CMI PLAN/OVERVIEW

Scho



Key Elements of the MWL Security Plan  
for Subgrade Preparation and Cover Construction Activities

1. Random Protective Force (Security) Patrols
2. MWL team must have continuous access to SNL Protective Force via cell phones, radios, or other communication devices during the duration of the field project. If security issues arise, notify Protective Force immediately.
3. DOE SSO requires that during all phases of construction, SNL protective force (PF), SNL physical security and DOE SSO Safeguards and Security must be notified prior to construction activities at the landfill.
4. All keys must be removed from the heavy equipment at the end of the work day, and either secured or removed from site.
5. If NMED has not approved the MWL Cover by April 30, 2007, SNL is required to immediately construct a 44" high barbed wire fence and access control gate around the landfill perimeter.
6. A Q-Cleared Individual will be required to be onsite at all times during operational hours when uncleared workers are working within the landfill boundaries.
7. Security Clearances not required for workers, as no classified materials will be encountered.
8. DOE standard badges must be worn at all times unless prohibited because of PPE.
9. Signage
  - DOE signs prohibiting trespassing will be posted around the perimeter.
  - Radiological postings around the perimeter to alert personnel to the presence of radiological hazards.
10. Security Incidents
  - Must comply with the reporting requirements for Incidents of Security Concern as outlined in CPR 400.3.7
  - Report incidents using the Security Incident Management Program (GIMP) incident reporting pager (540-2382)
11. The MWL Point of Contact (POC) will maintain a signed copy of the Security Plan and have it readily available during field operations on site.  
MWL Security POC – Scho  
Alternate POC – Ben
12. The original signed plan shall be retained by Physical Security (4213). If necessary, an annual review of the Security Plan will be conducted by Physical Security (4213).

**Task Hazard Analysis — Mixed Waste Landfill fence removal operation.**

*Description of Activity* — (1) Remove barbwire, t-posts, chain link fence, fence posts, and any other hardware required to dismantle the MWL fence. (2) Remove concrete from fence posts and place concrete in a separate roll off to be released by an RCT if needed. (3) Label/ number fence posts and hardware to be released by the RCT in accordance with the RWP in order to have a systematic approach to what has been swiped and what hasn't. (4) Place fencing material and hardware that has been cleared by an RCT into the metal only roll offs on the south end of the site boundary for recycle. (5) Once the fence has been removed the crew can begin grubbing the top layer of the MWL. (The crew may be required to use a chop saw or similar method to remove the concrete from the fence posts.)

***Equipment Required:***

- Heavy Equipment – forklift, front loader, road grader, skid steer
- Vehicles – pick-up trucks, trailers.
- Hand Tools – shovels, wrenches, hammers, screw drivers, chop saw
- Safety Equipment- Traffic control equipment, two-way radios, orange safety vests, face shield, fire extinguishers, eye wash station, Level D PPE (see section 4.0 in the HASP).

*Level of Protection:* Level D PPE (see Section 4.0 for detailed discussion of PPE).

Potential Hazard	Hazard Rating	Control
Chemical • Fuel	Low	There are no chemical hazards anticipated. Fuel for heavy equipment is stored on site. Fire extinguishers are available in the fuel storage areas and the crew will be briefed on the location of fuel, fire extinguisher location and proper procedures at the daily safety briefings.
Physical • Heat stress • Sunburn	Medium	Workers will be aware and briefed through tailgate safety meeting on heat stress and sunburn hazards. Adequate break and rest areas will be provided. Sunscreen will be provided. Frequent

<ul style="list-style-type: none"> <li>• Noise</li> <li>• Heavy Equipment</li> <li>• Lifting Injury</li> <li>• Pinching/crushing injury</li> <li>• Slips, trips, falls</li> <li>• Fire</li> <li>• Electrical hazards</li> <li>• Direct skin contact with the soil in the MWL boundary</li> </ul>		<p>water/hydration breaks will be required. Pace of work will be consistent with PPE requirements and site conditions. Operators will wear hearing protection when they are around any power tools or heavy equipment. Only qualified operators will operate heavy equipment. Equipment will be inspected daily and seat belts will be worn at all times. No one is allowed to walk or work under a suspended load of any kind. Hard hats will be worn for any overhead work. Orange safety vests will be worn at all times when personal is around heavy equipment. Proper lifting techniques will be taught and reinforced through daily tailgate meetings. Work areas will be inspected daily and slip-trip-fall hazards will be eliminated where possible. Safe work practices will be established and followed when fueling equipment and when conducting any general site maintenance. Any new tasks will be discussed at the daily tailgate briefings before performing any work. Water will be used to help control airborne dust. Eating, drinking and smoking will be administratively controlled throughout the operation and conducted only in designated areas. Personal hygiene and an adequate break schedule will be followed to prevent worker fatigue. Crew will wear the proper PPE and be required to follow all guidelines outlined in the RWP. RAD II will be required for all site workers.</p>
Radiological	Low	Potential for tritium below ground level. All work will be conducted in accordance with the RWP. RAD Worker II is required for all working personnel.
Explosive	N/A	There are no explosive hazards anticipated.
Biological <ul style="list-style-type: none"> <li>• Snakes</li> <li>• Rodents</li> <li>• Insects</li> </ul>	Low	Noise and the fence removal operation will not be conducive to snakes, rodents or insects. Work areas will be kept clean and places of refuge for biological hazards eliminated where possible. Worker awareness will be maintained through tailgate safety briefings.

\*Based on Probability and Severity

### **Potential Offsite Impacts**

1. Increased Noise- no off site impact anticipated. Personnel will be required to wear hearing protection in and around heavy equipment and power tools.
2. Increased Traffic- most vehicle and heavy equipment traffic related to the MWL fence removal operation will be limited to the typical transportation routes used for the work. If necessary, local traffic will be re-directed.
3. Utility outages- no off-site impact anticipated.
4. Dust- suppress dust with water as necessary. Use magnesium chloride/water mixture as appropriate to maintain soil stockpiles and local road surfaces. Fence removal and topsoil grubbing operations will be terminated if dust suppression techniques are not adequate to prevent offsite dust releases due to wind that adversely impacts on-site or off-site personnel.
5. Fire- Task Leader, SSO, or designee will communicate with local facility Points of Contact and initiate emergency response plan if necessary.



# RECORD OF MEETING

DATE: 10-2-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: *Kemp* Kelly Pell & Corey Woods \_\_\_\_\_

## ATTENDANCE :

Ben Martinez	Joe Fritts	Anthony Martinez	Tim Goering
Don Schofield	Brian Foskett	Tony Shurter	Stacy Griffith

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez  
Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #13 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) Tony Shurter surveyed the MWL non-classified fence on Friday and cleared it for disposal. The fencing material was removed from the posts Monday morning and loaded into the disposal containers.
- 2) The plan for the remainder of the week was to remove the fence material from the posts in the middle of the site; remove the posts; survey posts for clearance; start clear/grub of non-classified area. A screen and chipper will be located at the site to separate the grubbed material from the soil and rocks. The scredded brush will be stored for future reuse in covered containers.
- 3) Action by Tony: Soil samples from the site will be collected for laboratory analysis at Sandia.
- 4) At least one concrete slab exists within the classified area. After the fence is removed the slab(s) will be removed to view the potential settling under the slab. The concrete will be broken and disposed in the pit under the slab.
- 5) There have been no safety concerns. The PPE requirements will be in effect when the fence post work begins.
- 6) Action by Stacy: The monitoring wells around the MWL will have a video crew scheduled for the week of Oct 16<sup>th</sup>. Stacy will coordinate the effort.
- 7) Action by Tony and Tim: Because of the evidence of very low concentrations of cesium 137 in biota samples at the MWL, a plant will be excavated and separated for analysis to develop a data base of rad uptake.

- 8) The metal from the middle fence and the classified area fence will be separated for disposal relative to the DOE metal moratorium rules.
- 9) A sample of the stock piled borrow material for the sub-grade will be collected for procter analysis. A sample of the existing surface soil will be collected and surveyed by Tony before release to AMEC for a procter analysis.
- 10) The next meeting will be Monday, October 9 at 1:00 pm at the MWL building.

OCTOBER 2, 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Anthony, Kelly, Corey, Tim, Tony, Stacy

AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

ADDITIONS TO AGENDA

Video of wells  
Cs-137

NEXT MEETING

ACTION ITEMS



# RECORD OF MEETING

DATE: 10-10-06 Karfael JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Peil & Corey Woods \_\_\_\_\_

ATTENDANCE :

Ben Martinez	Joe Fritts	Anthony Martinez	Don Lopez
Don Schofield	Harry Buchner	Tony Shurter	Paula Schuh

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez  
Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #14 \_\_\_\_\_

---

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) The unclassified area of the MWL has all fence removed; the posts are on the ground waiting the rad survey results for release. The area has been cleared of vegetation. The piles of vegetation will be screened to remove rocks and schredded before storing in a container for future use as mulch.
- 2) The removal of the classified area fence will begin this week. A manlift will be used to reach the top strands of barbed wire. The wire will be rad surveyed before release for disposal.
- 3) Soil samples from the site were collected for laboratory analysis at Sandia and the results should be available this week. The rad data to date has been at background or below.
- 4) There have been no safety concerns.
- 5) The very low concentrations of cesium 137 in previous biota samples at the MWL are severals orders of magnitude below a health risk, therefore no further samples will be taken.
- 6) A sample of the stock piled borrow material for the sub-grade and a sample of the existing surface soil was collected and surveyed for release to AMEC for a procter analysis.
- 7) A decision on the concrete slab disposition within the classified area will be made later in the week.
- 8) The next meeting will be Thursday, October 19 at 11:00 am at the CWL building.

# OCTOBER 10, 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Anthony, Kelly, Corey, Bryan, Tony, Don, Paula, Harry

## AGENDA

PROGRESS AT SITE	Ben
Fence removal	
Grubbing	
Shredding	
STATE AUDIT	Scho
RAD PRO ISSUES	Tony
SOIL SAMPLING	Corey
SAFETY	Anthony

## ADDITIONS TO AGENDA

## NEXT MEETING

## ACTION ITEMS

## SECTION 02110

### CLEARING AND GRUBBING

#### PART 1 GENERAL

##### 1.1 SCOPE OF WORK

##### 1.1.1 Work Included

The Contractor shall furnish all materials, labor, tools, and equipment, and shall perform clearing and grubbing during construction activities in accordance with this specification and as shown on the design drawings.

##### 1.1.2 Related Work Specified Elsewhere

- 1) Temporary Diversion and Control of Water during Construction shall be in accordance with Section 01563 of these specifications.
- 2) Trenching, Backfilling, and Compaction shall be in accordance with Section 02221 of these specifications.
- 3) Reclamation Seeding and Mulching shall be in accordance with Section 02930 of these specifications.

##### 1.1.3 Work to be performed by the Operator and/or the CQA Engineer:

- 1) Review and approve submittals as required for this specification.
- 2) Designate items that require salvage, storage, reuse, and/or relocation.
- 3) Perform final inspection and confirm acceptance of clearing and grubbing.
- 4) In addition to inspection by the Contractor, the Operator and/or the CQA Engineer may inspect work for compliance with the requirements of this specification.

##### 1.2 SUBMITTALS

##### 1.2.1 Procedures, Certifications, and Records

The Contractor shall submit test results in accordance with the requirements of this specification and the MWL CQA Plan to the Operator and/or the CQA Engineer as soon as this information is available so that the Operator and/or the CQA Engineer can

review work for compliance with the requirements of this specification and make CQA decisions in real-time.

## **PART 2 PRODUCTS**

### **2.1 EQUIPMENT AND MATERIAL REQUIREMENTS**

2.1.1 All equipment and tools used by the Contractor to perform the work shall be subject to inspection by the Operator before the work is started and shall be maintained in satisfactory working condition by the Contractor at all times.

2.1.2 The Contractor's equipment shall have the capability to perform the indicated clearing and grubbing specified herein.

2.1.3 The Contractor shall ensure that all equipment used for clearing and grubbing work is fitted with appropriate safety devices that comply with all applicable Federal laws and the MWL Health and Safety Plan, and that will adequately protect equipment operators and minimize exposure of site workers and others.

### **2.2 ITEMS SALVAGED FOR REUSE, STORAGE, OR RELOCATION**

The Operator will designate items that require reuse, storage, or relocation.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

#### **3.1.1 Site Inspection**

The Contractor shall inspect the site to determine the nature, location, size, and extent of vegetative material, debris, and obstructions to be removed or preserved, as specified herein.

#### **3.1.2 Traffic**

The Contractor shall conduct clearing and grubbing operations to ensure minimum interference with roads, walks, and adjacent facilities. The Contractor shall not close or obstruct roads, walks, or adjacent operational facilities without written permission from the Operator.

#### **3.1.3 Protection of Existing Structures and Facilities**

The Contractor shall provide protection necessary to prevent damage to the existing structures and facilities which are to remain in place. The Contractor shall restore or replace damaged property to original condition, or to the satisfaction of the Operator.

Items damaged in removal shall be repaired and refinished, or replaced by the Contractor with new matching items as required by the Operator.

3.1.4 Salvageable Items

Items damaged in removal shall be repaired, refinished, or replaced by the Contractor with new matching items as required by the Operator. The Contractor shall save and protect from construction damage all vegetative materials (shrubs, grass, and other vegetation) beyond the limits of the required clearing and grubbing. The Contractor shall restore or replace damaged vegetative materials to the conditions as required by the Operator, in accordance with Section 02930 of these specifications.

3.1.5 Protection of Monuments and Other Permanent Surface Features

The Contractor shall locate and mark existing monuments, monitoring wells, stanchions, and markers before construction operations commence and shall protect such items during construction. The Contractor shall restore or replace damaged items to original condition as required by the Operator.

3.2 CLEARING AND GRUBBING

3.2.1 Clearing and Grubbing

The Contractor shall clear the site of shrubs, vegetation, rocks and debris as required within the limits of the landfill cover, laydown and stockpile areas south of the MWL. Roots exceeding 1 inch in dimension, as well as rocks and other debris exceeding 2 inches in dimension in the top 6 inches of the existing site grade shall be removed by hand or mechanical means. Removal methods shall minimize the disturbance of soils below 6 inches in depth. Clearing and grubbing shall conform to the Radiological Work Permit (RWP).

3.2.2 Reclamation Seeding and Mulching

The Contractor shall seed and mulch disturbed areas in accordance with Section 02930 of these specifications.

3.3 DISPOSAL OF WASTE AND DEBRIS MATERIALS

3.3.1 Organic Material

Organic materials, including grass, shrubs, stumps, roots, and other organic debris removed due to clearing activities, shall be transported by the Contractor to a stockpile/disposal site designated by the Operator. The stockpile/disposal site shall be located within ¼ mile of the project area. Organic material shall be stockpiled or disposed of as directed by the Operator.

3.3.2 Disposal

The Contractor shall remove all materials not designated for relocation, reuse, or salvage. These materials shall be disposed of or stockpiled as directed by the Operator.

3.4 DAMAGED AREAS

The Contractor shall confine clearing and grubbing operations to within those areas required for cover construction or as directed by the Operator. Any areas outside the designated areas that are damaged or disturbed by the Contractor's operations shall be reclaimed by the Contractor. Reclamation shall be in accordance with Section 02930 of these specifications.

3.5 ACCEPTANCE

Clearing and grubbing not in accordance with the requirements of this specification shall be repaired and/or replaced by the Contractor at the Contractor's expense. The Contractor shall submit a description of the repair and/or replacement methods to the Operator for approval before use. Acceptance criteria for repaired and/or replaced clearing and grubbing shall be in accordance with the requirements of this specification.

END OF SECTION



# RECORD OF MEETING

DATE: 10-19-06 \_\_\_\_\_ JOB NAME: SNL MWL Subgrade Construction JOB NO: 06-22-0011

RECORDED BY: Kelly Pell & Corey Woods \_\_\_\_\_

## ATTENDANCE :

Ben Martinez            Joe Fritts            Anthony Martinez    Don Lopez    Tim Goering  
Don Schofield            Bryan Foskett            Paula Schuh            Dick Fate

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez  
Project file \_\_\_\_\_

MAIN SUBJECT OF MEETING: Progress Meeting #15 \_\_\_\_\_

ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

- 1) The total MWL fence is removed and the majority of the metal will be picked-up by Ace Recycling. A small portion of the classified area fence structure and concrete footers will be disposed as waste in a landfill.
- 2) The total area has been cleared of vegetation. The final piles of vegetation will be screened to remove rocks and shredded. The 20 cyd roll-off container will be full; the screened soil will be returned to the surface.
- 3) A classified area pit concrete cover was broken in place, covered with soil to level, and compacted; one other pit sinkhole was filled, leveled, and compacted.
- 4) The activities for next week include walking the area to remove debris larger than two inches, compact the site to at least 90%, AMEC test the area for compaction results, the surveyors stake the area for subgrade lift markers, and a geophysics crew run a survey of the classified area.
- 5) The RCTs will survey the area to potentially clear it for the release from the RWP PPE requirements.
- 6) There have been no safety concerns.
- 7) A QA/QC audit was conducted by the QC Engineer to check performance versus the construction specifications. The work was in conformance.
- 8) The next meeting will be Wednesday, November 1 at 11:00 am at the MWL building.



# MKM Engineers, Inc.

*Safe, Quality Work Performed With Pride*

October 23, 2006

Mr. Don Schofield, Task Leader  
Sandia National Laboratories  
P.O. Box 5800, MS 1088  
Albuquerque, NM 87185-1088

Dear Don:

This letter is the result of the internal audit conducted October 16, 2006 at the Sandia National Laboratories Mixed Waste Landfill Subgrade Project site. There are no findings or corrective action reports.

The purpose of the internal audit was to ensure that the applicable construction specifications and project quality and safety procedures and protocols were being followed. From my surveillance and assessment the experience of the staff is obvious in the performance of the site work and the reporting of the results. The entire staff is aware of the safety aspects while working under a radiological work permit and around heavy equipment. The daily morning staff briefings are key to preparing everyone for their duties and responsibilities.

The audit checklist used for the audit and the resulting observations is attached as a record of the items covered. The list included requirements from the Construction Quality Assurance Plan (CQA) and the Construction Specifications that were applicable for the stage of the project at the time of the audit. A few of the observations are mentioned in the following paragraph.

The CQA states that specific documents would be available at the site, and they are easily accessible for the staff and visitors. The field forms, logs, and reports were clear, concise, and complete. The daily maintenance of the data will be beneficial for the final report preparation. The temporary diversion and storm water control (Spec 01563) requirements have been closely monitored and the BMPs maintained even with record rainfalls. The fence removal and the clearing and grubbing (Spec 02110) were performed efficiently, safely, and in accordance with the specification. The plan for the existing surface compaction (Spec 02200) will include a modification to the specification which will enhance the documentation of the compaction by taking field measurements. The plan for the grades, lines, and levels work (Spec 02210) will assist with the proper placement of subgrade material to meet the requirements of the specification

6000 Uptown Blvd., NE, Suite 490, Albuquerque, NM 87110 Phone: (505) 881-0123 Fax (505) 881-3005  
[www.mkmengeers.com](http://www.mkmengeers.com)

• Turnkey  
Environmental

• Unexploded  
Ordnance

• Radiological  
Services



Mr. Don Schofield  
October 23, 2006  
Page Two

Again, the staff expertise was obvious in the quality of their reporting, their concern for safety, concern for equipment, and concern for quality performance. Management should continue to encourage the staff that they are the key to a safe and quality finished product.

Sincerely,

A handwritten signature in cursive script that reads 'Kelly M. Peil'. The signature is fluid and matches the typed name below it.

Kelly M. Peil, PhD, PE  
QC Engineer

Cc: Joe Fritts  
Project File

Attachment: Checklist

### Audit Checklist

Audit Reference Number: 01  
 Date of Audit: October 16, 2006

Subject: Sandia MWL Subgrade Project  
 Auditor: Kelly Peil

Page Number: 1

Item	Requirement & Reference	Audit Question	Compliance		Observation/Finding	Person Contacted
			Yes	No		
1	Availability of CMIP with specifications (Nov 05) on site (CQA 1.1)	Are copies of specifications and the current version of the CMIP in site office	X		A binder at MWL contains the documents required at the site.	Ben Martinez
2	Availability of CQAP, Security Plan, and HASP on site (CQA 4.0)	Is the CQA with inspection checklists, Security Plan, HASP with THAs and signatures, MSDS, emerg contact info available at the site	X		All items listed in question are in the site office.	Ben Martinez
3	Provide continuing training to maintain job proficiency (CQA 4.0)	Evidence of daily safety and quality briefings	X		Briefing for today was prepared, reviewed and signatures for all present. The previous briefings are retained in a binder.	Joe Fritts and Anthony Martinez
4	Provide continuing training to maintain job proficiency (CQA 4.0)	Is instrumentation available for air and noise monitoring to control PPE; calibration records	X		Air monitoring not required because the physical rad sample results have been below requirements to monitor; a dust monitor and noise monitor are used with the readings retained along with the instrument calibration forms	Tony Shurter and Anthony Martinez

### Audit Checklist

Audit Reference Number: 01  
 Date of Audit: October 16, 2006

Subject: Sandia MWL Subgrade Project  
 Auditor: Kelly Peil

Page Number: 2

Item	Requirement & Reference	Audit Question	Compliance		Observation/Finding	Person Contacted
			Yes	No		
5	Continual improvement review and audit (CQA 2.3)	Evidence of past SNL personnel audits of project activities; weekly safety board inspection notes	X		Email concerning audits by Dick Fate in the file. Safety board inspection notes in Don Schofield's file	Joe Fritts and Don Schofield
6	Project plan, schedule, and resources for the work (CQA 4.0)	Is the plan and schedule up-to-date; are resources available for the work	X		Project schedule is up-to-date and posted; the schedule ties to the CMIP; the labor and equipment resources are adequate for the required work	Don Schofield
7	Applicable permits available (CQA 4.0)	Is the excavation permit current (July 24) and on site; RWP signatures daily	X		The excavation permit is effective thru Dec 06; the RWP is signed daily by those accessing the landfill	Joe Fritts
8	Site storm water control (Spec 01563)	Is the storm water diverted around the construction area; are SWPPP inspection forms complete and filed	X		The SWPPP BMP is a berm around the work site; the inspection records are complete and filed	Joe Fritts
9	Site storm water control (Spec 01563)	Inspect the BMPs for needed repairs	X		The berm was breached during the summer heavy rain events; it was repaired and is in good shape now	Joe Fritts

### Audit Checklist

Audit Reference Number: 01  
Date of Audit: October 16, 2006

Subject: Sandia MWL Subgrade Project  
Auditor: Kelly Peil

Page Number: 3

Item	Requirement & Reference	Audit Question	Compliance		Observation/Finding	Person Contacted
			Yes	No		
10	Clearing and grubbing (Spec 02110)	Inspect equipment storage area and safety of equipment for operators			I couldn't get on the landfill; item will be inspected by the QC inspector as part of duties	Joe Fritts
11	Clearing and grubbing (Spec 02110)	Inspect the MWL surface for rocks and debris; inspect MW-4 for protection; inspect the perimeter and organic storage area			See above; QC inspector will inspect surface and MW-4; the perimeter will be staked and cleared later; the shredded vegetation is stored in a covered metal roll-off container	Joe Fritts
12	Earthwork (Spec 02200)	Check compaction equipment to be used for the existing surface; agreement on change to spec for compaction versus field tests	X		A smooth drum, vibrating roller will be used for compaction; this spec will be modified with field density tests to determine compaction	Don Schofield
13	Earthwork (Spec 02200)	Tests results for subgrade material is in file; ensure no subgrade placement until compaction results are known	X		The surface permeability tests were projected from near-by field tests; no placement of subgrade will occur until results of surface compaction are available	Tim Goering and Ben Martinez

### Audit Checklist

Audit Reference Number: 01  
 Date of Audit: October 16, 2006

Subject: Sandia MWL Subgrade Project  
 Auditor: Kelly Peil

Page Number: 4

Item	Requirement & Reference	Audit Question	Compliance		Observation/Finding	Person Contacted
			Yes	No		
14	Grades, Lines, & Levels (Spec 02210)	Plan for survey of existing surface before subgrade is placed and between lifts	X		Survey crew will begin after compaction results are known; each lift will be surveyed; total depth of subgrade will vary from 40 inches to 2 inches	Ben Martinez
16	Removal of existing fences (CQA 5.1) and THA	Review plan to separate concrete from posts; inspect waste management (separation, labels, quantities, disposal receipts)	X		Posts were cut from the concrete powered cutters; the rad data clears the posts and concrete for disposal or recycle; the metal is separated into roll-offs for recycle and labeled as such; the metal recycler will receipt the material	Joe Fritts
17	Documentation (CQA 8.0)	Ensure logs and photos are used to document work details, quantities, nonconformances, resolutions, and comments concerning quality and safety	X		Photos are taken and stored on a CD; Ben's log is the official record of work activities and details; there have been no nonconformances noted to date	Joe Fritts



# November 1, 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Tim, Anthony, Kelly, Corey, Don, Harry, Stacy?

## AGENDA

PROGRESS AT SITE	Ben/Stewart
SURVEY STATUS	Harry
QA	Corey/Kelly
RAD PRO ISSUES	Tony/Bryan
SAFETY	Anthony
STATUS OF COVER	Scho

## ADDITIONS TO AGENDA

Gravel Delivery

## NEXT MEETING

## ACTION ITEMS



November 16, 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Tim, Anthony, Kelly, Corey, Don, Harry *stacy,*  
*Jerry Peace, Tony Shuter*

AGENDA

PROGRESS AT SITE Ben

SOILS

QA Corey/Kelly

SAFETY Anthony

ADDITIONS TO AGENDA

NEXT MEETING

ACTION ITEMS

---



# RECORD OF MEETING

DATE: 12-12-06      JOB NAME: SNL MWL Subgrade Construction      JOB NO: 06-22-0011

RECORDED BY: Corey Woods *(signature)*

ATTENDANCE : Ben Martinez                      Joe Fritts              Tim Goering  
                    Harry Buckner              Anthony Martinez

ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez  
                    Project file

MAIN SUBJECT OF MEETING: Progress Meeting #18 to discuss project work hold

---

## ITEMS DISCUSSED:

- 1) Progress – approximately ½-way through Lift 12. Currently out of screened soil. Crew is screening additional soil, could take another 1,800-2,000 cubic yards. Sandia Facilities personnel scheduled to haul additional screened soil from the borrow area to the site Wednesday and Thursday.
- 2) Lift 12 will cover monitor well on west side of MWL, compactor will stay correct distance away from the well during compaction.
- 3) AMEC is backlogged, currently taking at least 1 week to return proctor results.





February 26, 2007 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Tim, Don, Kelly, Corey, Paula

AGENDA

PROGRESS AT SITE Ben  
screening

EROSION PROTECTION MATTING All

SITE INSPECTION CHECKLIST Joe

SAFETY Anthony

ADDITIONS TO AGENDA

Surveying

NEXT MEETING

ACTION ITEMS



## **2009 Meetings**





## MEETING MINUTES

Sandia Mixed Waste Landfill – Corrective Measures Implementation  
Job #: 24342640

**Title: Kickoff Meeting**

Date: 30 April, 2009

Time: 10:00 AM – 11:15 AM

Location: Sandia IPOC, Room 2156

Conducted By: Sandia Personnel

**ATTENDEES:**

NAME	COMPANY	PHONE	EMAIL
Paul Molina	URS Field QA	505-855-7498	<a href="mailto:Paul_Molina@urscorp.com">Paul_Molina@urscorp.com</a>
Harry Buckner	URS Survey QA	505-855-7574	<a href="mailto:Harry_Buckner@urscorp.com">Harry_Buckner@urscorp.com</a>
Don Lopez	PM, CQA	505-855-7440	<a href="mailto:Don_Lopez@urscorp.com">Don_Lopez@urscorp.com</a>
Marshall Nay	URS QA	505-855-7485	<a href="mailto:Marshall_Nay@urscorp.com">Marshall_Nay@urscorp.com</a>
Chris Edgman	EDI Con. PM	505-341-3578	<a href="mailto:CEdgmom@edi-nm.com">CEdgmom@edi-nm.com</a>
Don Schofield	SNL SDR	505-844-4088	
Mateo Aragon	SNL Contracting Officer		
Jerry Peace	SNL Senior Tech Leader		
Mike Mitchell	SNL Project Tech Lead		
Emily Wright	SNL Safety		
Dan Kwiecinski	AMEC – Senior PM Geo Tech.	505-821-1801	<a href="mailto:Dan.kwiecinski@amec.com">Dan.kwiecinski@amec.com</a>

**BIOINTRUSION BARRIER:**

- “Engineering Judgment”, is to be used while installing the Biointrusion Barrier.  
(See email from Don Schofield to Don Lopez dated 03/30/2009 attached)
- There are no provisions for a test section located in specifications.
- The Biointrusion Barrier rock was not in the original concept. It was later added to meet NMED requirements.

- ISSUE: Difficulty filling the voids between the rocks for the Biointrusion Barrier. Sandia has requested for “Engineering Judgment” to be used to determine that this has in fact been achieved. Potential solutions:
  - Place a layer of native soil between the rock and compacted sub-grade. Place the rock on top of the native soil and use a dozer to compact the rock into the native soil. A second layer of native soil is to be placed on the rock to fill the remaining voids. A dozer will then be used to compact the Biointrusion layer and fill the voids with additional native soil. After compaction, wetting the Biointrusion layer to increase the density of the native soil was discussed. Wetting the Biointrusion layer will also help by prepping for the next layer (native soil layer). A final decision to employ a wet layer has not been made.
  - A suggestion was made by Don Lopez to layout a small area (test section) of the Biointrusion Barrier prior to laying out the entire surface. From the test section, URS will be able to determine if the compaction methods in place are sufficient. This will prevent delays and rework. EDI was tasked with the responsibility of providing the test section required in order to determine if compaction methods are adequate. This suggestion was supported by all attendees.
  - A suggestion was made by Don Lopez to coordinate the use of a large diameter density test for the Biointrusion Barrier. A decision by Sandia and the team will be made at the appropriate time during construction.

**VOLUME OF SOIL:**

- Don Schofield is concerned the volume of soil available is insufficient to complete the entire project. Don Schofield would prefer to stay in Borrow Pit #1 to avoid delays due to SWPPP requirements.
- URS surveying QA was tasked with determining the volume of soil currently available in Borrow Pit #1. SNL would like to have the assignment completed in the next 30 days. The sooner the better.
- Borings may be performed in Borrow Pit #1 to determine how much usable soil is available before the caliche layer is reached. The caliche layer may be usable if it is blended with native soil to meet Specifications. Further investigation to be conducted.

**EQUIPMENT:**

- Cell phones are permitted in Tech Area III, however, they can not have picture taking capabilities. Black Berry's are permitted.

- EDI is going to be in charge of managing the photo file. A single dedicated camera will be provided to EDI by Sandia. All team members may use this camera. A scissor lift complete with safety rail for taking elevated photos will also be provided by Sandia for documentation of project progress.
- All other cameras are not permitted in Tech Area III
- Personal computers are permitted without wireless capability.

**SAFETY/TRAINING:**

- Training requirements are part of the mobilization process. All training requirements will be submitted to Don Lopez, URS CQA Engineer, by Mike Mitchell of SNL.
- Three (3) Sandia training courses estimated.
- Site specific training to be determined.
- Two (2) safety tailgate meetings will be conducted per day during the construction phase. One in the morning and one in the afternoon after lunch.
- A modified SNL provided project specific Health and Safety Plan is anticipated to be ready for distribution early next week.

**CONSTRUCTION:**

- Construction work schedule: Mon-Fri. 7:00 AM -5:00 PM

**QUALITY:**

- The CQA report is to be developed throughout the duration of the project. Additional time may not be provided for the CQA report at the conclusion of the project.
- Pictures and descriptions (photo log) are to be incorporated into the CQA report.
- A meeting with the QA surveyor and construction surveyor is required in the near future.

**MISCELLANEOUS:**

- Kickoff meeting at the site is scheduled day before construction.
- No sticker or decal is required on vehicle to get on base. Only a contractors badge is required.

**\*\*NEXT MEETING: MAY 6, 2009; Bldg. 823; 10:00 AM**

- This will be the readiness review. Release of Notice-To-Proceed is anticipated shortly thereafter pending a successful outcome of the readiness review.

**"Schofield, Donald P"**  
<dpschof@sandia.gov>  
03/30/2009 10:02 AM

To "Don\_Lopez@URSCorp.com"  
<Don\_Lopez@URSCorp.com>  
cc  
Subje FW: BioIntrusion Layer Compaction  
ct

---

**From:** Peace, Jerry L  
**Sent:** Monday, March 23, 2009 12:44 PM  
**To:** Aragon, Mateo  
**Cc:** Schofield, Donald P; Mitchell, Mike M  
**Subject:** BioIntrusion Layer Compaction

Mateo,  
Regarding the discussion the evaluation team had about proper filling of voids and effective compaction of the soil within the voids, SNL will need to rely on what is often referred to as "Engineering Judgment" exercised by the QA / QC engineer and the project manager. Compaction of soil within voids in a rock matrix is very difficult. Whether one deploys the rock comprising the biointrusion layer in one single or two lifts, the infilling and compaction of soil will be difficult to accomplish, difficult to measure, and difficult to prove. The QA / QC engineer will need to be present to observe the operation to determine whether the contractor fills the voids and compacts the soil adequately. This will be a judgment or opinion made in accordance with the QA / QC engineer's sound engineering reasoning and experience. Once the rock is locked into place, only dynamic compaction techniques will be effective in compacting the soil, and even then to a limited extent. Nonetheless over time, the soil within the voids will reach optimum compaction due to mechanical and hydraulic action. Jerry

**END OF MEETING NOTES**



## MEETING MINUTES

Sandia Mixed Waste Landfill – Corrective Measures Implementation  
Job #: 24342640

**Title: Readiness Review**

Date: 06 May, 2009

Time: 10:00 AM – 12:15 PM

Location: Sandia Bldg 823,

Conducted By: Sandia Personnel

**\*\* NOTE:** THIS MEETING WAS THE READINESS REVIEW FOR STAGING AND MOBILIZATION TO THE FIELD. THERE WILL BE AN ADDITIONAL READINESS REVIEW FOR OPERATIONS. \*\*\*

**\*\*NOTE: (9/24/09):** THE SECOND READINESS REVIEW FOR OPERATIONS OCCURRED ON 5/19/09 IN THE FIELD AS REQUIRED. URS WAS NOT PRESENT FOR THIS MEETING.

**ATTENDEES:**

NAME	COMPANY
Paul Molina	URS Field QA
Harry Buckner	URS Survey QA
Don Lopez	PM, CQA
Marshall Nay	URS QA
Chris Edgman	EDI Con. PM
Don Schofield	SNL SDR
Mateo Aragon	SNL Contracting Officer
Jerry Peace	SNL Senior Tech Leader
Mike Mitchell	SNL Project Tech Lead
Emily Wright	SNL Safety
Dan Kwiecinski	AMEC – Senior PM Geo Tech.

### MWL ET COVER CONSTRUCTION PROJECT PRE-MOB CHECKLIST

Please see attached

- o Any work done outside of the footprint (outside of fence) will require a Q-Clearance representative to be present to be able to address any issues in real time.

- There will be an Authorized Access List established to identify personnel that are approved to work on the site w/o escort. People with the authority to add people to the list are to be determined at a later date.
- Equipment calibrations will be done by AMEC.
- Two Nuclear Density measurement calibrations and a copy of the results will be provided to Sandia.
- Construction Safety and Security Plan (CSSP) is to be signed today (05/06/2009).
- Sandia has suggested pushing two Geo-Probes through the Biointrusion Barrier to test the under layer of MWL once construction is complete. This may be difficult because of the structural integrity of the Biointrusion Layer. Also, the penetrations may jeopardize the integrity of the Biointrusion Barrier. The Geo Probes are to be discussed more in the near future. Perhaps an engineered sleeve could be provided to accommodate the two Geo-Probes(Please see attached diagram of the Cover Cross Section)
- In the first meeting (Kickoff Meeting) the Spill Prevention Control and Countermeasures Plan (SPCC) was discussed. In this meeting, only the Storm Water Pollution Prevention Plan (SWPPP) was discussed. Both are probably needed for this project. As an example, the heavy construction equipment that will operate on the site will require refueling on-site during the daily work shift (7:00 AM – 5:00 PM). Thus there will be diesel, gasoline and lubricating oil dispensing equipment.
- The fuel supply mobile storage for heavy equipment is to be stored off site when construction is not in progress. The off-site storage location currently being considered is the Sandia Motor Pool.

#### **LOW HAZARD OPERATIONS CHECKLIST**

- The handout used for the Sandia “Corporate” Level readiness review was recalled due to an editorial error. It will be corrected and re-issued. The error was administrative in nature and had no impact on project progress.
- Safety Training will be covered extensively throughout the duration of the project.

#### **MISCELLANEOUS**

- Please see preliminary schedule also attached.
- Please see Conditional Notice To Proceed also attached.

**END OF MEETING NOTES**



## MEETING MINUTES

Sandia Mixed Waste Landfill – Corrective Measures Implementation  
Job #: 24342640

**Title: Kickoff Meeting**

Date: 19 May, 2009

Time: 10:00 AM – 11:15 AM

Location: Tech Area III, Sandia Mixed Waste Landfill

Conducted By: Sandia Personnel

**ATTENDEES:**

URS was not present for this meeting; however, all Sandia and EDi Construction personnel were present as required by the CMIP.

Please see attached.



## TOOL RR-02-T – Startup/Restart Review for Standard Industrial Hazard and Low Hazard Operations Checklist

Operation: SNL/NM MWL ET Cover Project Operational Readiness (facility/activity)	Location: TA III mixed waste landfill								
Check one: <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 2px;">New Facility</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">New Activity</td> <td style="text-align: center;"><input checked="" type="checkbox"/> <i>EW 5/14/09</i></td> </tr> <tr> <td style="padding: 2px;">Restart of Facility/Activity</td> <td style="text-align: center;"><input checked="" type="checkbox"/> <i>not restart EW</i></td> </tr> <tr> <td style="padding: 2px;">Modification to Existing Facility/Activity</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>		New Facility	<input type="checkbox"/>	New Activity	<input checked="" type="checkbox"/> <i>EW 5/14/09</i>	Restart of Facility/Activity	<input checked="" type="checkbox"/> <i>not restart EW</i>	Modification to Existing Facility/Activity	<input type="checkbox"/>
New Facility	<input type="checkbox"/>								
New Activity	<input checked="" type="checkbox"/> <i>EW 5/14/09</i>								
Restart of Facility/Activity	<input checked="" type="checkbox"/> <i>not restart EW</i>								
Modification to Existing Facility/Activity	<input type="checkbox"/>								

	Yes	No	N/A
Was the Standard Industrial Hazard Review (SR) or Low Hazard Review (LR) planned according to Chapter 3 or 4 of the Safety Basis Manual?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A. AUTHORIZATION BASIS/WORK PLANNING *	Yes	No	N/A
1. Is a current Primary Hazard Screening (PHS) (and Hazards Analysis [HA], if necessary) complete and approved for this facility/activity?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is a current Hazards Aggregation Rollup Process (HARP) document (if necessary) complete and approved for this facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Are workers aware of hazards and controls described in the PHS/HA?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Have interfaces with other organizations been communicated and negotiated (such as nearby operations, ES&H, Facilities Org.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have activity-or facility-specific controls been implemented (e.g., equipment in place and working)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have lessons learned from projects/activities/facilities with similar hazards been evaluated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. TRAINING *	Yes	No	N/A
1. Have workers (authorized users, Members of the Workforce, contractors, subcontractors) completed required training?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. TECHNICAL WORK DOCUMENTS (TWDs) *	Yes	No	N/A
1. Have TWDs been developed, and have workers read and signed them as authorized users?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are TWDs available to workers (preferably at the work site)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. If more than one TWD is to be used, has the set of TWDs been reviewed for adequacy and consistency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--	--------------------------	--------------------------	-------------------------------------

4. Are controls implemented (e.g., administrative, engineering, personal protective equipment [PPE])?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

<b>D. WORK ENVIRONMENT *</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
------------------------------	------------	-----------	------------

1. Are adequate signs in place and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

2. Are practices to handle waste management issues in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	-------------------------------------	--------------------------	--------------------------

3. Are workers aware of hazards and controls associated with adjacent operations?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	-------------------------------------	--------------------------

*2005/19/07*

<b>E. EQUIPMENT AND MAINTENANCE *</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
---------------------------------------	------------	-----------	------------

1. For startup of a new operation/facility, is the construction and equipment in accordance with design criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

2. Has maintenance and calibration of line-owned equipment performed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

3. Are required safety monitoring devices installed and operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--	--------------------------	--------------------------	-------------------------------------

<b>F. EMERGENCY PREPAREDNESS *</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
------------------------------------	------------	-----------	------------

1. Are emergency plans/procedures in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

2. Are the local emergency plans/procedures coordinated with the corporate Emergency Plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	-------------------------------------	--------------------------	--------------------------

3. Is emergency equipment in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	-------------------------------------	--------------------------	--------------------------

4. Have emergency response personnel been notified of operations that may present unusual hazards or a special need for response?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

5. Have personnel been trained in emergency planning?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

<b>G. ADDITIONAL CRITERIA FOR RESTARTING OPERATIONS</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
---	------------	-----------	------------

1. Have actions been taken to address problems that caused or contributed to the need for a restart?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--	--------------------------	--------------------------	-------------------------------------

--

Check here if additional readiness criteria are attached.

List the subject areas of the additional criteria (such as forklifts, electrical): Heavy equipment
---



CHRISTOPHER M. TIMM *Chris Timm* → AMEC 5/19/09  
 CHRIS EDGEMON *Chris Edgemon* → EDI 5/19/09  
 KRISTY KIMMERLE *Kristy Kimmerle* → NORMAN 5/19/09  
 KENNETH HALE *Kenneth Hale* → AMEC 5/19/09

**Persons who participated in this readiness review:**

Name <i>Jan Coan</i>	Org. 6765	Name <i>Don Sheffield</i>	Org. 4133
Name <i>Mich. R. Nichols</i>	Org. 6765	Name	Org.

**Verification of Readiness:**

- This operation has successfully passed the review
- This operation has NOT passed the review at this time

Reviewer	Org.	Date
<i>Emily D. Wright</i> ES&H Coordinator (for Low Hazard ONLY)	6790	5/19/09
<i>David R. Hill</i> Approving Manager	6765	5/19/09

Questions on this tool? Contact Subject Matter Expert: Caren Wenner

**MWL ET COVER CONSTRUCTION PROJECT  
MOBILIZATION CHECKLIST FOR OPERATIONAL READINESS  
MAY 19, 2009**

<b>TASK</b>	<b>STATUS</b>	<b>CSSP CROSS-REFERENCE &amp; NOTES</b>
Follow On Items from May 6 RR Meeting	Complete	See attached list with status information
Site Access List on site	Complete	Per MWL Security Plan
Personnel Badging	Ongoing	Per RFQ 27881, all site personnel currently badged. More will phase in over time.
<b>Site Preparation</b>		
Office Trailers and Storage Units	Complete	Per Section 5.2
Site Utilities Marked – Dig Permit Signed	Complete	Per Section 5.2 and May 6 Mting. Photos taken of utility markings in field.
Equipment on site and inspected (MWL and Borrow Pit)	Complete	Per Section 5.2. Craig Hauber completed 5/14/
Permits, CMIP, and CSSP on site	Complete	Per Section 5.2.1 - see list of plans & permits below
Site Boundary Rope & Signs	Complete	Per Section 5.2 and 5.3, Warning/No Trespassing & Rad signs. Finish 5/19.
Removal of Barbed Wire Fence & Notification to Security	Complete	Per Section 5.3 and Security Plan. Security notified 5/18, fence down by 5/20.
SWPPP BMPs	Complete	Per Section 5.2 and includes perimeter silt fencing and drive off pad
Fuel and Maintenance Vehicle Placarding, Signage, and Staging Area	Complete	Per Section 11.10 – per inspection by Craig Hauber on 5/11.
Site Access Control - Visitor Log, Sign In, Safety Briefing, and Escort Protocol	Complete	Per Section 6.3, sign posted at site entrance "Visitors Must Sign In at Office Trailer"
Extension of MW4 Surface Casing	In Progress	Currently scheduled for May 27
3-Foot Diameter Fence around MW4	In Progress	Per Section 5.6.1 – will be completed after MW4 casing extended
Initial Traffic Control Plan – Measures & Map	Complete	Per Section 5.5, map will be posted and haul routes/work areas defined
Site Control Plan & Communications Established	Complete	Two Way Radios operational & on site, cell phone #s distributed to site workers per Chapter 9 and Sections 5.5.1 and 9.3
Preliminary Photo Documentation and Land Survey	In Progress	Prelim "before start" photos complete, land survey ongoing.
<b>Training, Emergency Equipment &amp; Procedures</b>		
Training completed and verified with documentation on site – AHAs for initial tasks reviewed with site workers	Complete	Per Chapters 6, 7, and 8 - includes Medical Monitoring (Chapter 8) and all site personnel reading and signing the CSSP
PPE & Associated Training	Complete	Per Chapter 7
Pre-Emergency Planning with TA 3 and SNL/NM Emergency Operations	Complete	Per May 6 Readiness Review and Sections 5.5.1 and 10.2
Emergency Procedures, Contact List, Route Map and Directions to Medical Facilities Posted in Office Trailer & Communicated to Site Workers	Complete	Per Chapter 10, Sections 10.6 & 10.11 – post Figure 10.1 and Tables 10.1, 10.3, and 10.4 in Office Trailer

**MWL ET COVER CONSTRUCTION PROJECT  
MOBILIZATION CHECKLIST FOR OPERATIONAL READINESS  
MAY 19, 2009**

<b>TASK</b>	<b>STATUS</b>	<b>CSSP CROSS-REFERENCE &amp; NOTES</b>
Fire Extinguisher, Emergency Contact List, Route Map and Directions to Medical Facilities in all site vehicles	Complete	Table 10.1 is the Emergency Contact List. Tables 10.3 & 10.4 provide directions to Lovelace Urgent Care & Hospital, and Figure 10.1 is map to Lovelace Medical facilities.
Evacuation Route and Assembly Point Map Posted in Office Trailer	Complete	Per Section 10.8
Emergency Equipment and Supplies	Complete	Per Sections 7.6, 10.9, 10.14, and Table 10.2
Fire Extinguishers	Complete	Per Section 10.9.2
Water supply, toilet facilities, and hand wash station	Complete	Per Section 11.16
<b>Notifications</b>		
Radiation Protection notification for Start of Subgrade Layer work	Complete	Per Section 4.7 Heavy equipment to be used on the Subgrade Layer will be surveyed prior to and after work
Radiation Protection notification when neutron probe will be brought on and removed from the site	Complete	Per Section 4.7 RCT will survey neutron probes at their discretion
Field Work Schedule Update to NMED & DOE	Complete	General Project Requirement
<b>Permits &amp; Plans Maintained On Site</b>		
Contract Specific Safety Plan (CSSP)	On Site	
MWL CMIP	On Site	
MWL Site Security Plan	On Site	
EDI Corporate Environmental HASP	On Site	Revision 10
NEPA	On Site	SNA09-0150
BIO-SURVEY	On Site	May 8.
EXCAVATION PERMIT	On Site	#0902-085
SWPPP	On Site	Permit # NMR150000
FUGITIVE DUST CONTROL PERMIT	On Site	#10-683-4160 through -4162
MWL SURFACE H2O DISCHARGE	On Site	4/27/09 #09-16
PHS	On Site	3/17/09-SNL09A00039-001
HOT WORK PERMIT	On Site	Needed for MW4 Extension work
SNL/NM APPROVAL PAPERWORK FOR EDI TEAM TWO-WAY RADIOS	On Site	

**MWL ET COVER CONSTRUCTION PROJECT  
MAY 6, 2009 READINESS REVIEW MEETING  
FOLLOW-UP ITEMS**

1. Don Schofield (SDR) will issue a Conditional Notice to Proceed to the EDI Team for mobilization tasks as defined in the Contract Request for Quotation (RFQ) and Contract Specific Safety Plan (CSSP) based upon the results of the May 6, 2009 Readiness Review.  
*Completed May 7, 2009*
2. Operational readiness (i.e., readiness to proceed with ET Cover Field Work) will be verified through a follow-on Readiness Review that will document completion of these follow-up items (listed in this document) and implementation/completion of mobilization tasks per the project RFQ and CSSP.  
Mike Mitchell will develop the mobilization task/activity checklist and coordinate the follow-on Readiness Review *Completed May 14, 2009*
  - Upon completion of this follow-on meeting, Emily Wright will update Corporate Readiness Review documentation and Don Schofield will issue the final NTP  
*To be completed after May 19 meeting*
3. David Miller will contact Jeff Cherry and Sheldon Tieszen to make them aware of the MWL ET Cover Construction work and schedule. David will discuss TA 3 Emergency Response coordination and follow up with the MWL Project Team. Any actions the Project Team will need to take will be defined, completed, and documented.  
*Completed May 11, 2009, with subsequent and ongoing follow-up with Randey Colgrove*
4. The Project Team will coordinate with Sandia's Emergency Operations to notify them of the MWL ET Cover Construction Project activities, schedule, and location.  
*Completed May 19, 2009 with site visit from SNL ICs*
5. A Site Access List will be compiled per the MWL Security Plan and maintained on site. Project personnel with "pen and ink change authority" will be identified.  
*Completed May 15, 2009*
6. Neutron Probe calibration records will be requested from AMEC and maintained on site in the project files.  
*Completed May 11, 2009*
7. Security will be notified when the Fuel and Maintenance Vehicle is mobilized to the site and informed that it will be stored during non-working hours at Building 9925 in the fenced equipment storage yard.  
*Completed May 11, 2009*
8. The required Bio-Survey will be completed on May 8, 2009.  
*Completed May 8, 2009*
9. Electronic copies of the CSSP signature pages will be provided to Steve Farmer, Chris Edgmon, Vicki Maranville, and Emily Wright.  
*Completed May 7, 2009*
10. Electronic copies of the Readiness Review Meeting sign-up sheet will be provided to Chris Edgmon, Vicki Maranville, Emily Wright, Mateo Aragon, and Don Lopez.  
*Completed May 7, 2009*
11. The Corporate Readiness Review Form documenting the May 6, 2009 meeting will be revised per Fran Nimick's suggestions, finalized, and distribute to David Miller, Don Schofield, Emily Wright, Mateo Aragon, and Chris Edgmon.  
*Completed May 7, 2009*
12. Provide MWL ET Cover Construction Quality Assurance Plan (Appendix B of the MWL CMIP) to Fran Nimick, who will forward the document of a required Corporate Quality Assurance review as required by the Corporate Work Controls Process.  
*Completed May 7, 2009*
13. Obtain appropriate signatures on the SNL/NM Excavation Permit.  
*Completed May 11, 2009*



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **APPROVAL OF EXISTING SUBGRADE**

Date: 22 May, 2009

Quality Resolution #: 001

Layer: Existing Subgrade

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade Surface

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Jerome Sanchez	ASCI
Don Lopez	URS
Marshall Nay	URS
Chris Edgman	EDI
Don Schofield	SNL SDR
Kenneth Hale	AMEC
Mike Mitchell	SNL Project Tech Lead

---

### FIELD DENSITY AND MOISTURE TEST (CONSTRUCTION)

- Field density test were taken at thirteen different locations by AMEC representative Miguel Chavez. The Existing Subgrade Layer surface was divided into thirteen grids. A density/moisture test was performed at random locations within each of the thirteen grids. Survey data was collected on all testing locations.
- All thirteen moisture/density tests met the MWL specification requirements and were approved by Don Lopez, CQA Engineer.

### FIELD DENSITY AND MOISTURE TEST (CQA)

- Six CQA tests were taken by AMEC for URS. The AMEC representative for the CQA was Robert Carr. A firewall is setup between AMEC representatives Robert Carr and Miguel Chavez to prevent any conflict of interest. Robert Carr was instructed to perform his density/moisture tests within an approximate 3-foot radius of every other QC test performed by Miguel Chavez. Density test locations and elevations were collected and plotted by the EDi surveyor.
- All six CQA moisture and density tests met the MWL specifications requirements and were approved by Don Lopez.

- Don Lopez has approved the MWL Existing Surface. Construction of the Biointrusion Layer may now begin.
- The Existing Subgrade constructed in 2006 has been cleared of vegetation and remnant erosion matting, compacted, and tested in accordance with the CMIP. The Existing Subgrade is approved for construction of the Biointrusion Layer.
- Quality control survey indicates some parts of the Existing Subgrade surface do not meet the 2.0% east-to-west design slope. The slope will be adjusted during construction of the overlaying layers.
- Side slopes are steeper than 6:1 around the north end of the MWL. 6:1 side slopes will be established during construction of the Native Soil and Top Soil Layers.

**END OF MEETING NOTES**



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

### Title: **BIOINTRUSION CONSTRUCTION FIELD TESTS AND THICKNESS VERIFICATION**

Quality Resolution #: 002

Date: 26 May, 2009

Layer: Biointrusion Layer

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

#### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Harry Buckner	URS
Don Lopez	URS
Marshall Nay	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Christopher Timm	AMEC

---

### BIOINTRUSION CONSTRUCTION FIELD TESTS

#### I.

##### 1. Biointrusion Test Area I (as discussed in CSSP)

Please see CSSP (page 37) for procedure I description.

The test area consisted of two truckloads of dry, screened loose soil distributed over an approximate 20 x 20-foot area. Using a builder's level, the thickness of the test loose soil layer was determined to be 6-to-8-inch as specified in the CSSP. The soil was initially spread using a motor grader, but EDi later switched to a dozer in an attempt to reduce the soil compaction.

The Biointrusion rock was then placed onto the 6-to-8-inch loose soil layer. The Biointrusion rock was spread to an approximate thickness of 1.0-foot or slightly less. A dozer then compacted the rock in an attempt to push the rock down into the soil layer. After several passes with the dozer, Don Lopez (URS CQA) was not convinced that the

Biointrusion rock was being pressed down through the loose soil layer to the existing Subgrade Layer. This raised concerns of the possibility of future settling due to the layer of sand between the Subgrade Layer and the Biointrusion Layer. It was determined this procedure was not adequate to meet Specification Section 02115 located in the CMIP.

## II.

### 1. Biointrusion Test Area II

After it was determined that the procedure described above in Test Area I was ineffective, a second test area was created using the tracks of the dozer to scarify the existing Subgrade Surface. It was determined the tracks of the dozer created a texture, which was ideal for the Biointrusion Rock placement. The scarified surface had enough loose soil to fill some of the voids in the rock, as well as create a grooved pattern, which made it easy for the rock to fall into place and interlock. The rock was compacted with the dozer a minimum of four times. Loose, screened soil was then placed over the rock layer and worked into the voids by spreading with the dozer. This method proved to be very effective. (See below for updated Biointrusion installation procedure).

### 2. The Following is the Updated Biointrusion Layer Installation Procedure:

The Biointrusion layer will be constructed in compliance with the CMIP, Specification Section 02115. The following is the procedure recommended by Don Lopez PE (URS CQA Engineer) for the Biointrusion Layer:

The rock used for the Biointrusion Layer will continue to be the rock acquired by SNL. The rock is located at the former Bulk Waste Staging Area in TA 3.

The EDi Team will scarify the Existing Subgrade Surface using the tracks of a dozer. A minimum of four passes with the dozer tracks is required across the existing Subgrade Surface. Once the Subgrade Surface has been prepared, the Biointrusion Rock may be spread across the scarified surface. The rock layer will then be compacted with a minimum of four passes by the dozer to ensure compaction and interlocking of the rock. Compaction shall be performed until rocks are firmly locked into place. The entire Biointrusion Rock Layer Surface must be completed, surveyed, and approved before any further construction may take place.

Once the rock layer is compacted in place and approved, additional dry loose soil will be placed over the surface. A dozer will then spread the loose soil across the rock surface and work the loose soil into the voids. The soil will then be compacted with a minimum of four passes with the vibratory roller. After this is completed and approved, water will be applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content.

## MISCELLANEOUS

- There was a discussion about extending the Biointrusion Barrier past the toe of the existing Subgrade Layer. It was determined that it is not necessary to extend the Biointrusion Barrier past the toe.
- The current slope is approximately 1.8% from East to West in lieu of the 2.0% as specified. The slope will be adjusted to the specified 2.0% during the course of construction. It will be corrected during the Native Soil Layer as apposed to the Biointrusion Barrier due to material availability and ease of construction.
- The method of constructing the Biointrusion described in the CSSP (Page 37) was determined to be insufficient by Don Lopez PE URS CQA Engineer and will not be used for this project.
- The Biointrusion rock previously purchased and stockpiled in the Former Bulk Waste Staging Area TA-3 is approved for use on the MWL cover.
- No soil may be placed in the Biointrusion voids prior to approval of Biointrusion Layer thickness

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **QC SURVEY AND QA VERIFICATION SURVEY COORDINATION**

Quality Resolution #: 003

Date: 01 June, 2009

Layer: Biointrusion

Location: Tech Area III; Sandia Mixed Waste Landfill; Existing Subgrade Layer

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Harry Buckner	URS
Don Lopez	URS
Marshall Nay	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Christopher Timm	AMEC
Jerome Sanchez	ASCI

---

### QC/QA SURVEY COORDINATION

- Jerome (EDi QC survey rep.) was not sure how URS was going to perform the QA check. Jerome was instructed to use the 50-foot grid created for the Existing Subgrade. Jerome is to take elevations of the Biointrusion Barrier Layer at the exact locations he took elevations on the Existing Subgrade.
- Harry Buckner will do his QA survey on the exact same locations using the 50-foot grid system. Harry Buckner will do the CQA survey check on Friday (06/05/09) or Monday (06/08/09) depending on the status of the Biointrusion Layer. Harry will use the method described above to check the thickness of the Biointrusion Rock Barrier.
- The 50-foot grid system created will be used throughout the duration of the project to confirm the thickness and slopes of the cover.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **BIOINTRUSION ROCK VOLUME AND THICKNESS**

Date: 04 June, 2009

Quality Resolution #: 004

Layer: Biointrusion

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Don Lopez	URS
Marshall Nay and Harry Buckner	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Christopher Timm	AMEC
Jerome Sanchez	ASCI

---

### BIOINTRUSION ROCK VOLUME SHORTAGE

- There is not going to be enough rock in the Former Bulk Waste Staging Area, TA III, to complete the Biointrusion layer.
- The original rock was purchased at the San Lazarus Gulch in the San Lazarus Gulch in the San Pedro Mountains (San Pedro rock). Ben Martinez (Sandia) contacted San Pedro Rock and was informed that there is more of the same rock available; however, it has more fines in it than the original rock. Don Lopez requested a sample of the proposed rock to be collected and taken to AMEC for a sieve analysis to determine if the proposed rock will meet the Contract Specifications.
- Don Lopez will make his decision to approve/disapprove the additional Biointrusion rock based on visual inspection/Engineering Judgment.

### BIOINTRUSION THICKNESS

- Harry Buckner (URS) will begin the QA survey on Friday (06/05/09). Harry will begin his survey on the south end of the MWL and proceed north. Harry

will convert the survey data collected into a usable format on Saturday (06/06/09) to determine the Biointrusion Layer thickness. URS intends to provide EDi with approval/disapproval of at least the south portion of the Biointrusion Layer Monday morning. Any survey not completed on Friday will be collected on Monday.

- There was a discussion over the “actual thickness” of the Biointrusion Layer compared to the “computed thickness”. The computed Biointrusion Layer thickness is determined by comparing the elevation of the Existing Subgrade to the elevation of the Biointrusion Layer. However, the rock is being placed onto a scarified surface, not the surveyed Existing Subgrade, which allows the rock to push down into the Existing Subgrade approximately 1-to-2 inches. This causes the actual thickness to be greater than what the computed thickness derived from survey data is showing. Don Lopez has decided to accept a computed Biointrusion Layer thickness of 11-inches to compensate for the above.

**END OF MEETING NOTES**



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

### Title: QA VERIFICATION SURVEY & APPROVAL FOR SOIL PLACEMENT ON THE BIOINTRUSION LAYER SURFACE

Date: 05 June, 2009

Quality Resolution #: 005

Layer: Biointrusion Layer

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

#### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Harry Buckner	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Christopher Timm	AMEC
Jerome Sanchez	ASCI

---

#### QA VERIFICATION SURVEY

- Harry Buckner (URS) and Paul Molina (URS) conducted the QA survey on the south end of the MWL. The survey data collected will be converted into a usable format to determine the Biointrusion Layer thickness. URS intends to provide EDi with approval/disapproval of at least the south end of the Biointrusion Layer. Additional QA Survey will be conducted on Monday (6/8/09).
- Four Points on the southwest slope did not pass the 1-foot minimum thickness requirement (See results attached). EDi will need to place more rock on this section. URS will then recheck the survey at these four spots.

#### LOOSE SOIL PLACEMENT APPROVAL

- The south portion of the Biointrusion Layer is approved with the exception of four grid point locations on the west slope which are less than the 1.0' minimum thickness requirement. The south portion is approved for the placement of soil into the voids except for the west slope grid points which must be corrected, resurveyed, and approved.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

### Title: QA VERIFICATION SURVEY & APPROVAL FOR SOIL PLACEMENT ON THE BIOINTRUSION LAYER SURFACE

Date: 09 June, 2009

Quality Resolution #: 006

Layer: Biointrusion Layer

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

#### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Harry Buckner	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez	ASCI

---

#### QA VERIFICATION SURVEY & LOOSE SOIL PLACEMENT APPROVAL

- The northwest portion of the Biointrusion Layer is approved with the exception of two locations on the north slope which were too thick. The northwest portion is approved for the placement of soil into the voids except for the north slope, which must be corrected, resurveyed, and approved at the two locations.
- The four locations on the west slope of the Biointrusion Layer at the south end that required additional rock has been corrected, resurveyed, and are now approved. The west slope was approved for the placement of soil into the voids on 6/09/09.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **BIOINTRUSION LAYER EAST-TO-WEST SURFACE DESIGN SLOPE**

Date: 10 June, 2009

Quality Resolution #: 007

Layer: Biointrusion Layer

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez	ASCI

---

### THIN SOIL LAYER

- The Biointrusion Layer (without the soil in the voids) may be a difficult layer to use as a new datum due to irregularities in the rock. Also, the rock is being pushed flat when the soil is placed and spread with a dozer into the voids and then compacted with a vibrating, smooth drum roller. Because of rock being pushed flat under the soil, we would not know the exact elevation of the rock after the sand has been placed and compacted. A better datum may be to use the Biointrusion Layer after the voids have been filled with loose soil and compacted with the vibrating, smooth drum roller. The loose soil makes a thin soil layer above the rock, which may be a better surface to create a starting datum for the Native Soil Layer.

### BIOINTRUSION SIDE AND 6:1 SLOPE CORRECTIONS

- It was decided that to make the corrections for the 2.0% surface slope and 6:1 side slopes during the Native Soil Layer because of construction constraints due to the Biointrusion rock. It will be very difficult to adjust the Biointrusion rock surface to meet the specifications. As of now, the surface slopes are approximately at an average of 1.8%. Correcting the slope with the first couple of Native Soil Lifts will give us a better idea of how much material we are going to be short. It will also be a much easier material to adjust to the specification requirements.

**BIOINTRUSION SURVEY**

- Most of the Biointrusion Layer thickness was within the specified thickness. There were a couple of points on the orange corner post that were high. These points are going to be corrected for the final QA survey on Friday.

**MISCELLANEOUS**

- We are expecting information from Jerry Peace regarding the Biointrusion Rock. This information is to be incorporated into the final report.

**END OF MEETING NOTES**



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

### Title: QA VERIFICATION SURVEY & APPROVAL FOR SOIL PLACEMENT ON THE BIOINTRUSION SURFACE

Date: 15 June, 2009

Quality Resolution #: 008

Layer: Biointrusion Layer

Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

#### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay and Harry Buckner	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez	ASCI

---

#### QA VERIFICATION SURVEY & LOOSE SOIL PLACEMENT APPROVAL

- The northeast portion of the MWL Biointrusion Layer is approved for the placement of soil into the voids.
- The two locations on the north slope of the Biointrusion Layer that were too thick have been corrected, resurveyed, and were approved. The north slope is now approved for the placement of soil into the voids.
- The entire Biointrusion Layer is now approved. Approval includes thickness, side slopes, and surface slope. Side slopes are steeper than 6:1 but will be adjusted during construction of the Native Soil Layer. The east-to-west surface slope is less than 2.0% in some areas consistent with the Existing Subgrade and will also be adjusted during the construction of the Native Soil Layer.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **BIOINTRUSION AND THIN SOIL LAYER THICKNESS, CONSTRUCTION OF NATIVE SOIL LAYER, ESTABLISHING A NEW DATUM FOR THE 2.0% EAST-TO-WEST SURFACE DESIGN SLOPE, ESTABLISHING THE 6:1 SIDE SLOPES, AND K-SAT TESTING**

Date: 16 June, 2009

Quality Resolution #: 009

Layer: Thin Soil layer and Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield and Ben Martinez	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez and Vladimir Jirik	ASCI

---

### THIN SOIL LAYER (NEW DATUM) AND EDi SURVEY

- Vladimir Jirik (Subcontractor Survey for EDi) attended today's meeting to discuss potential solutions for construction of the Native Soil Layer. There is currently an approximate 3-inch or less (nominal) compacted thin soil layer from the loose soil that was worked into the Biointrusion voids. The thin soil layer creates a better surface to build the Native Soil Layer on due to the irregularities of the Biointrusion Rock. Vladimir Jirik is going to verify the nominal 3-inch thickness via survey CADD software. This thin soil layer will be the new construction datum. Vladimir has also been asked to create a topographic survey of the current existing surface (thin soil layer). This topographic survey will be based on the same 50-foot grid previously used on the Existing Subgrade and Biointrusion Layer. The topographic survey will show the current elevations as well as the slope across the MWL surface. There will also be section cuts to show the difference in the current existing slope and a projected 2.0% slope to meet the

contract specifications. Based off of this data, an approach will be determined to continue the construction of the Native Soil Layer.

#### **NATIVE SOIL LAYER CONSTRUCTION**

- Vladimir Jirik made a suggestion to bring the Native Soil up as a flat surface rather than correct the 2.0% slope on the final lift. This has already been discussed and is not the preferred method due to foreseeing soil shortages. It is also believed it is better to start correcting for the 2.0% slope as soon as possible due to deviations in elevation in the Subgrade, which have continued through the Biointrusion Layer. Vladimir also suggested reverting back to the contract design for the remainder of the project. This is not ideal to use because the contract design does not fit exactly with what the existing conditions are. A final decision will be made based off of the survey data expected tomorrow.
- As of now, URS is not going to do a QA survey on the MWL until the 2-1/2-foot Native Soil Layer is complete. URS will do QA density/moisture tests every 6-inch lift as specified in the CMIP.
- It appears that we are not going to be able to correct the slope to 2.0% on the first lift of Native Soil due to the thickness requirements in the CMIP (8-inch loose, 6-inch compacted). The 2.0% slope will probably need to be made up incrementally with multiple lifts. To be discussed more when additional survey information is received tomorrow (06/17/09).
- EDi will begin adjusting the slopes of the MWL to 6:1 as specified on the north, east, and west slopes during the Native Soil Layer. The lifts will be placed in 8-inch loose, 6-inch compacted lifts as specified. Density/Moisture testing will be conducted after the completion of two 6-inch lifts. The Density/Moisture tests will be performed by driving the stake down and testing at 6-inches. The stake will then be driven an additional 6-inches (12-inch total) to test the first 6-inch Native Soil Lift. A random location will be chosen on each side (north, east, west) to be tested (3 locations; 6 test) per 12-inch lift. URS will perform random QA density/moisture tests to verify the results obtained by EDi. This procedure of adding the 6:1 slope is significantly adding to the size of the MWL.

#### **SOIL VOLUME SHORTAGES**

- The actual size of the MWL is greater than the 2.6-acre originally anticipated. The larger cover footprint due to the thicker Biointrusion Layer and resulting side slopes is anticipated to result in a shortage of screened soil fill. The actual size of the MWL as of now is approximately 3.05 acres. Additional soil can be extracted from the Borrow Area, however, the exact amount is not known. Additional testing may need to be conducted in the Borrow Area to determine the depth of the Calichie layer.

### **BIOINTRUSION LAYER THICKNESS**

- Marshall Nay calculated an average on the thickness of the Biointrusion Rock Layer. The nominal thickness is approximately 1.29-feet, which is very close to the 1.25-foot maximum specified in the CMIP.

### **K-sat TESTING**

- Specification section 02200 requires a hydraulic conductivity testing on each Native Soil Layer lift (8-inch loose, 6-inch compacted). No ASTM Standard was specifically called out in the Specifications and there are a couple of test to choose from:
  - The first test, ASTM D-5084, is a flexible wall hydraulic conductivity test. This test requires an “undisturbed” compacted sample to be taken in the field. The sample is then taken back to the lab to determine the hydraulic properties.
  - The second test, ASTM-5856, is a rigid wall hydraulic conductivity test. This test requires a sample to be taken from the field and returned to the lab. The sample is then compacted and tested at the lab. This test will take 3-5 days and is the most appropriate method based upon the CMIP and a team evaluation of the K-Sat testing logistics and alternatives.
- During the pre-bid there was discussion concerning the potential for delay in schedule due to the hydraulic conductivity testing. The bidding contractors concern was they could control the moisture content and the density in the soil, however, because they are required to use the soil pre-determined by Sandia, they would not have control over the outcome of the hydraulic conductivity test. As a solution, Sandia agreed to not delay the project due to hydraulic conductivity testing.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **QC SURVEY OF THIN SOIL LAYER OVERLAYING THE BIOINTRUSION LAYER AND 2.0% SURFACE DESIGN SLOPE CORRECTION**

Date: 17 June, 2009

Quality Resolution #: 010

Layer: Thin Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez and Marcus Cordova	ASCI

---

### THIN SOIL LAYER APPROVAL

- A meeting was held with Sandia, EDi, and URS to discuss the construction of the Native Soil Layer. The topographic survey depicting the current existing conditions was provided by Vladimir Jirik (EDi surveyor). The Topographic map shows existing elevations, the thickness of the thin soil layer covering the Biointrusion Layer, section cuts of existing slopes, and the projected 2.0% slope.
- After reviewing the topographic survey, it was determined the thin soil layer filling the Biointrusion voids was a nominal 3.0" thickness. It was determined that this was an acceptable thickness.
- The 3.0-inch nominal thickness thin soil layer is approved and is now the new construction datum.

### 2.0% SURFACE DESIGN SLOPE CORRECTION

- After reviewing the survey, it was determined imperfections in the Biointrusion Layer that had been inherited by the low areas in the Existing Subgrade Layer were still present. Grid Blocks 7, 8, and 11 have low areas that require additional

Native Soil material in order to achieve the 2.0% slope required across the MWL from east to west. Because of the maximum 8-inch loose, 6-inch compacted soil constraint in the CMIP, the difference in thickness will need to be constructed in two individual "wedge lifts". Each of the wedge lifts thickness will be within the specified requirements and will receive moisture/density testing as required. Once the slope is corrected using the wedge lifts, the additional lifts (Lifts 3 through 8) will be placed in uniform 6-inch compacted lifts across the entire surface to achieve the 30.0-inch minimum requirement.

**END OF MEETING NOTES**



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **APPROVAL OF WEDGE LIFTS 1 & 2 AND NATIVE SOIL LIFTS #3 AND #4 (POLISHING LIFTS)**

Date: 22 June, 2009

Quality Resolution #: 011

Layer: Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

### APPROVAL OF WEDGE LIFTS 1 & 2

- Wedge Lifts 1 and 2 were constructed, tapered, spatially limited lifts to achieve the 2.0% east-to-west design slope. They were constructed and tested in accordance with the CMIP. The slope of the surface still has a couple of areas that do not meet the 2.0% design slope requirement. The 2.0% design slope requirement will be achieved with Native Soil Polishing Lifts 3 and 4.
- Wedge Lifts 1 and 2 are approved based upon CQA Engineer review of construction team QC survey data (topographic map and profiles).

### CONSTRUCTION OF NATIVE SOIL "POLISHING LIFTS" 3 & 4

- Chris Edgman (EDi) received an updated topographic map with section cuts of the MWL, which includes the installation of the Native Soil Wedge Lifts 1 and 2. The maps and section cuts were reviewed to discuss how construction of the Native Soil Layer should continue:
- After reviewing the new topographic map it was determined there are still slopes that do not meet the 2.0% requirement. The Native Soil Layer was brought up into

the specified tolerance, however, after reviewing the section cuts there are still some areas that are below the 2.0% grade line that will need correction. EDi proposed correcting these low areas during the third lift of Native Soil. The third lift will fill the low areas with approx 3-to-6-inches of soil while placing only a thin layer of soil, if any, on the areas with higher elevations. This will create a flat surface at approximately 2.0% across the entire MWL. Because soil will only be placed in the low areas, it is not sufficient to perform Density/Moisture tests on all 13 grids. Only the areas that receive enough soil (approximately 4-inch minimum) will be tested. The areas that do not receive enough soil to test during the third lift will be tested during the fourth lift.

- After the third lift is tested and approved, the fourth lift will begin. The fourth lift will also be a thin lift (less than 6-inches) to prevent the areas that received a small amount of soil in the third lift, but not enough soil to test, from exceeding the 6-inch maximum thickness specification constraint. The fourth lift will also be used to “fine-tune” the 2.0% slope. After the fourth lift, the Native Soil remaining lifts (5 through 8) will be constructed and tested in consistent 6-inch lifts at the 2.0% slope. EDi will provide Marshall Nay with a copy of the Topographic Survey Data after the fourth lift (See Appendix A).

#### **PROCTORS**

- Discussion on identifying which proctor is to be used for different locations on the MWL occurred. There is currently a range of proctor maximum densities and optimum moisture content from 112.2-to-119.1 pcf and 10.3-to-14.4% respectively. Marshall Nay (URS) calculated the average of all of the current proctors. Marshall received an average maximum density and optimum moisture content of 116.0 pcf and 12.3% respectively. Jon Schermerhorn (AMEC) conducted field proctors as the two wedge lifts were being placed and received a maximum density and optimum moisture content of 115.7 pcf and 12.6% respectively. Both Marshall and Jon acquired similar results, which supported the Density/Moisture tests results.

**END OF MEETING NOTES**



**QUALITY RESOLUTION MEETING MINUTES**  
Sandia Mixed Waste Landfill  
Job #: 24342640

Title: **REVIEW OF SIEVE RESULTS FOR AVAILABLE 3/8-INCH CRUSHED GRAVEL TO ADMIX WITH TOPSOIL FILL MATERIAL**

Date: 25 June, 2009

Quality Resolution #: 012

Layer: Topsoil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

**ATTENDEES:**

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

**3/8-INCH CRUSHED GRAVEL**

- Edgewood Aggregate may not be able to provide enough crushed gravel to meet the current schedule. Edgewood Aggregate is providing the 3/8-inch crushed gravel previously approved for the Topsoil Layer. EDi is resubmitting the Crushed Gravel from Fisher as an alternative to the crushed gravel previously approved by Edgewood Aggregate (See Submittals #1 and #8). EDi is proposing to use crushed gravel from both Edgewood aggregate and Fisher. A new sample of the Fisher aggregate was provided yesterday and contains similar physical properties as the previously approved Edgewood aggregate.
- EDi plans to mix the 3/8-inch crushed gravel available by Edgewood Aggregate with the 3/8-inch crushed gravel from Fisher.
- Approximately 2,300-tons of crushed gravel will be needed.

- No available aggregate met specifications for % passing through the #4 sieve. An aggregate was selected and approved using engineering judgment. Marshall Nay (URS) has approved the Fisher 3/8-inch crushed gravel today in lieu of Don Lopez.

**END OF MEETING NOTES**



## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **QC SURVEY RESULTS FOR POLISHING LIFTS 3 AND 4**

Date: 30 June, 2009

Quality Resolution #: 013

Layer: Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

### APPROVAL OF POLISHING LIFTS 3 AND 4

- Polishing Lifts 3 and 4 were constructed across the cover surface but with variable thickness to complete the adjustment required to establish the 2.0% east-to-west surface design slope. They were constructed and tested in accordance with the CMIP. Polishing Lifts 3 and 4 are approved.
- Polishing Lifts 3 and 4 are approved based upon review of Construction Team QC survey data (topographic map and profiles).

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **LIFT #5 LOW AREA**

Date: 01 July, 2009

Quality Resolution #: 014

Layer: Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

### CORRECTION OF LIFT #5

- A location on the corner of Grid Bock 7 was located which requires a fill of 0.90-feet to achieve the proper elevation. 0.45-feet of Native Soil was placed yesterday (06/30/09) at this location. This location will receive Density/Moisture testing today. An additional 0.45-foot of Native Soil will then be placed to achieve the 0.90-feet required. The second lift of 0.45-feet will be tested with the remainder of Native Soil Lift #5 as required in the CMIP.
- The first 0.45-feet layer placed yesterday was tested for moisture and density, but failed. The area was reworked, recompacted, and retested. The Moisture/Density test was then successful. The second 0.45-feet layer was then placed (to account for the 0.9-feet thickness). EDi performed a Moisture/Density test in this location which also passed.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **SOIL FILL MATERIAL SHORFALL – QA REVIEW OF EDi SOIL VOLUME ESTIMATES FOR ADDITIONAL MATERIAL NEEDED**

Date: 14 July, 2009

Quality Resolution #: 015

Layer: Native & Topsoil Layers

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield and Ben Martinez	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

### SOIL FILL MATERIAL SHORFALL – QA REVIEW OF EDi SOIL VOLUME ESTIMATES FOR ADDITIONAL MATERIAL NEEDED

- Due to the MWL surface area being larger than initially anticipated, additional Native Soil and Topsoil is required. Sandia has requested EDi provide a proposal for the additional volumes/cost to complete the MWL. Sandia has also requested URS provide a third party analysis of the volumes/cost to complete the MWL. The volumes/cost provided by URS shall be used to verify the proposal provided by EDi to Sandia.
- EDi provided Sandia with a proposal of 9,615-CY of additional Native Soil and 1,590-CY of additional Topsoil for the completion of the MWL. URS provided an independent review of the additional soil volumes required using two methods (free-body diagram and construction history data). Both methods were close to the results obtained by EDi. URS informed Sandia that EDi's estimate for additional volume calculations are accurate

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **NATIVE SOIL LAYER QA AND QC VERIFICATION SURVEYS**

Date: 30 July, 2009

Quality Resolution #: 016

Layer: Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield and Ben Martinez	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Jerome Sanchez	ASCI

---

### NATIVE SOIL LAYER QA AND QC VERIFICATION SURVEY

- The Native Soil Layer was constructed and tested in accordance with the CMIP with the exception of 9 locations which were below the 30-inch thickness requirement. The Native Soil Layer is approved for the placement of the Topsoil Layer with the exception of the 9 low locations. The 9 locations must be corrected, resurveyed, and approved prior to the placement of the Topsoil Layer.
- The 9 locations requiring additional soil were identified through review of both the QC and QA survey results, and likely represent high spots in the underlying Biointrusion Layer.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **NATIVE SOIL LAYER FINAL QA AND QC VERIFICATION SURVEYS**

Date: 04 August, 2009

Quality Resolution #: 017

Layer: Native Soil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay and Harry Buckner	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC

---

### APPROVAL OF NATIVE SOIL LAYER

- The 9 locations previously identified as low areas have been corrected, resurveyed, and are approved. The Native Soil Layer was constructed and tested in accordance with the CMIP and is approved for the placement of the Topsoil Layer.
- Native Soil Layer thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes are approved based upon the QA verification survey and review of the Construction Team QC survey data (topographic map and profiles).

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **TOPSOIL LAYER QA AND QC VERIFICATION SURVEYS**

Date: 12 August, 2009

Quality Resolution #: 018

Layer: Topsoil Layer

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay and Harry Buckner	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC
Marcus Cordova	ASCI

---

### TOPSOIL LAYER QA AND QC VERIFICATION SURVEYS

- The Topsoil Layer was constructed in accordance with the CMIP. Thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes verified and meet specifications. The Topsoil layer is approved.
- Topsoil Layer thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes are approved based upon the QA verification survey and review of the Construction Team QC survey data (topographic map and profiles).

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

### Title: SEED AND MULCH MATERIAL INSPECTIONS AND ELIMINATION OF STARTER FERTILIZER

Date: 19 August, 2009

Quality Resolution #: 019

Layer: Seed and Mulch

Location: Tech Area III, Sandia Mixed Waste Landfill

#### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
John Davidson	North Wind Inc.
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC

---

#### SEED AND MULCH APPROVAL

- Native Grass Seed was delivered and stored in the conex to keep dry. Seed and Mulch was approved by Don Lopez today.
- Elimination of fertilizer was approved today.

END OF MEETING NOTES





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **INCREASED SEEDING RATE AND APPLICATION METHOD**

Date: 25 August, 2009

Quality Resolution #: 020

Layer: Seed, Fertilizer, and Mulch

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Harry Buckner and Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC

---

### INCREASED SEEDING RATE AND APPLICATION METHOD APPROVAL

- CMIP modification for reclamation seeding and mulching is approved.
- Hand broadcasting used in addition to drill seeding to minimize compaction of the Topsoil Layer by minimizing the number of passes required by the tractor pulling the drill seeder. Additional passes would have been necessary to accommodate the increase of seeding rate.
- Fertilizer not used based upon recommendation from Sandia Staff Biologist. Fertilizer used late in the growing season can make plants more susceptible to frost damage.

**END OF MEETING NOTES**





## QUALITY RESOLUTION MEETING MINUTES

Sandia Mixed Waste Landfill

Job #: 24342640

Title: **INSPECTION AND APPROVAL OF THE SEEDING AND MULCH**

Date: 02 September, 2009

Quality Resolution #: 021

Layer: Seed, Fertilizer, and Mulch

Location: Tech Area III, Sandia Mixed Waste Landfill

### ATTENDEES:

NAME	COMPANY
Paul Molina	URS
Marshall Nay	URS
Don Lopez	URS
Chris Edgman	EDI
Don Schofield	SNL/4133
Mike Mitchell	SNL/GRAM
Kenneth Hale	AMEC
Jon Schermerhorn	AMEC

---

### INSPECTION AND APPROVAL OF THE SEEDING AND MULCH

- The placement of seed and mulch is approved based on visual inspection.

**END OF MEETING NOTES**



## **ATTACHMENT 2**

### **CQA Submittals and Approvals**



## **2009 QA Submittal Cover Pages**



MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL CONSTRUCTION COVER PROJECT Date 6-2-2009  
 Contract # PO# 903627  
 Submittal # 001  
 New  Resubmittal   
 If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) DON LOPEZ - URS CORPORATION  
 Submitted by (name/company) CHRIS EDGMON - EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	3/8" CRUSHED GRAVEL	THE TOP SOIL LAYER SHALL BE ADMIXED WITH 3/8" CRUSHED GRAVEL 25 PERCENT BY VOLUME BEFORE PLACING GRADING SECTION 02200-4 2.1.2 FILL # 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date June 2, 2009 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
URS NM CQA Engineer

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

A TOTAL OF THREE (3) SAMPLES WERE COLLECTED FROM THREE DIFFERENT VENDORS. PLEASE FIND ATTACHED THE SIEVE ANALYSIS PERFORMED BY AMEC FOR EACH OF THE THREE VENDORS.

#1 - DUKE CITY AGGREGATE

#2 - FISHER INDUSTRIES (SEE NOTE BELOW)

#3 - EDGEWOOD AGGREGATE

NOTE - EDI HAS ONLY RECEIVED THE INITIAL RESULTS, EDI WILL PROVIDE THE COMPLETE PACKAGE ONCE RECEIVED FROM AMEC.

MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-10-09

Contract # PO# 903627

Submittal # 002

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Field Density Gridline #5	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
02	Field Density Gridline #9	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
03	Field Density Gridline #12	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
04	Field Density Gridline #11	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
05	Field Density Gridline #8	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
06	Field Density Gridline #3	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
07	Field Density Gridline #2	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
08	Field Density Gridline #7	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
09	Field Density Gridline #6	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
10	Field Density Gridline #1	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
11	Field Density Gridline #4	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
12	Field Density Gridline #10	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
13	Field Density Gridline #13	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>

Date June 10, 09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
URS NM CRA Eng.



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-11-09

Contract # PO# 903627

Submittal # 003

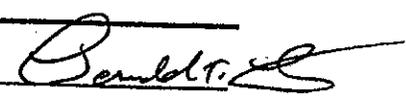
New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material # 4	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02	Native Fill Material # 5	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03	Native Fill Material # 6	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04	Native Fill Material # 7	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05	Native Fill Material # 9	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date June 12, 09 Name/Title Donald T. Lopez PE Signature   
URS NM CQA  
Engineer

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the Native Soil Borrow material at a frequency of 1/500 cubic yards stated in Section 2200-9 3.4.2 and Table 3.1.

5 samples ( Items 1 to 5) were collected from the native soil borrow pile.

Please see attached map for sample locations.

MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-16-09

Contract # PO# 903627

Submittal # 004

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material # 1	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>m</i>
02	Native Fill Material # 2	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>m</i>
03	Native Fill Material # 3	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>m</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 16 June 09 Name/Title Marshall Nay P.E. URS  
for Don Lopez, CQA  
Engr

Signature *Marshall W. Nay*



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-17-09

Contract # PO# 903627

Submittal # 005

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Top Soil # 1	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
02	Top Soil # 2	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
03	Top Soil # 3	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
04	Top Soil # 4	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
05	Top Soil # 5	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
06	Top Soil # 6	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>ML</i>
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 18 June 09 Name/Title M. Lopez, URS for Don Lopez - CQA Signature *Marshall Ray*



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-17-09

Contract # PO# 903627

Submittal # 006

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Native Fill Material # 9 ✓	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
02	Native Fill Material # 10 ✓	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
03	Native Fill Material # 11 ✓	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M
04	Native Fill Material # 12 ✓	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
05	Native Fill Material # 13	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 18 June 09 Name/Title Marshall W. Nay Signature Marshall Nay  
for Don Lopez CQA Engineer



# Approximate Methods - Surface 3

Goal is to check order of magnitude of production numbers.



Case Surface Area:

$$2[(200)(2.5)] + (20)(10) = 360 \text{ SF}$$

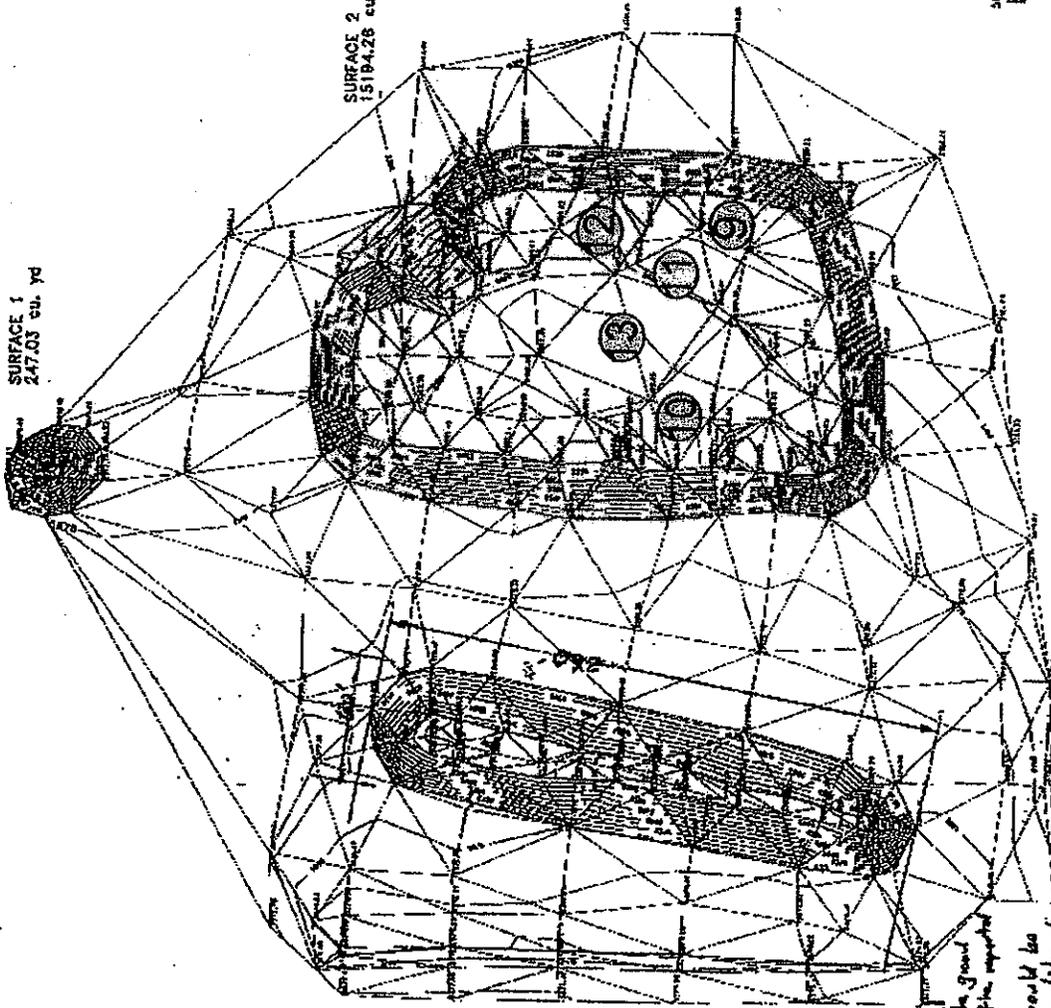
240 + 120  $\downarrow$  and remaining factor

Length:  $260 \times (.80) = 208 \text{ ft}$   $\times$   $83,800 \text{ cu ft}$

Divide by  $27 \frac{\text{ft}^3}{\text{CY}} = 3,400 \text{ CY}$

The Shading Volume using Approx Method is about 3,400 CY. If I increased my End Planning Factor to 0.9, the result are: ~~3,400~~ CY.

The computer using Micro Soft INROADS software reports ~~3,400~~ CY. The results are very close.



SURFACE 1  
247.03 cu. yd

SURFACE 2  
15194.28 cu. yd

SURFACE 3  
3585.74 cu. yd

.5377  $\times$  10' high  
.5377

## Special Notes:

1. There is additional potential usable fill material below the ground surface before you reach the required Caliche Layer.
2. Special Soil bearing would be required to define the quantity of material.



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-22-09

Contract # PO# 903627

Submittal # 007

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Survey Data	Survey Data of fill depths needed for wedge lift to make 2% slope across cover.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
02		<del>_____</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03		<del>_____</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04		<del>_____</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 23 June

Name/Title Marshall Nay, URS for

Signature Marshall Nay

Don Lopez, PE, Project CQA



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 6-24-09

Contract # PO# 903627

Submittal # 008

New  Resubmittal

If resubmittal, prev. submittal # 001

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	3/8" Crush Gravel	Crushed Gravel for top soil lift. Section 02200-4 2.1.2 Fill # 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>M</i>
02			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 25 June 09 Name/Title Marshall Nay, URS For

Signature *Marshall Nay*

Don Lopez, PE, CQA  
Engineer



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-2-09

Contract # PO# 903627

Submittal # 009

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material # 14	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
02	Native Fill Material # 15	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
03	Native Fill Material # 16	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
04	Native Fill Material # 17	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
05	Native Fill Material # 18	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 6, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
CQA Engineer  
URS NM



MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 7-02-09

Contract # PO# 903627

Submittal # 010

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Field Density North Slope Lift 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
02	Field Density North Slope Lift 1	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
03	Field Density East Slope Lift 2	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
04	Field Density East Slope Lift 1	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
05	Field Density West Slope Lift 2	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
06	Field Density West Slope Lift 1	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
07	Field Density East Slope Lift 4	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
08	Field Density East Slope Lift 3	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
09	Field Density West Slope Lift 4	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
10	Field Density West Slope Lift 3	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
11	Field Density North Slope Lift 4	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
12	Field Density North Slope Lift 3	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>
13	Field Density North Slope Lift 6	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>BE</i>

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
14	Field Density North Slope Lift 5	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
15	Field Density Dog Leg Lift 2	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
16	Field Density Dog Leg Lift 1	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
17	Field Density West Slope Lift 6	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
18	Field Density West Slope Lift 5	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
19	Field Density East Slope Lift 6	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
20	Field Density East Slope Lift 5	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
21	Field Density North Slope Lift 8	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
22	Field Density North Slope Lift 7	Sub Grade Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DS</i>
23			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
26			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 6, 09 Name/Title DONALD G. LOPEZ PE Signature *Donald G. Lopez*  
CQA Engineer  
URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-2-09

Contract # PO# 903627

Submittal # 011

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Field Density Grid Block #7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Field Density Grid Block #8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Field Density Grid Block #11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 6, 2009

Name/Title DONALD T. LOPEZ PE

Signature

*Donald T. Lopez*  
 CQA Engineer  
 URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-2-09

Contract # PO# 903627

Submittal # 012

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

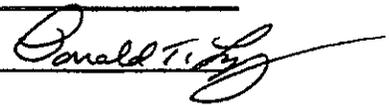
To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Field Density Grid Block #11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Field Density Grid Block #7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Field Density Grid Block #8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 6, 2009 Name/Title DONALD T. LOPEZ PE Signature \_\_\_\_\_

*CQA Engineer*  
*URS NM*



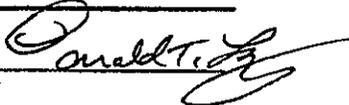


MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project Date 7-2-09  
 Contract # PO# 903627  
 Submittal # 013  
 New  Resubmittal   
 If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation  
 Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Field Density Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Field Density Grid Block # 1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Field Density Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Field Density Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 6, 2009 Name/Title DONALD T. LOPEZ Signature   
CA A Engineer  
URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-10-09

Contract # PO# 903627

Submittal # 014 BK

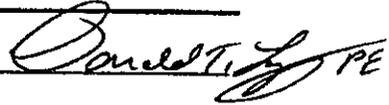
New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Lift 3 Grid Block # 11 SE	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02	Lift 3 Grid Block # 11 NE	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03	Lift 4 Grid Block # 1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04	Lift 4 Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05	Lift 4 Grid Block # 3	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06	Lift 4 Grid Block # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07	Lift 4 Grid Block # 5	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08	Lift 4 Grid Block # 10	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09	Lift 4 Grid Block # 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10	Lift 4 Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11	Lift 4 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12	Lift 4 Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 13, 09 Name/Title Donald T. Lopez PE Signature   
URS NM  
C&A Engineer



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-10-09

Contract # PO# 903627

Submittal # 015 OK

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 4 Grid Block # 13	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02	Lift 4 Grid Block # 12	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03	Lift 4 Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 13, 09 Name/Title Donald T. Cope 3 PE Signature Donald T. Cope PE  
URS NM  
CQA Engineer



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-10-09

Contract # PO# 903627

Submittal # 016

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 5 Grid Block # 13	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift 5 Grid Block # 12	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Lift 5 Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Lift 5 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	<sup>East Edge</sup> Lift 5 Grid Block # 7, Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 14, 09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
URS NM  
CQA Engineer



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-10-09

Contract # PO# 903627

Submittal # 017

New  Resubmittal

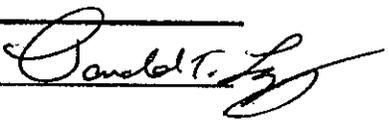
If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Native Fill Material Berm 1	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02	Native Fill Material Berm 2	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03	Native Fill Material Berm 3	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 13, 09 Name/Title Donald T. Lopez PE  
URS NM  
CQA Engineer

Signature 

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the Native Soil Borrow material at a frequency of 1/500 cubic yards stated in Section 2200-9 3.4.2 and Table 3.1. 3 samples ( Items 1 to 5) were collected from the 1400 cubic yards of SWPPP berm material hauled from the MWL to the borrow area.

OK

MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-10-09

Contract # PO# 903627

Submittal # 018

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Lift 5 Grid Block # 10	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
02	Lift 5 Grid Block # 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
03	Lift 5 Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
04	Lift 5 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
05	Lift 5 Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 7-14-09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
URS NM  
COA Engineer



MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 7-16-09

Contract # PO# 903627

Submittal # 019

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Lift 5 Grid Block # 5 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift 5 Grid Block # 4 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Lift 5 Grid Block # 3 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Lift 5 Grid Block # 2 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	Lift 5 Grid Block # 1 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 17, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 URS NM  
 CQA Engineer



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-20-09

Contract # PO# 903627

Submittal # 020

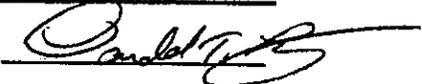
New  Resubmittal

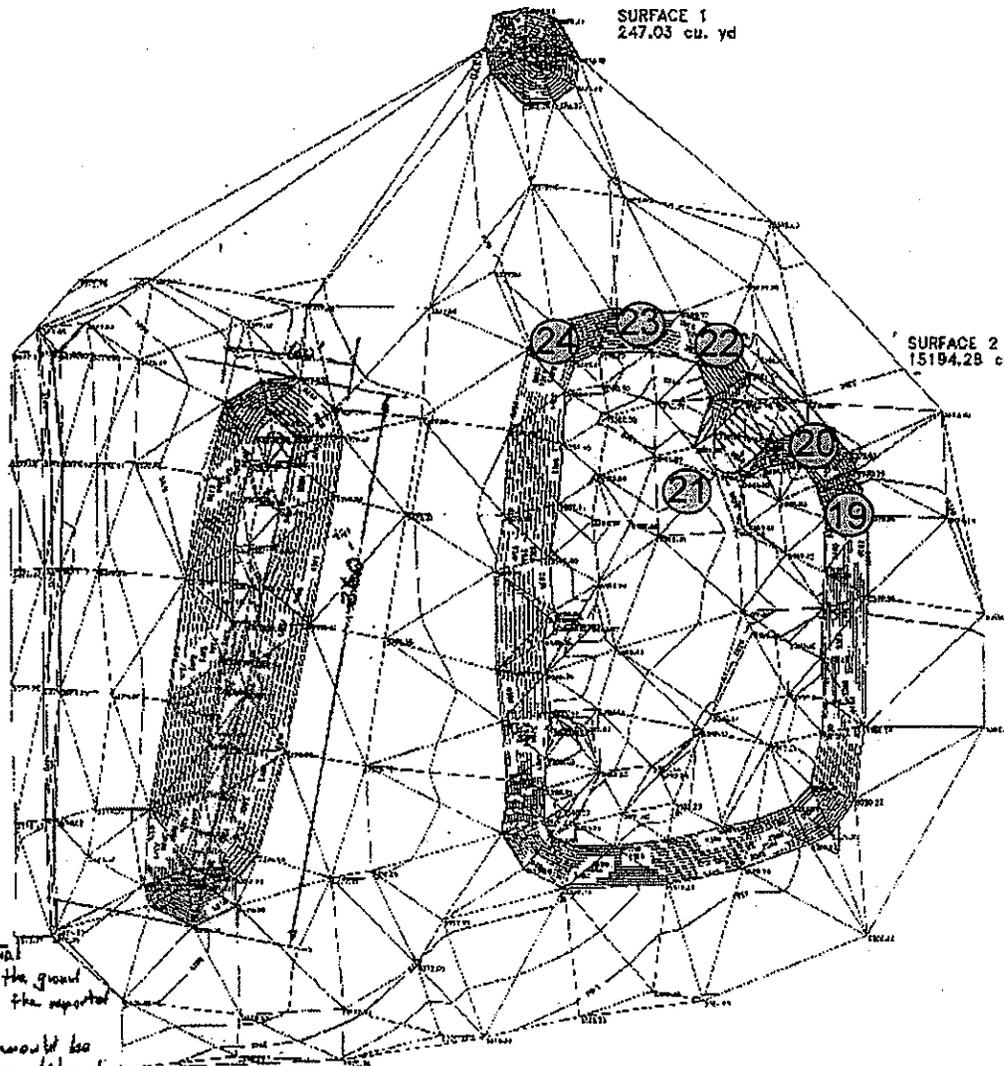
If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material # 19	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
02	Native Fill Material # 20	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
03	Native Fill Material # 21	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
04	Native Fill Material # 22	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
05	Native Fill Material # 23	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
06	Native Fill Material # 24	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>EL</i>
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 20, 2009 Name/Title Donald T. Lopez PE Signature   
URS NM  
CQA Engineer



Approximate Methods - Surface 3

Goal is to check order of magnitude of production numbers.



Cross Section Area:

$$2[(20)(12)] + (20)(60) = 360 \text{ SF}$$

200 + 120 end rounding factor

Length:  $260'(.98) = 255'$  91, 82 or 81

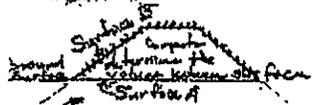
Divide by  $\frac{27 \text{ CF}}{\text{CY}} = 3400 \text{ CY}$

- The Standing Volume using Approx Methods is about 3400 CY. If I used very End Rounding Factor to 0.97, the results are: 3360 CY.
- The computer using Micro Soft INROADS software reports 3360 CY.
- The results are very close.

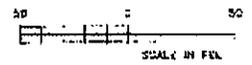
SURFACE 3  
3359.74 cu. yd

.5387 } 10' high  
5377 }

Special Notes:



1. There is additional potential useable fill material below the ground surface before you reach the reported Caliche Layer.
2. Special Soil bearings would be required to define the quantity of voids.



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-20-09

Contract # PO# 903627

Submittal # 021

New  Resubmittal

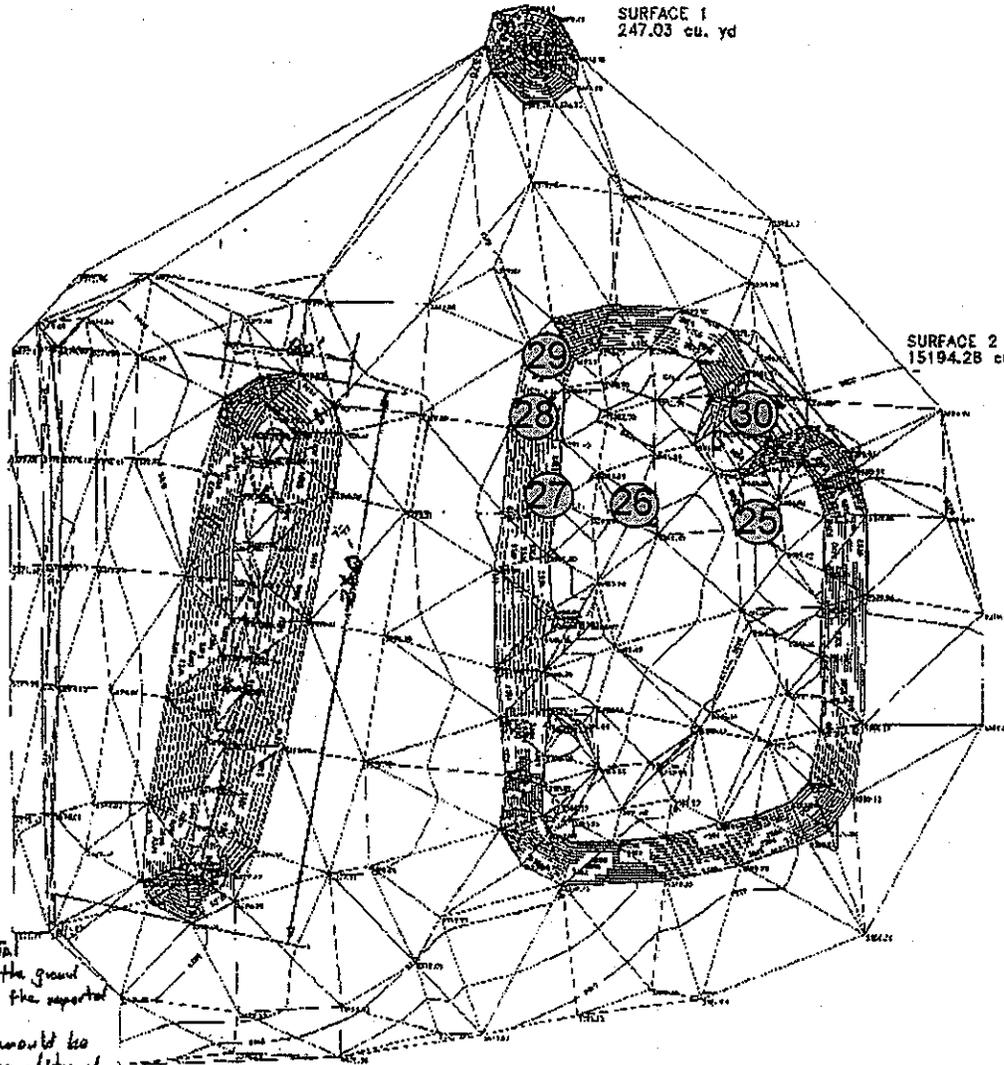
If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

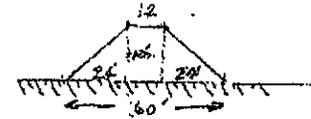
Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material # 25	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Native Fill Material # 26	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Native Fill Material # 27	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Native Fill Material # 28	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	Native Fill Material # 29	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06	Native Fill Material # 30	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date July 20, 2009 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
URS NM  
CE&A Engineer



Approximate Methods - Surface 3

Goal is to check order of magnitude of production numbers.



Cross Section Area:

$$2 \left[ \frac{(12+60) \times 120}{2} \right] + (60 \times 10) = 360 \text{ SF}$$

$$240 + 120 \text{ } \int \text{end rounding factor}$$

$$\text{Length} = 260' \times .98 = 255' .91, 8000 \text{ ft}$$

$$\text{Divide by } 27 \frac{\text{ft}^3}{\text{CY}} = 3400 \text{ CY}$$

The Sliding Volume using Approx Methods is about 3400 CY. If I included my End Rounding Factor to 0.97, the results are: 3360 CY.

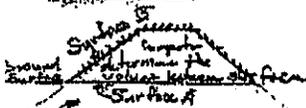
The computer, using Micro Soft INROADS software reports 3360 CY.

The results are very close.

SURFACE 3  
3359.74 cu. yd

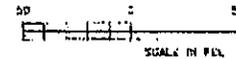
5387 } 10' high  
5377

Special Notes:



Cutlike Layer

- ① There is additional potential useable fill material below the ground surface before you reach the reported Cutlike Layer.
- ② Special Soil borings would be required to define true quantity of potential material.



Submittal 21



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-22-09

Contract # PO# 903627

Submittal # 022

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material Berm 4	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
02	Native Fill Material Berm 5	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
03	<i>SNL MWL 071009-7</i> <del>Top Soil Material 7</del> <i>SRJ</i>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
04	<i>SNL MWL 071009-8</i> <del>Top Soil Material 8</del> <i>SRJ</i>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
05	<i>SNL MWL 071009-9</i> <del>Top Soil Material 9</del>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 07/23/09 Name/Title Donald T. Lopez PE Signature *[Signature]*  
*CQA Engineer*  
*URS NM*





MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-22-09

Contract # PO# 903627

Submittal # 023

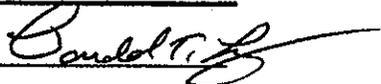
New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material Berm 6	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DB
02	Native Fill Material Berm 7	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DB
03	Native Fill Material Berm 8	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DB
04	<del>SNL MWL 071409-10 Top Soil Material 10</del>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DB
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 07/23/09 Name/Title Donald T. Lopez PE Signature   
COA Engineer  
URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-22-09

Contract # PO# 903627

Submittal # 024

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 6 Grid Block # 13	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02	Lift 6 Grid Block # 12	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03	Lift 6 Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 07/23/09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
CQA Engineer  
URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-22-09

Contract # PO# 903627

Submittal # 025

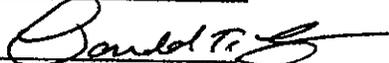
New  Resubmittal

If resubmittal, prev. submittal # 006

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Native Fill Material 11	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 07/23/09 Name/Title Donald T. Lopez PE Signature   
COA Engineer  
URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-23-09

Contract # PO# 903627

Submittal # 026

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 6 Grid Block # 10	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift 6 MW-4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>DL</i> <span style="margin-left: 20px;">Retested</span>
03	Lift 6 Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Lift 6 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	Lift 6 Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06	Lift 6 Grid Block # 1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
07	Lift 6 Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
08	Lift 6 Grid Block # 3	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
09	Lift 6 Grid Block # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
10	Lift 6 Grid Block # 5	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
11	Lift 6 Grid Block # 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
12		NA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 7/23/09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 CQA Engineer  
 URS NM



MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 7-23-09

Contract # PO# 903627

Submittal # 027

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 6 MW-4 Re-test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
02			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
03			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05	<p><i>Don Approval. Don L. Recommend approval now. Have sorted out the sample taxonomy they are using. "01 is the first # of a test sequence, the second # 01-1 is the first time to the job site for a particular day to do a test. If they made a second trip to the site the number would be 01-2. Their number 01-1 is the first test they did on 21 July and it was a retest of 02-1 from 17 July. M</i></p>					
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Edgmon*  
*Chris Edgmon*

Date 07/23/09 Name/Title

Donald T. Lopez PE  
 C&A Engr.  
 URS NM

Signature *Donald T. Lopez*

*approved 08/07/09*



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 7-23-09

Contract # PO# 903627

Submittal # 028

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Lift 7 Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
02	Lift 7 Grid Block # 12	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
03	Lift 7 Grid Block # 13	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
04	Lift 7 Grid Block # 10	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
05	Lift 7 Grid Block # 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
06	Lift 7 Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
07	Lift 7 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
08	Lift 7 Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>CE</i>
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date 7/23/09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
CQA Engineer  
URS NM



MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 7-28-09

Contract # PO# 903627

Submittal # 029

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Wedge Lift 2, Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>BE</i>
02	Lift 4, Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>BE</i>
03	Lift 4, Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>BE</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Atch. Page 1*

Date \_\_\_\_\_ Name/Title \_\_\_\_\_ Signature \_\_\_\_\_

4 Aug

~~Don~~ I concur.

I've looked at these again. They all meet the CMIP spec of less than  $4.6 \times 10^{-4}$  cu/sec.

However, these samples should be tested at 90% max dry density. They weren't. They were tested at 81 - 89%. I think it makes a difference. If you test at 90% you should be able to achieve  $10^{-5}$  values.

Recommended "conditional approval" until all sample results are in and that they are tested at 90%.

Meredith Day

Donald T. ~~LD~~ PE  
C&A Engineer  
URS NM

Conditional  
Recommended approval  
See my "Notes"  
memo. ok Don T. PE  
Meredith Day

CONDITIONNALLY APPROVED  
August 6, 2009



Recommended OK  
Approval

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

*M*

Project Name SNL MWL Construction Cover Project

Date 8-4-09

Contract # PO# 903627

Submittal # 030

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 7 Grid Block # 1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift 7 Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Lift 7 Grid Block # 3	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Lift 7 Grid Block # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	Lift 7 Grid Block # 5	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 6, 09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
CQA Engineer  
URS NM



Revised OK  
 approval  
 M

MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-4-09

Contract # PO# 903627

Submittal # 031

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 8 Grid Block # 11	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
02	Lift 8 Grid Block # 12	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
03	Lift 8 Grid Block # 13	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 6, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 CQA Engineer  
 URS NA



A. n. Davis

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-4-09

Contract # PO# 903627

Submittal # 032

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Lift 8 Grid Block # 10	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift 8 MW # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03	Lift 8 Grid Block # 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
04	Lift 8 Grid Block # 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
05	Lift 8 Grid Block # 7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
06	Lift 8 Grid Block # 6	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
07	Lift 8 Grid Block # 1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
08	Lift 8 Grid Block # 2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
09	Lift 8 Grid Block # 3	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
10	Lift 8 Grid Block # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
11	Lift 8 Grid Block # 5	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
12	Lift 8 Grid Block # 8 Re-Test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
13	Lift 8 Grid Block # 10 Re-Test	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
14	Lift 8 MW # 4	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>

See note  
"  
"  
"

Date August 6, 2009 Name/Title

Donald T. Lopez PE  
C&A Engineer  
URS NA

Signature Donald T. Lopez

2 Approved August 2, 2009

Don I concur.

Recommended approval of all  
except #1, #2 & #4. Their  
moisture contents fell below  
the minimum.

To their credit, they  
retd these three problem  
areas and then retested  
and all passed.

Good on them.

M ~~BB~~ PE



Recommended  
Approval  
M

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-6-09

Contract # PO# 903627

Submittal # 033

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Native Fill Material Berm 9	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
02	Native Fill Material Berm 10	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
03	Native Fill Material Berm 11	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
04	Native Fill Material Berm 12	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
05	Native Fill Material Berm 13	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
06	Native Fill Material Berm 14	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
07	Native Fill Material Berm 15	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
08	Native Fill Material Berm 16	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DL
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 7, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 CQA Engineer  
 URS NH



Recognized <sup>OK</sup>  
 approval  
 M

MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project Date 8-4-09  
 Contract # PO# 903627  
 Submittal # 034  
 New  Resubmittal   
 If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation  
 Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Native Fill Material Berm 17	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DE
02	Native Fill Material Berm 18	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DE
03	Native Fill Material Berm 19	Native Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DE
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 6, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 C&A Engr.  
 URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 8-4-09

Contract # PO# 903627

Submittal # 035

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Top Soil Material 11	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>DL</i>
02	Top Soil Material 12	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>DL</i>
03	<p><i>Don I concur.</i></p> <p><i>Recommend conditional disapproval until a time when all the data can be presented. There may have been a software error.</i></p> <p style="text-align: center;"><i>[Signature]</i>  <i>Paul T. [Signature] PE</i>  <i>CQA Engineer</i>  <i>URS New Mexico</i></p>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>DL</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date \_\_\_\_\_

*CONDITIONALLY APPROVED.*  
*August 6, 2009*

Signature \_\_\_\_\_

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the Native Soil Borrow material at a frequency of 1/500 cubic yards stated in Section 2200-9 3.4.2 and Table 3.1. Items 1 and 2 were collected from the excavated and screened material on the west side of the borrow area. The samples were taken for the additional material needed to complete the native soil lifts. This material was added to the existing top soil pile to be blended with the  $\frac{3}{8}$ " gravel.

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-6-09

Contract # PO# 903627

Submittal # 036

New  Resubmittal

If resubmittal, prev. submittal # 035

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	<del>SNL MWL 071609-11</del> <del>Top Soil Material 11</del>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
02	<del>SNL MWL 071609-12</del> <del>Top Soil Material 12</del>	Top Soil Testing of Borrow Material SECTION 02200-9 3.4.2 Fill and Borrow Area Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>RE</i>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*6 August*

*Don or DE*

*When they originally submitted, they attributed the specimens as "Native Soil". The specimen actually is "Top Soil" and the test results satisfy CMIP criteria. Recommend approval.*

*Marshall King*

Date August 7, 09 Name/Title Donald T. Lopez PE Signature *Donald T. Lopez*  
 CQA Engineer  
 URS NM



*Approved*  
*Approved*  
*ML*

MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-7-09

Contract # PO# 903627

Submittal # 037

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	<del>Lift 1-01</del> <sup>3-01 JRS</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
02	<del>Lift 1-02</del> <sup>3-02 JRS</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
03	<del>Lift 1-03</del> <sup>3-03 JRS</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[Signature]</i>
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 7, 09 Name/Title Donald T. Lopez PE Signature *[Signature]*  
CQA Engineer  
URS New Mexico



MA-01  
 MATERIAL APPROVAL FORM  
 MATERIAL APPROVAL SUBMITTAL FORM

Project Name SNL MWL Construction Cover Project

Date 8-12-09

Contract # PO# 903627

Submittal # 038

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	<del>LIR 5-01</del> ED: NS LIFT 5 GB 1 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
02	<del>LIR 5-02</del> ED: NS LIFT 5 GB 4 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
03	<del>LIR 5-03</del> ED: NS LIFT 5 GB 8 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
04	<del>LIR 6-01</del> ED: NS LIFT 6 GB 3 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
05	<del>LIR 6-02</del> ED: NS LIFT 6 GB 6 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
06	<del>LIR 6-03</del> ED: NS LIFT 6 GB 12 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
07	<del>LIR 7-01</del> ED: NS LIFT 7 GB 1 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
08	<del>LIR 7-02</del> ED: NS LIFT 7 GB 5 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
09	<del>LIR 7-03</del> ED: NS LIFT 7 GB 13 <sup>510</sup>	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>[initials]</i>
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11	* Please retest at 95%		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12	D 69B Proctor.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 22, 09 Name/Title Donald T. Lopez PE Signature *[Signature]*  
 C&A Engineer  
 URS NM



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 8-18-09

Contract # PO# 903627

Submittal # 039

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis- approved	See reverse	Initials
01	Wedge Lift-01- GB 8	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Lift-4- GB 9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 27, 09 Name/Title \_\_\_\_\_

Donald T. Lopez PE Signature  
 CQA Engineer  
 URS NM

*Donald T. Lopez*



MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 8-18-09

Contract # PO# 903627

Submittal # 040

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	Seed Mixture	Reclamation seeding and mulching SECTION 02930-2 2.2.1 Seed Mix for Cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
02	Seed Mixture	Reclamation seeding and mulching SECTION 02930-2 2.2.1 Seed Mix for Cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>DL</i>
03			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 19, 2009 Name/Title Donald T. Lopez Signature *Donald T. Lopez*  
C&A Engineer  
URS NM

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires the seed mixture for the cover and reclaimed areas contain Galleta grass at 8.0 lbs/acre, Black grama at 6.0 lbs/acre, Spike dropseed at 3.0 lbs/acre, and Ring Muhly at 3.0 lbs/acre for a total of 20 lbs/acre. Sandia approved a modification to the CMIP in regards to the revegetation specifications at the request of SNL's staff biologist. The modification to the CMIP calls for an increase in the seeding rate to 80 pounds of seed mix per acre, four times the rate stated in the CMIP. Item 1 is the seed mixture from the supplier. Item 2 is from the landscaper and is a copy of the tag on the seed bag.

"Schofield, Donald P" <dpschof@sandia.gov>



"Schofield, Donald P"  
<dpschof@sandia.gov>  
08/05/2009 09:59 AM

To "Don\_Lopez@URSCorp.com"  
<Don\_Lopez@URSCorp.com>  
cc "Mitchell, Mike M" <mmmitch@sandia.gov>

Subject: CMIP Reveg Modification

*This is the modification that John is referring to.*

*MW Hwy*

Mr. Lopez - Sandia National Laboratories (SNL) is approving a modification to the Mixed Waste Landfill (MWL) Corrective Measures Implementation Plan (CMIP) with regards to the revegetation specifications. These modifications come at the request of SNL's staff biologist, and are:

- uniform seeding rate of 80 pounds seed mix per acre (4x CMIP).
- no fertilizer added due to timing (August) of seeding.
- supplemental watering to assist seed germination and root development.

Please incorporate these modifications into URS's CQA effort. Thank you, Donald P Schofield.

MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 8-19-09

Contract # PO# 903627

Submittal # 041

New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDi

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	<del>NS Lift 8-1</del> ED: NS Lift 8 66-2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing 510	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CE
02	<del>NS Lift 8-2</del> ED: NS Lift 8 66-7	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing 510	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CE
03	<del>NS Lift 8-3</del> ED: NS Lift 8 66-9	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing 510	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CE

*DATA OK D E PE*

*Data looks good - compaction on all 3 > 90%  
 Recommend your approval.*

No.	Location	% of D 698 Proctor	K <sub>sat</sub>
1	NS Lift 8-1	90.4	1.22 E-06 ✓
2	NS Lift 8-2	90.0	1.23 E-06 ✓
3	NS Lift 8-3	90.0	1.36 E-06 ✓

*M W Way*

Date August 24, 09 Name/Title Donald T. Lopez PE Signature Donald T. Lopez  
 CQA Engineer  
 URS NM

MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM (Page 2)

COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 1 saturated hydraulic conductivity test per acre per lift stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the hydraulic conductivity be conducted according to ASTM specification for rigid wall testing, ASTM 5856. The samples shall have a maximum hydraulic conductivity of  $4.6 \times 10^{-4}$ . All items were compacted to 90 percent using a standard proctor. All items are samples collected from lift 8 on the cover. See map for sample locations. All samples passed the required hydraulic conductivity requirements.

*MWA*

MA-01  
**MATERIAL APPROVAL FORM**  
**MATERIAL APPROVAL SUBMITTAL FORM**

Project Name SNL MWL Construction Cover Project

Date 8-26-09

Contract # PO# 903627

Submittal # 042

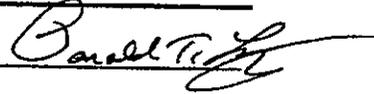
New  Resubmittal

If resubmittal, prev. submittal # \_\_\_\_\_

To (name/SNL Dept.) Don Lopez - URS Corporation

Submitted by (name/company) Chris Edgmon / EDI

Item #	Item	Description (type, model #, catalog #, mfg., etc.)	Approved	Dis-approved	See reverse	Initials
01	<del>NS Lift 5-2</del> ED: NS Lift 5 6B-4 Ref: 5-2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED
02	NS Lift 5-3 ED: NS Lift 5 6B-8 Ref: 5-3	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED
03	NS Lift 7-1 ED: NS Lift 7 6B-1 Ref: 7-1	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED
04	NS Lift 7-2 ED: NS Lift 7 6B-5 Ref: 7-2	Native Soil Field Testing of compacted Fill SECTION 02200-9 3.4 Testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED
05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
09			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Date August 27, 09 Name/Title Donald G. Lopez PE Signature   
 CEA Engineer  
 URS NM



## **2009 Cover Layer Approval Forms**



# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 001

DATE: 05/22/09

Attention: **Don Schofield**  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

**URS Corporation**  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: **Existing Subgrade Approval**

URS Project No. 24343640

Item No.	Layer	Description
1.	Existing Subgrade	Existing Subgrade approval for construction.

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks:

1. The Existing Subgrade constructed in 2006 has been cleared of vegetation and remnant erosion matting, compacted, and tested in accordance with the CMIP. The Existing Subgrade is approved for construction of the Biointrusion Layer.
2. Quality control survey indicates some parts of the Existing Sugrade surface do not meet the 2.0% east-to-west design slope. The slope will be adjusted during construction of the overlaying layers.
3. Side slopes are steeper than 6:1 around the north end of the MWL. 6:1 side slopes will be established during construction of the Native Soil and Top Soil Layers.

Attachments:

None

URS Corporation

Approved By:

5/22/09

Donald T. Lopez, P.E.

Date:

CQA Engineer

# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 002

DATE: 05/26/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: Biointrusion Layer

URS Project No. 24343640

Item No.	Layer	Description
1.	Biointrusion Layer	Biointrusion rock approval
2.	Biointrusion Layer	Biointrusion rock installation procedure
3.	Biointrusion Layer	Biointrusion Thickness Verification Requirement

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

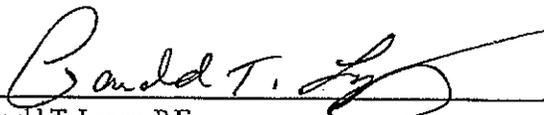
Remarks:

1. The Biointrusion rock previously purchased and stockpiled in the Former Bulk Waste Staging Area TA-3 is approved for use on the MWL cover.
2. The revised procedure for installation of the Biointrusion Layer is approved. Please see attached for revised method.
3. No soil may be placed in the Biointrusion voids prior to approval of Biointrusion Layer thickness.

Attachments: 1. Revised Biointrusion Layer installation procedure described in 5/26/09 Daily Summary Report.

URS Corporation

Approved By:

  
Donald T. Lopez, P.E.  
CQA Engineer

5/26/09

Date:



Don Lopez/Albuquerque/URSCorp  
05/27/2009 09:04 AM

To dpschof@sandia.gov  
cc Cedgmon@edi-nm.com, Paul  
Molina/Albuquerque/URSCorp@URSCorp  
bcc Mandy Scarberry/Albuquerque/URSCorp@URSCorp;  
Marshall Nay/Albuquerque/URSCorp@URSCorp  
Subject May 26, 2009 URS CQA Daily report and URS CQA approval  
of Test Method no. II for installation of the Mixed Waste  
Landfill Biointrusion Layer

Don, and Mixed Waste Landfill Team, Attached to this E-mail is the URS CQA Mixed Waste Landfill Construction Daily Report for May 26, 2009. My CQA Engineer approval of Biointrusion test area method no.II for installation of the Biointrusion layer is described in the daily report and is my direction to the Sandia Mixed Waste Landfill Team by copy of this E-mail.



Please let me know if you need any additional information. 20090526\_SMWL DSR\_Biointrusion Test Layer.doc

**DONALD T. LOPEZ, PE**

PRINCIPAL CIVIL/GEOTECHNICAL ENGINEER

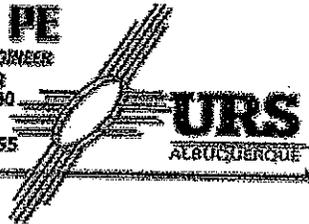
INFRASTRUCTURE GROUP LEADER

6501 AMERICAS PARKWAY NE, SUITE 900

ALBUQUERQUE, NEW MEXICO 87110

PH. 505.855.7500 FX. 505.855.7555

CL. 505.301.5965



This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

## DAILY SUMMARY REPORT (final draft)

**DATE:** 5/26/09 (Tuesday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Slightly Cloudy, good conditions (58 deg)

**WEATHER (PM):** Slightly Cloudy, good conditions (72 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- The test section for the Biointrusion Layer was executed today. The initial test procedure discussed in the Construction Site Safety Plan (CSSP, page 37) was determined to be unsuccessful. A second method for the installation of the Biointrusion Barrier was derived and was successful (See below Biointrusion Test Area II for details).

### LOCATION OF CONSTRUCTION

1. Tech Are III, Sandia Mixed Waste Landfill, Existing Subgrade.
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location)
3. Borrow Pit, (Pre-screened Soil Stockpile)

### LIST OF PERSONNEL:

Please see Appendix C for sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

#### 1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:30 AM

Attendees: See attached sign in sheet.

Issues:

- a. The test Biointrusion procedure to be followed.

#### 2. Description: Biointrusion Barrier Procedure Briefing

Time: 9:45-10:15 PM

Attendees: See attached sign in sheet.

Issues:

- a. Discussion of responsibilities and measures that needed to be taken into consideration to have a successful Biointrusion Test.

#### 3. Description: Afternoon Safety Briefing

Time: 1:00-1:18 PM

Attendees: See attached sign in sheet.

Issues:

- a. Rock Delivery: The procedure for continuing with the delivery of rock.
- b. Safety: Proper ear protection and the truck routes needed ensure safety.
- c. Construction: The procedure for continuing the placement of Biointrusion barrier rock.

## DAILY TASK

### I.

#### A. TASK DESCRIPTION: Biointrusion Test Area I (as discussed in CSSP)

Please see CSSP (page 37) for procedure description.

The test area consisted of two truckloads of dry, screened loose soil distributed over an approximate 20'x20' area. Using a builder's level, the thickness of the test loose soil layer was determined to be 6-to-8 inches as specified in the CSSP. The soil was initially spread using a motor grader, but EDi later switched to a dozer in an attempt to reduce the soil compaction.

The Biointrusion rock was then placed onto the 6-to-8 inch loose soil layer. The Biointrusion rock was spread to an approximate thickness of 1.0-foot or slightly less. A dozer then compacted the rock in an attempt to push the rock down into the soil layer. After several passes with the dozer, Don Lopez (URS CQA) was not convinced the Biointrusion rock was being pressed down through the loose soil layer to the existing Subgrade Layer. This raised concerns of the possibility of future settling due to the layer of sand between the Subgrade Layer and the Biointrusion Layer. It was determined this procedure was not adequate to meet Specification Section 02115 located in the CMIP.

#### B. ISSUES/COMMENTS:

1. There was a discussion about extending the Biointrusion Barrier past the toe of the existing Subgrade Layer. It was determined that it is not necessary to extend the Biointrusion Barrier past the toe.
2. The current slope is approximately 1.8% from East to West in lieu of the 2.0% as specified. The slope will be adjusted to the specified 2.0% during the course of construction. It will be corrected during the Native Soil Layer apposed to the Biointrusion Barrier due to material availability and ease of construction.
3. The method of constructing the Biointrusion described in the CSSP (Page 37) was determined to be insufficient by Don Lopez PE URS CQA Engineer.

#### C. EQUIPMENT USED (See Appendix B for Equipment Description)

1. Grader
2. Dozer
3. Dump Trucks
4. Loader

#### D. EQUIPMENT CALIBRATION CERTIFICATES

1. NA

#### E. STATUS:

1. This procedure was ineffective and was canceled. A new method was derived and used as described below.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed: 24342640\_06 Project Deliverables\_Field Photos.

II.

A. TASK DESCRIPTION: *Biointrusion Test Area II*

After it was determined the procedure described above in Test Area I was ineffective, a second test area was created using the tracks of the Dozer to scarify the existing Subgrade Surface. It was determined the tracks of the dozer created a texture, which was ideal for the Biointrusion Rock placement. The scarified surface had enough loose soil to fill some of the voids in the rock, as well as create a grooved pattern, which made it easy for the rock to fall into place and interlock. The rock was compacted with the dozer a minimum of four times. Loose, screened soil was then placed over the rock layer and worked into the voids using a vibratory roller. This method proved to be very effective. (See below for updated Biointrusion installation procedure)

*The Following is the Updated Biointrusion Layer Installation Procedure:*

The Biointrusion layer will be constructed in compliance with the CMIP, Specification Section 02115. The following is the procedure recommended by Don Lopez PE (URS CQA Engineer) for the Biointrusion Layer:

The rock used for the Biointrusion Layer will continue to be the rock acquired by SNL. The rock is located at the former Bulk Waste Staging Area in TA 3.

The EDI Team will scarify the Existing Subgrade Surface using the tracks of a dozer. A minimum of 4 passes with the dozer tracks is required across the existing Subgrade Surface. Once the Subgrade Surface has been prepared, the Biointrusion Rock may be spread across the scarified surface. The rock layer will then be compacted with a minimum of 4 passes by the dozer to ensure compaction and interlocking of the rock. Compaction shall be performed until rocks are firmly locked into place. The entire Biointrusion Rock Layer Surface must be completed, surveyed, and approved before any further construction may take place.

Once the rock layer is compacted in place and approved, additional dry loose soil will be placed over the surface. A dozer will then spread the loose soil across the rock surface and a vibrating, smooth drum roller will be used to work the loose soil into the voids. A minimum of 4 passes with the vibratory roller is required. After this is completed and approved, water will be applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent).

*END*

B. ISSUES/COMMENTS

1. After the Test Method II was determined to be affective, it was applied for the remainder of the day to the South side of the MWL. Approximately 300-CY of the Biointrusion layer was installed.
2. Water was not applied to the Biointrusion Layer to fill voids today.
3. No survey was performed today. The survey team should be out tomorrow for as-built conditions and elevation confirmations for the Biointrusion Layer.
4. Crushed rock used for the Biointrusion Layer did meet specifications by method of visual inspection.
5. No heavy equipment was operated around the monitoring wells.

C. EQUIPMENT USED (See Appendix B for Equipment Description):

1. Dozer
2. Dump Trucks
3. Vibrator, Smooth Drum Roller

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. NA

F. STATUS:

1. Approximately 300 CY of the Biointrusion Layer was installed today (20 Truck Loads @ approx 15 CY/truck). See dwg\_05/26/09\_Construction\_01.
2. Approximately 90 CY of the Loose, dry soil for the voids was installed in test pad (6 truck loads @ approx 15 CY/truck). This was only for the test pad and will not be continued until the Biointrusion Rock Layer is completed and approved.
3. Water was not applied to the Biointrusion Layer today.

G. PICTURES

1. Pictures of this procedure were collected and filed: 24342640\_06 Project Deliverables\_Field Photos.

**INSPECTION CHECKLISTS REQUIRED**

1. 1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 05/27/09)**

1. Continue installation of the Biointrusion Barrier.
2. Raise Well



# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 003

DATE: 06/05/09

Attention: **Don Schofield**  
 Sandia National Laboratories  
 P.O. Box 5800 MS 1125  
 Albuquerque, NM  
 87185

**URS Corporation**  
 6501 Americas Parkway NE, Ste 900  
 Albuquerque, NM 87110-6367  
 (505) 855-7500

Subject: **Biointrusion Rock Thickness (South)**

URS Project No. 24343640

Item No.	Layer	Description
1.	Biointrusion Layer	South Biointrusion Layer Thickness

Approved, conforms to CMIP

Conditionally Approved

Declined, does not conform to CMIP

Remarks:

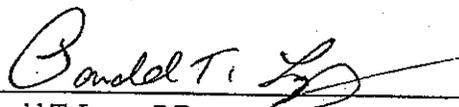
- The south portion of the Biointrusion Layer is approved with the exception of four grid point locations on the west slope which are less than the 1.0' minimum thickness requirement. The south portion is approved for the placement of soil into the voids except for the west slope grid points which must be corrected, resurveyed, and approved.

Attachments:

- South portion Biointrusion QA survey locations.

URS Corporation

Approved By:



Donald T. Lopez, P.E.

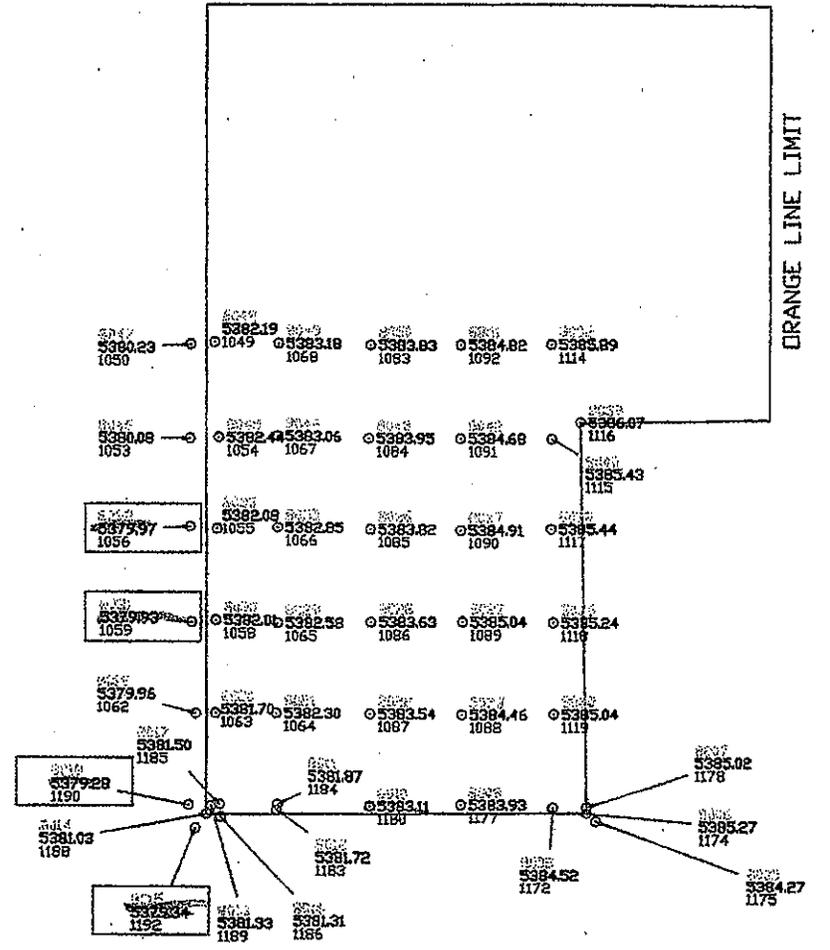
CQA Engineer

06/05/09

Date:

MWL BIOINTRUSION LAYER					URS PROJECT 24342640					6/6/2009				
COMPARISON OF "EXIST SFC FROM ABQ SURVEY" TO "MWL South Bio Int Layer Shots 6-5-2009"														
ASCI SUBGRADE SHOTS					URS BIOINTRUSION LAYER QA SHOTS (6-5-2009)					DELTAS (MIN ΔELEV VALUE = 11" = 0.92 FT)				
POINT	NORTH	EAST	ELEV	DESC	POINT	NORTH	EAST	ELEV	DESC	ΔPOINT	ΔNORTH	ΔEAST	ΔDIST	ΔELEV
1049	1452939	411599.7	5381.12	4-NG	8048	1452939	411599.4	5382.195	1049	0	-0.11	0.23	0.25	-1.07
1050	1452938	411586.2	5378.91	4-NG	8047	1452938	411586.6	5380.229	1050	0	0.48	-0.39	0.60	-1.32
1053	1452887	411586.8	5379.01	4-NG	8046	1452887	411586.3	5380.082	1053	0	-0.03	0.56	0.56	-1.07
1054	1452888	411601.6	5381.2	4-NG	8045	1452888	411601.9	5382.44	1054	0	-0.07	-0.27	0.28	-1.24
1055	1452839	411601.2	5380.98	4-NG	8033	1452839	411601	5382.083	1055	0	0.06	0.14	0.15	-1.10
1056	1452840	411586.5	5379.53	4-NG	8032	1452840	411586.6	5379.966	1056	0	0.04	-0.14	0.15	-1.10
1058	1452789	411600.8	5380.64	4-NG	8030	1452789	411600.5	5382.009	1058	0	-0.25	0.30	0.39	-1.37
1059	1452788	411587.3	5379.3	4-NG	8031	1452788	411587.3	5379.934	1059	0	0.03	-0.05	0.05	-1.03
1062	1452739	411589.1	5378.93	4-NG	8019	1452739	411589.5	5379.957	1062	0	-0.05	-0.39	0.39	-1.03
1063	1452739	411600.2	5380.35	4-NG	8020	1452739	411600.3	5381.704	1063	0	-0.12	-0.07	0.13	-1.35
1064	1452739	411633	5381.28	4-NG	8021	1452739	411633.1	5382.3	1064	0	-0.17	-0.13	0.22	-1.02
1065	1452788	411633.6	5381.27	4-NG	8029	1452788	411633.8	5382.576	1065	0	-0.08	-0.18	0.19	-1.31
1066	1452839	411633.7	5381.78	4-NG	8035	1452839	411633.9	5382.846	1066	0	-0.11	-0.10	0.15	-1.07
1067	1452889	411633.6	5381.76	4-NG	8044	1452889	411633.6	5383.064	1067	0	0.13	0.00	0.13	-1.30
1068	1452939	411633.8	5381.85	4-NG	8049	1452939	411634.1	5383.179	1068	0	0.08	-0.30	0.31	-1.33
1083	1452938	411684.3	5382.71	4-NG	8050	1452938	411684.3	5383.827	1083	0	0.10	0.08	0.13	-1.12
1084	1452888	411683.4	5382.76	4-NG	8043	1452888	411683.3	5383.946	1084	0	-0.02	0.13	0.13	-1.19
1085	1452838	411684.1	5382.73	4-NG	8036	1452839	411684.2	5383.821	1085	0	-0.15	-0.13	0.20	-1.09
1086	1452788	411684.4	5382.4	4-NG	8028	1452789	411684.6	5383.626	1086	0	-0.18	-0.24	0.30	-1.23
1087	1452739	411684.3	5382	4-NG	8022	1452739	411684.2	5383.537	1087	0	-0.23	0.05	0.24	-1.54
1088	1452739	411734.3	5382.97	4-NG	8023	1452739	411734.3	5384.459	1088	0	-0.01	-0.05	0.05	-1.49
1089	1452789	411734.3	5383.14	4-NG	8027	1452789	411734.5	5385.041	1089	0	0.13	-0.20	0.24	-1.90
1090	1452838	411733.3	5383.53	4-NG	8037	1452838	411733.4	5384.909	1090	0	-0.14	-0.10	0.17	-1.38
1091	1452888	411733.4	5383.58	4-NG	8042	1452888	411733.4	5384.68	1091	0	0.16	0.09	0.19	-1.10
1092	1452938	411733.1	5383.55	4-NG	8051	1452938	411733.4	5384.821	1092	0	0.02	-0.31	0.31	-1.27
1114	1452939	411783	5384.75	4-NG	8052	1452939	411782.7	5385.888	1114	0	0.26	0.29	0.38	-1.14
1115	1452888	411783.4	5384.28	4-NG	8040	1452888	411783.1	5385.43	1115	0	0.16	0.25	0.30	-1.15
1116	1452897	411798.6	5384.56	ORANGE	8039	1452897	411798.7	5386.069	1116	0	-0.31	-0.16	0.35	-1.51
1117	1452839	411782.7	5384.19	4-NG	8038	1452839	411782.8	5385.441	1117	0	-0.16	-0.07	0.17	-1.25
1118	1452789	411783.8	5383.98	4-NG	8026	1452789	411784	5385.237	1118	0	0.21	-0.14	0.25	-1.26
1119	1452739	411784.4	5383.87	4-NG	8024	1452739	411784.4	5385.041	1119	0	-0.03	-0.01	0.03	-1.17
1172	1452688	411784.2	5383.51	4-NG	8008	1452688	411784.2	5384.519	1172	0	0.14	0.03	0.14	-1.01
1174	1452685	411802.5	5383.5	ORANGE	8006	1452685	411802.6	5385.269	1174	0	0.15	-0.19	0.24	-1.77
1175	1452681	411807.5	5383.13	4-NG	8005	1452681	411807.6	5384.265	1175	0	-0.13	-0.13	0.18	-1.14
1177	1452690	411733.9	5382.56	4-NG	8009	1452690	411734	5383.932	1177	0	-0.01	-0.12	0.12	-1.37
1178	1452689	411802.7	5383.65	4-NG	8007	1452689	411802.6	5385.02	1178	0	0.10	0.08	0.13	-1.37
1180	1452689	411684.7	5381.4	4-NG	8010	1452689	411684.3	5383.114	1180	0	0.20	0.38	0.42	-1.71
1183	1452688	411633.5	5380.58	4-NG	8012	1452687	411633.6	5381.723	1183	0	-0.01	-0.18	0.18	-1.14
1184	1452689	411634.3	5380.56	4-NG	8011	1452690	411634.2	5381.872	1184	0	-0.22	0.10	0.24	-1.31
1185	1452690	411602.9	5380.03	4-NG	8017	1452690	411602.9	5381.497	1185	0	0.04	0.00	0.04	-1.47
1186	1452682	411603.2	5379.95	4-NG	8016	1452683	411603.4	5381.305	1186	0	-0.43	-0.22	0.48	-1.36
1188	1452684	411595.5	5379.48	ORANGE	8014	1452684	411595.8	5381.033	1188	0	-0.13	-0.35	0.38	-1.55
1189	1452689	411597.7	5379.82	4-NG	8013	1452689	411598.3	5381.331	1189	0	0.68	-0.54	0.86	-1.51
1190	1452689	411586.2	5378.58	4-NG	8018	1452689	411586.1	5379.276	1190	0	-0.31	0.07	0.31	-1.27
1192	1452677	411590.1	5378.59	4-NG	8015	1452677	411589.9	5379.34	1192	0	0.16	0.24	0.28	-1.03

# MWL BIOINTRUSION LAYER QA SHOTS 6-5-2009



# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 004

DATE: 06/08/09

Attention: **Don Schofield**  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

**URS Corporation**  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: **Additional Biointrusion Rock**

URS Project No. 24343640

Item No.	Layer	Description
1.	Biointrusion Layer	Additional rock needed to complete construction of the Biointrusion Layer.

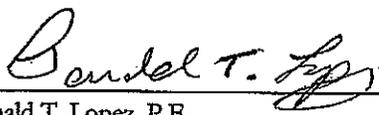
Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks: 1. After a visual inspection of the first delivered load and confirmation from the supplier that this rock is from the same stockpiles as the 2005 rock purchased by Sandia, the additional rock for the Biointrusion Layer is approved.

Attachments:  
None

URS Corporation

Approved By:

  
Donald T. Lopez, P.E.

CQA Engineer

06/08/09

Date:

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 005

DATE: 06/09/09

Attention: **Don Schofield**  
 Sandia National Laboratories  
 P.O. Box 5800 MS 1125  
 Albuquerque, NM  
 87185

**URS Corporation**  
 6501 Americas Parkway NE, Ste 900  
 Albuquerque, NM 87110-6367  
 (505) 855-7500

Subject: **Biointrusion Rock Thickness  
 (Northwest)**

URS Project No. 24343640

Item No.	Layer	Description
1.	Biointrusion Layer	Northwest Biointrusion Layer Thickness
2.	Biointrusion Layer	South Biointrusion Layer Thickness Correction (four locations)

Approved, conforms to CMIP     
  Conditionally Approved     
  Declined, does not conform to CMIP

Remarks:

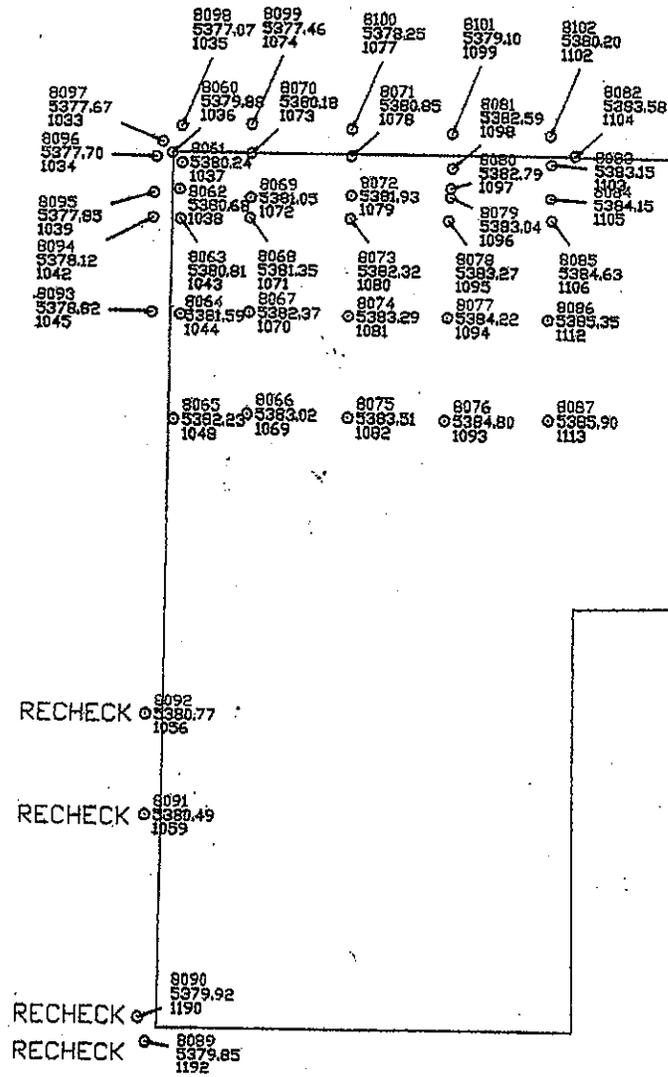
- The northwest portion of the Biointrusion Layer is approved with the exception of two locations on the north slope which were too thick. The northwest portion is approved for the placement of soil into the voids except for the north slope, which must be corrected, resurveyed, and approved at the two locations.
- The four locations on the west slope of the Biointrusion Layer at the south end that required additional rock have been corrected, resurveyed, and are now approved. The west slope was approved for the placement of soil into the voids on 6/09/09.

Attachments: 1. Northwest Biointrusion QA survey locations with four west slope location corrections.

URS Corporation

Approved By: Donald T. Lopez 06/09/09  
 Donald T. Lopez, P.E. Date:  
 CQA Engineer

# MWL BIOL. TRUSTION LAYER QA SHOTS 6-8-2009



MWL BIOINTRUSION LAYER				URS PROJECT 24342640				6/8/2009						
COMPARISON OF "EXIST SFC FROM ABQ SURVEY" TO "MWL South Bio Int Layer Shots 6-8-2009"														
ASCI SUBGRADE SHOTS				URS BIOINTRUSION LAYER QA SHOTS (6-8-2009)					DELTA'S (MIN ΔELEV VALUE = 11" = 0.92 FT)					
POINT	NORTH	EAST	ELEV	DESC	POINT	NORTH	EAST	ELEV	DESC	ΔPOINT	ΔNORTH	ΔEAST	ΔDIST	ΔELEV
1033	1453125.877	411589.895	5375.93	4-NG	8097	1453125.86	411588.649	5377.87	1033	0	-0.08	0.05	0.09	-1.74
1034	1453118.152	411586.2652	5376.15	4-NG	8096	1453118.18	411586.573	5377.7	1034	0	-0.02	-0.31	0.31	-1.55
1035	1453133.576	411598.6233	5376.01	4-NG	8098	1453134	411598.77	5377.068	1035	0	-0.42	-0.15	0.44	-1.06
1036	1453120.655	411594.5462	5377.47	ORANGE	8060	1453120.31	411594.343	5379.877	1036	0	0.34	0.20	0.40	-2.41
1037	1453116.253	411599.3789	5378.75	4-NG	8061	1453115.27	411599.316	5380.239	1037	0	-0.01	0.06	0.06	-1.49
1038	1453101.434	411598.4945	5379.18	4-NG	8062	1453101.84	411598.369	5380.684	1038	0	-0.41	0.13	0.42	-1.50
1039	1453100.301	411585.8963	5378.49	4-NG	8095	1453099.77	411585.684	5377.854	1039	0	0.53	0.23	0.58	-1.36
1042	1453087.052	411585.7231	5376.67	4-NG	8094	1453086.81	411585.413	5378.12	1042	0	0.24	0.31	0.39	-1.45
1043	1453086.652	411599.5111	5379.49	4-NG	8063	1453086.39	411598.955	5380.808	1043	0	0.26	0.56	0.61	-1.32
1044	1453037.789	411599.7667	5380.16	4-NG	8084	1453037.81	411599.883	5381.587	1044	0	-0.02	-0.12	0.12	-1.43
1045	1453038.654	411585.7589	5377.65	4-NG	8093	1453038.67	411585.805	5378.816	1045	0	-0.01	-0.05	0.05	-1.17
1048	1452985.905	411597.2513	5380.74	4-NG	8065	1452985.99	411597.474	5382.235	1048	0	-0.08	-0.22	0.24	-1.49
1069	1462989.02	411633.8955	5381.65	4-NG	8066	1452989.19	411633.832	5383.02	1069	0	-0.17	0.06	0.19	-1.37
1070	1453039.815	411634.2786	5380.88	4-NG	8067	1453039.37	411634.024	5382.371	1070	0	0.24	0.25	0.35	-1.49
1071	1453087.525	411633.2208	5380.15	4-NG	8088	1453087.51	411633.52	5381.346	1071	0	0.02	-0.30	0.30	-1.20
1072	1453098.407	411633.2068	5379.89	4-NG	8069	1453098.09	411633.595	5381.047	1072	0	0.32	-0.39	0.50	-1.16
1073	1453121.203	411633.1296	5378.82	4-NG	8070	1453120.91	411633.551	5380.183	1073	0	0.29	-0.42	0.51	-1.36
1074	1453135.631	411633.0617	5378.2	4-NG	8089	1453135.47	411633.506	5377.462	1074	0	0.16	-0.44	0.47	-1.26
1077	1453133.88	411683.207	5377.09	4-NG	8100	1453133.95	411683.298	5378.248	1077	0	-0.07	-0.09	0.11	-1.16
1078	1453119.978	411683.4251	5379.31	4-NG	8071	1453120.17	411683.395	5380.847	1078	0	-0.19	0.03	0.20	-1.54
1079	1453100.037	411683.65	5380.53	4-NG	8072	1453100.08	411683.655	5381.926	1079	0	-0.04	-0.01	0.04	-1.40
1080	1453087.998	411683.5577	5380.94	4-NG	8073	1453088.03	411683.424	5382.32	1080	0	-0.03	0.13	0.14	-1.38
1081	1453038.445	411683.4116	5382.03	4-NG	8074	1453038.25	411683.461	5383.287	1081	0	0.20	-0.05	0.21	-1.26
1082	1452988.346	411684.2255	5382.47	4-NG	8075	1452988.31	411684.105	5383.514	1082	0	0.04	0.12	0.13	-1.04
1093	1452987.9	411732.4728	5383.43	4-NG	8076	1452987.81	411732.657	5384.798	1093	0	0.09	-0.18	0.21	-1.37
1094	1453038.326	411733.0576	5382.97	4-NG	8077	1453038.35	411733.048	5384.216	1094	0	-0.03	0.01	0.03	-1.25
1095	1453088.196	411732.5428	5381.97	4-NG	8078	1453087.95	411732.624	5383.265	1095	0	0.25	-0.08	0.26	-1.30
1096	1453099.821	411733.3841	5381.79	4-NG	8079	1453099.87	411733.446	5383.036	1096	0	-0.15	-0.08	0.16	-1.25
1097	1453104.645	411733.8868	5381.6	4-NG	8080	1453104.71	411733.51	5382.791	1097	0	-0.07	0.18	0.19	-1.19
1098	1453116.013	411733.8539	5380.84	4-NG	8081	1453114.96	411734.082	5382.585	1098	0	0.06	-0.23	0.24	-1.74
1099	1453132.795	411733.4958	5377.69	4-NG	8101	1453132.87	411733.614	5379.1	1099	0	0.13	-0.12	0.17	-1.41
1102	1453132.772	411782.9083	5378.68	4-NG	8102	1453132.37	411782.772	5380.2	1102	0	0.40	0.14	0.42	-1.52
1103	1453117.638	411784.1682	5381.61	4-NG	8083	1453117.63	411783.726	5383.151	1103	0	0.01	0.44	0.44	-1.54
1104	1453121.862	411795.0732	5380.99	ORANGE	8082	1453122.42	411795.3	5383.577	1104	0	-0.46	-0.23	0.51	-2.59
1105	1453100.319	411783.3915	5382.73	4-NG	8084	1453100.18	411783.505	5384.152	1105	0	0.14	-0.11	0.18	-1.42
1106	1453088.965	411783.8353	5383.08	4-NG	8085	1453088.85	411784.211	5384.628	1106	0	0.12	-0.38	0.39	-1.55
1112	1453038.061	411783.504	5384.18	4-NG	8086	1453038.1	411783.411	5385.35	1112	0	-0.04	0.09	0.10	-1.17
1113	1452988.713	411784.3371	5384.8	4-NG	8087	1452988.91	411784.492	5385.904	1113	0	-0.19	-0.15	0.25	-1.10
RECHECKS OF 6-5-2009 BIOINTRUSION LAYER QA SHOTS WITH INSUFFICIENT FILL, AFTER REWORK BY EDI														
1192	1452876.76	411590.118	5378.59	4-NG	8089	1452876.67	411590.124	5378.854	1192	0	0.09	-0.01	0.09	-1.26
1190	1452888.844	411586.1968	5378.58	4-NG	8090	1452888.81	411586.207	5378.922	1190	0	0.04	-0.01	0.04	-1.34
1059	1452788.213	411587.2638	5379.3	4-NG	8081	1452788.46	411687.369	5380.494	1059	0	-0.24	-0.11	0.26	-1.19
1056	1452839.657	411586.4578	5379.53	4-NG	8092	1452839.85	411586.695	5380.771	1056	0	-0.19	-0.24	0.31	-1.24

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 006

DATE: 06/15/09

**Attention:** Don Schofield  
 Sandia National Laboratories  
 P.O. Box 5800 MS 1125  
 Albuquerque, NM  
 87185

**URS Corporation**  
 6501 Americas Parkway NE, Ste 900  
 Albuquerque, NM 87110-6367  
 (505) 855-7500

**Subject:** Biointrusion Rock Thickness  
 (Northeast)

URS Project No. 24343640

Item No.	Layer	Description
1.	Biointrusion Layer	Northeast Biointrusion Layer Thickness
2.	Biointrusion Layer	Northwest Biointrusion Layer Thickness Correction (two locations)

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

**Remarks:**

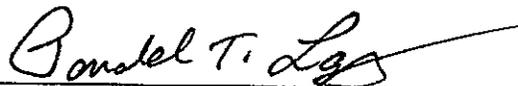
- The northeast portion of the MWL Biointrusion Layer is approved for the placement of soil into the voids.
- The two locations on the north slope of the Biointrusion Layer that were too thick have been corrected, resurveyed, and were approved. The north slope is now approved for the placement of soil into the voids.
- The entire Biointrusion Layer is now approved. Approval includes thickness, side slopes, and surface slope. Side slopes are steeper than 6:1 but will be adjusted during construction of the Native Soil Layer. The east-to-west surface slope is less than 2.0% in some areas consistent with the Existing Subgrade and, will also be adjusted during the construction of the Native Soil Layer.

**Attachments:**

- Northeast Biointrusion QA survey locations with two north slope location corrections.
- QC survey results for the thickness of the Biointrusion Layer.

URS Corporation

Approved By:

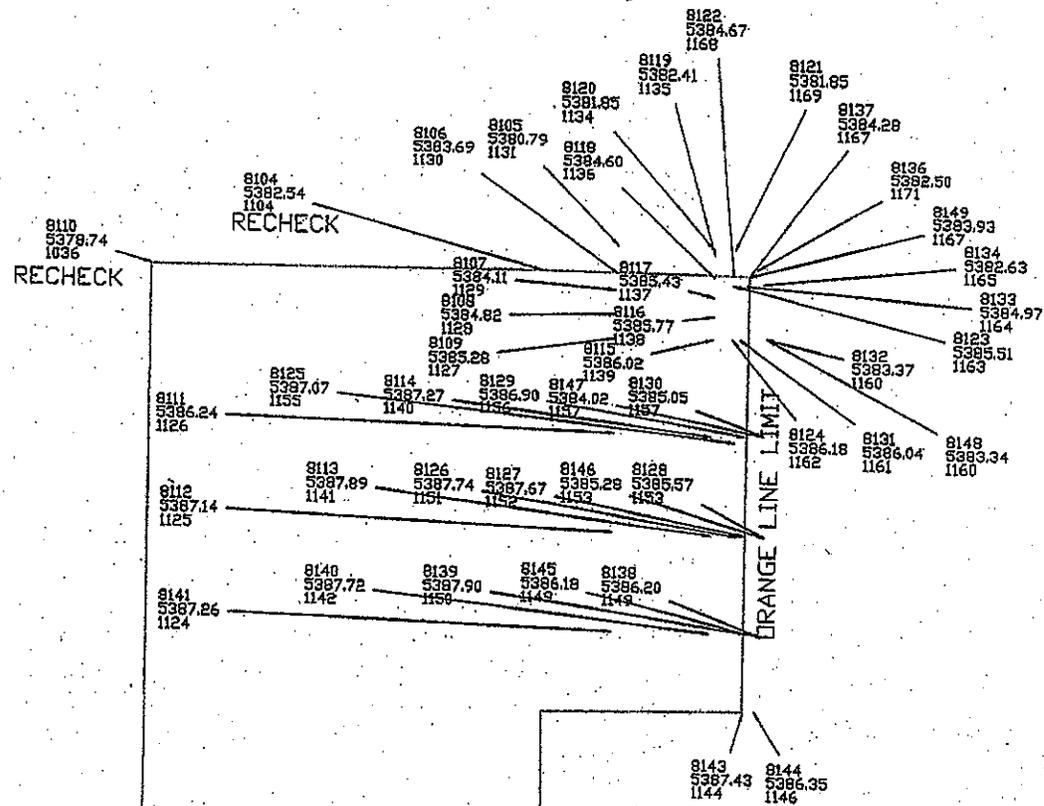


Donald T. Lopez, P.E.  
 CQA Engineer

06/15/09

Date:

# MWL BIOINTRUSION LAYER QA SHOTS 6-12-2009





**BIOINTRUSION LAYER**

**Construction QC Survey Results**

Grid #	Pt. #	Elev.	Δ Total
A1	1747	5380.75	1.26
A2	1755	5381.28	1.13
A3	1758	5382.26	1.32
A4	1761	5383.18	1.21
A5	1770	5384.54	1.46
A6	1806	5385.11	1.28
A7	1820	5386.03	1.20
B1	1777	5381.49	1.33
B2	1754	5382.13	1.25
B3	1759	5383.32	1.29
B4	1760	5384.17	1.20
B5	1769	5385.46	1.28
B6	1805	5386.18	1.12
B7	1821	5387.19	1.17
C1	1778	5382.24	1.50
C2	1746	5382.86	1.21
C3	1711	5383.75	1.28
C4	1712	5384.70	1.27
C5	1713	5385.88	1.08
C6	1835	5386.97	1.21
C7	1834	5387.66	1.29
D1	1719	5382.38	1.26
D2	1710	5383.13	1.28
D3	1709	5383.83	1.12
D4	1708	5384.80	1.25
D5	1707	5385.78	1.03
D6	1847	5387.17	1.27
D7	1837	5387.64	1.28
E1	1717	5382.43	1.23
E2	1702	5383.05	1.29
E3	1703	5383.98	1.21
E4	1704	5384.69	1.11
E5	1705	5385.45	1.17
E5.1	1706	5385.79	1.23

Grid #	Pt. #	Elev.	Δ Total
E6	1846.00	5386.17	1.41
E7	1845.00	5386.91	1.84
F1	1716.00	5382.09	1.11
F2	1701.00	5382.85	1.07
F3	1700.00	5383.8	1.07
F4	1699.00	5384.81	1.28
F5	1698.00	5385.41	1.22
G1	1715.00	5381.97	1.33
G2	1692.00	5382.51	1.24
G3	1749.00	5383.72	1.32
G4	1748.00	5384.4	1.26
G5	1695.00	5385.21	1.23
H1	1714.00	5381.73	1.38
H2	1691.00	5382.33	1.05
H3	1768.00	5383.44	1.44
H4	1766.00	5384.42	1.45
H5	1688.00	5384.94	1.07
I1	1750.00	5381.09	1.27
I2	1751.00	5381.87	1.31
I3	1683.00	5382.73	1.33
I4	1767.00	5383.89	1.33
I5	1685.00	5384.58	1.07
		<b>Average =</b>	<b>1.25</b>

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 007

DATE: 06/17/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: 3.0-inch Thin Soil Layer

URS Project No. 24343640

Item No.	Layer	Description
1.	Thin Soil Layer	3.0-inch nominal thickness Thin Soil Layer.

Approved

Conditionally Approved

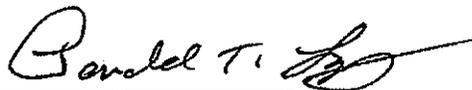
Declined, does not conform to CMIP

Remarks: 1. The 3.0-inch nominal thickness Thin Soil Layer is approved.

Attachments: 1. Thin soil layer thickness verification.

URS Corporation

Approved By:



06/17/09

Donald T. Lopez, P.E. / Marshall C. Noy, P.H.D., P.E. Date:

CQA Engineer

**THIN SOIL LAYER**

**Construction QC Survey Results**

Grid #	Elev.	Pt.#	Δ Total (ft)
A1	5380.94	1905	0.19
A2	5381.54	1904	0.26
A3	5382.43	1903	0.17
A4	5383.46	1923	0.28
A5	5384.78	1929	0.24
A6	5385.40	1940	0.29
A7	5386.35	1955	0.32
B1	5381.74	1900	0.25
B2	5382.39	1921	0.26
B3	5383.51	1901	0.19
B4	5384.47	1902	0.30
B5	5385.61	1928	0.15
B6	5386.39	1939	0.21
B7	5387.26	1950	0.07
C1	5382.38	1898	0.14
C2	5383.15	1920	0.29
C3	5384.05	1897	0.30
C4	5384.94	1896	0.24
C5	5386.01	1895	0.13
C6	5387.26	1938	0.29
C7	5387.96	1949	0.30
D1	5382.59	1889	0.21
D2	5383.35	1892	0.22
D3	5384.07	1891	0.24
D4	5385.08	1893	0.28
D5	5386.01	1894	0.23
D6	5387.35	1931	0.18
D7	5387.94	1953	0.30
E1	5382.71	1882	0.28
E2	5383.20	1886	0.15
E3	5384.24	1883	0.26
E4	5384.97	1884	0.28
E5	5385.75	1885	0.30
E5.1	5386.09	1933	0.30

Grid #	Elev.	Pt.#	Δ Total (ft)
F1	5382.34	1887	0.25
F2	5383.11	1880	0.26
F3	5384.09	1879	0.29
F4	5384.89	1878	0.08
F5	5385.67	1877	0.26
G1	5382.25	1868	0.28
G2	5382.75	1871	0.24
G3	5383.92	1872	0.20
G4	5384.99	1873	0.59
G5	5385.54	1874	0.33
H1	5382.02	1866	0.29
H2	5382.62	1869	0.29
H3	5383.74	1864	0.30
H4	5384.68	1865	0.26
H5	5385.28	1863	0.34
I1	5381.34	1853	0.25
I2	5382.07	1855	0.20
I3	5382.99	1857	0.26
I4	5384.14	1861	0.25
I5	5384.78	1859	0.20
<b>Average =</b>			<b>0.25</b>

# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 008

DATE: 06/22/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: Wedge Lifts 1 & 2 Approval

URS Project No. 24343640

Item No.	Layer	Description
1.	Native Soil Layer	Wedge Lifts 1 and 2 approval

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks:

1. Wedge Lifts 1 and 2 were constructed, tapered, spatially limited lifts to achieve the 2.0% east-to-west design slope. They were constructed and tested in accordance with the CMIP. The slope of the surface still has a couple of areas that do not meet the 2.0% design slope requirement. The 2.0% design slope requirement will be achieved with Native Soil Polishing Lifts 3 and 4.
2. Wedge Lifts 1 and 2 are approved based upon CQA Engineer review of construction team QC survey data (topographic map and profiles).

Attachments:  
None

URS Corporation

Approved By: Donald T. Lopez 06/22/09  
Donald T. Lopez, P.E. / Marshall Nori, PHD, PE Date:  
CQA Engineer

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 009

DATE: 06/30/09

**Attention:** Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

**URS Corporation**  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

**Subject:** Wedge Lifts 3 & 4 Approval

URS Project No. 24343640

Item No.	Layer	Description
1.	Native Soil Layer	Polishing Lifts 3 and 4 approval

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

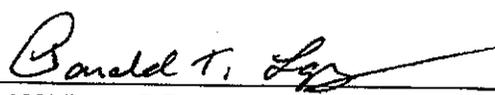
- Remarks:
1. Polishing Lifts 3 and 4 were constructed across the cover surface but with variable thickness to complete the adjustment required to establish the 2.0% east-to-west surface design slope. They were constructed and tested in accordance with the CMIP. Polishing Lifts 3 and 4 are approved.
  2. Polishing Lifts 3 and 4 are approved based upon review of Construction Team QC survey data (topographic map and profiles).

Attachments:

None

URS Corporation

Approved By:



Donald T. Lopez, P.E.  
CQA Engineer

06/30/09

Date:

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 010

DATE: 7/30/09

Attention: **Don Schofield**  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

**URS Corporation**  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: **Native Soil Layer Approval**

URS Project No. 24343640

Item No.	Layer	Description
1	Native Soil Layer	Native Soil Layer approval

Approved, conforms to CMIP

Conditionally Approved

Declined, does not conform to CMIP

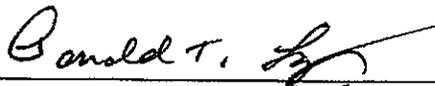
Remarks:

1. The Native Soil Layer was constructed and tested in accordance with the CMIP with the exception of 9 locations which were below the 30-inch thickness requirement. The Native Soil Layer is approved for the placement of the Topsoil Layer with the exception of the 9 low locations. The 9 locations must be corrected, resurveyed, and approved prior to the placement of the Topsoil Layer.
2. The 9 locations requiring additional soil were identified through review of both the QC and QA survey results, and likely represents high spots in the underlying Biointrusion Layer.

Attachments: 1. None

URS Corporation

Approved By:



07/30/09

Donald T. Lopez, P.E.

Date:

CQA Engineer

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 011

DATE: 8/04/09

Attention: Don Schofield  
 Sandia National Laboratories  
 P.O. Box 5800 MS 1125  
 Albuquerque, NM  
 87185

URS Corporation  
 6501 Americas Parkway NE, Ste 900  
 Albuquerque, NM 87110-6367  
 (505) 855-7500

Subject: Native Soil Corrections Approval

URS Project No. 24343640

Item No.	Layer	Description
1.	Native Soil Layer	Native Soil Layer Corrections (9 locations), 2.0% east-to-west surface design slope and 6:1 side slopes.

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks:

- The 9 locations previously identified as low areas have been corrected, resurveyed, and are approved. The Native Soil Layer was constructed and tested in accordance with the CMIP and is approved for the placement of the Topsoil Layer.
- Native Soil Layer thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes are approved based upon the QA verification survey and review of the Construction Team QC survey data (topographic map and profiles).

Attachments:

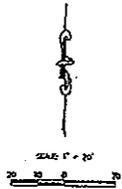
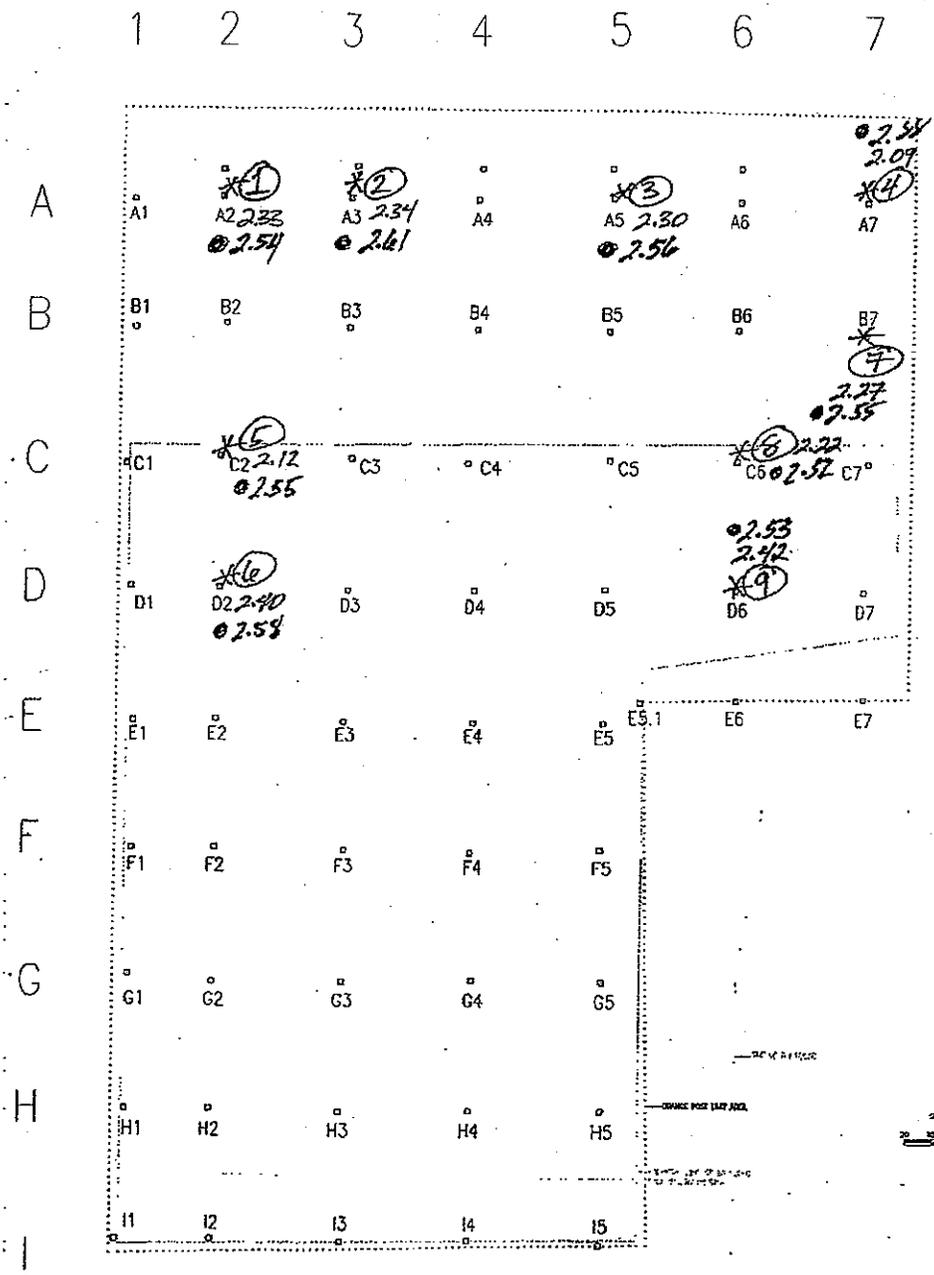
- Map showing 9 locations and thickness pre/post adjustment.
- QC survey results for the thickness of the Native Soil Layer.

URS Corporation

Approved By: Donald T. Lopez      08/12/09  
 Donald T. Lopez, P.E.      Date:  
 CQA Engineer

SPREAD SHEET DIAGRAM

⊙ = Post Adjustment  
 ⊕ = Pre-Adjustment



**NATIVE SOIL LAYER**

**Construction QC Survey Results**

Grid #	Pt. #	Elev.	Δ Total
A1	5311	5383.51	2.76
A2	5310	5384.04	2.76
A3	5307	5384.93	2.67
A4	5306	5385.99	2.81
A5	5290	5387.28	2.74
A6	5289	5387.93	2.82
A7	5347	5388.54	2.51
B1	5312	5384.36	2.87
B2	5309	5384.87	2.74
B3	5300	5385.98	2.66
B4	5305	5386.99	2.82
B5	5291	5388.09	2.63
B6	5292	5388.92	2.74
B7	5346	5389.37	2.18
C1	5313	5384.87	2.63
C2	5340	5385.59	2.73
C3	5315	5386.61	2.86
C4	5304	5387.52	2.82
C5	5294	5388.59	2.71
C6	5345	5389.57	2.60
C7	5293	5390.48	2.82
D1	5314	5385.09	2.71
D2	5341	5385.77	2.64
D3	5316	5386.80	2.97
D4	5303	5387.77	2.97
D5	5295	5388.73	2.95
D6	5296	5389.74	2.57
D7	5297	5390.77	3.13
E1	5319	5385.22	2.79
E2	5318	5385.86	2.81
E3	5317	5386.84	2.86
E4	5302	5387.85	3.16
E5	5301	5388.85	3.40
E5.1	5300	5389.12	3.33
E6	5299	5389.83	3.66
E7	5298	5390.89	3.98

Grid #	Pt. #	Elev.	Δ Total
F1	5320	5384.87	2.78
F2	5321	5385.49	2.64
F3	5322	5386.57	2.77
F4	5323	5387.48	2.67
F5	5324	5388.46	3.05
G1	5329	5384.75	2.78
G2	5328	5385.34	2.83
G3	5327	5386.42	2.70
G4	5326	5387.44	3.04
G5	5325	5388.41	3.20
H1	5330	5384.43	2.70
H2	5331	5385.17	2.84
H3	5332	5386.19	2.75
H4	5333	5387.20	2.78
H5	5334	5388.19	3.25
I1	5339	5383.82	2.73
I2	5338	5384.53	2.66
I3	5337	5385.70	2.97
I4	5336	5386.59	2.70
I5	5335	5387.60	3.02
<b>Average =</b>			<b>2.85</b>

# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 012

DATE: 8/12/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: Topsoil Layer Approval

URS Project No. 24343640

Item No.	Layer	Description
1.	Topsoil Layer	Approval of Topsoil Layer

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks:

1. The Topsoil Layer was constructed in accordance with the CMIP. Thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes verified and meet specifications. The Topsoil layer is approved.
2. Topsoil Layer thickness, 2.0% east-to-west surface design slope, and 6:1 side slopes are approved based upon the QA verification survey and review of the Construction Team QC survey data (topographic map and profiles).

Attachments:

1. QC survey results for the thickness of the Topsoil Layer.

URS Corporation

Approved By:

Donald T. Lopez, P.E.  
CQA Engineer

08/12/09

Date:

**TOPSOIL LAYER**

**Construction QC Survey Results**

Grid #	Pt.#	Elev.	Δ Total (Ft)
A1	5256	5384.52	1.01
A2	5262	5385.03	0.99
A3	5264	5385.99	1.06
A4	5267	5387.02	1.03
A5	5274	5388.33	1.05
A6	5279	5388.89	0.96
A7	5281	5389.58	1.04
B1	5276	5385.40	1.04
B2	5261	5385.90	1.03
B3	5265	5387.00	1.02
B4	5266	5388.01	1.02
B5	5273	5389.08	0.99
B6	5278	5389.87	0.95
B7	5282	5390.50	1.13
C1	5277	5385.88	1.01
C2	5255	5386.56	0.97
C3	5247	5387.60	0.99
C4	5248	5388.55	1.03
C5	5249	5389.59	1.00
C6	5284	5390.65	1.08
C7	5283	5391.59	1.11
D1	5254	5386.07	0.98
D2	5246	5386.78	1.01
D3	5245	5387.78	0.98
D4	5244	5388.78	1.01
D5	5243	5389.77	1.04
D6	5288	5390.78	1.04
D7	5285	5391.79	1.02
E1	5253	5386.21	0.99
E2	5238	5386.84	0.98
E3	5239	5387.84	1.00
E4	5240	5388.83	0.98
E5	5241	5389.82	0.97
E5.1	5242	5390.06	0.94

Grid #	Pt.#	Elev.	Δ Total
F1	5252	5385.88	1.01
F2	5237	5386.52	1.03
F3	5236	5387.61	1.04
F4	5235	5388.63	1.15
F5	5234	5389.49	1.03
G1	5251	5385.77	1.02
G2	5232	5386.42	1.08
G3	5258	5387.49	1.07
G4	5257	5388.45	1.01
G5	5233	5389.39	0.98
H1	5250	5385.52	1.09
H2	5231	5386.19	1.02
H3	5272	5387.24	1.05
H4	5270	5388.27	1.07
H5	5230	5389.27	1.08
I1	5259	5384.83	1.01
I2	5260	5385.55	1.02
I3	5228	5386.64	0.94
I4	5271	5387.66	1.07
I5	5229	5388.60	1.00
<b>Average =</b>			<b>1.02</b>

# MIXED WASTE LANDFILL APPROVAL FORM



AP #: 013

DATE: 8/25/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: Seeding, Fertilizer and Mulching  
Modification

URS Project No. 24343640

Item No.	Layer	Description
1.	Seeding	CMIP Reclamation Seeding and Mulching Modification
2.	Fertilizer	Elimination of fertilizer
3.	Mulch	Mulch Approved

Approved, conforms to CMIP       Conditionally Approved       Declined, does not conform to CMIP

Remarks:

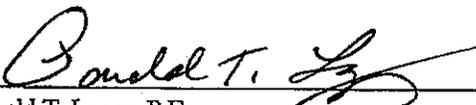
1. CMIP modification for reclamation seeding and mulching is approved.
2. Hand broadcasting used in addition to drill seeding to minimize compaction of the Topsoil Layer by minimizing the number of passes required by the tractor pulling the drill seeder. Additional passes would have been necessary to accommodate the increase of seeding rate.
3. Fertilizer not used based upon recommendation from Sandia Staff Biologist. Fertilizer used late in the growing season can make plants more susceptible to frost damage.

Attachments:

1. Email from Don Schofield requesting modification for increased seeding rate and elimination of fertilizer.

URS Corporation

Approved By:

  
Donald T. Lopez, P.E.

8/25/09

Date:

CQA Engineer



Don Lopez/Albuquerque/URSCorp  
08/05/2009 04:45 PM

To "Schofield, Donald P" <dpschof@sandia.gov>  
cc "Mitchell, Mike M" <mmitch@sandia.gov>, Marshall  
Nay/Albuquerque/URSCorp@URSCorp, Paul  
Molina/Albuquerque/URSCorp@URSCorp, Jack  
bcc

Subject Re: CMIP Reveg Modification

Don, Thanks for this mod. We will incorporate this modification in to our CQA effort and the report.

**DONALD T. LOPEZ, PE**  
PRINCIPAL CIVIL/GEOTECHNICAL ENGINEER  
INFRASTRUCTURE GROUP LEADER  
6501 AMERICAS PARKWAY NE, SUITE 900  
ALBUQUERQUE, NEW MEXICO 87110  
PH. 505.855.7500 FX. 505.855.7555  
CL. 505.301.5965



This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

"Schofield, Donald P" <dpschof@sandia.gov>



"Schofield, Donald P"  
<dpschof@sandia.gov>  
08/05/2009 09:59 AM

To "Don\_Lopez@URSCorp.com"  
<Don\_Lopez@URSCorp.com>  
cc "Mitchell, Mike M" <mmitch@sandia.gov>  
Subject CMIP Reveg Modification

Mr. Lopez - Sandia National Laboratories (SNL) is approving a modification to the Mixed Waste Landfill (MWL) Corrective Measures Implementation Plan (CMIP) with regards to the revegetation specifications. These modifications come at the request of SNL's staff biologist, and are:

- uniform seeding rate of 80 pounds seed mix per acre (4x CMIP).
- no fertilizer added due to timing (August) of seeding.
- supplemental watering to assist seed germination and root development.

Please incorporate these modifications into URS's CQA effort. Thank you, Donald P. Schofield.

# MIXED WASTE LANDFILL APPROVAL FORM

# URS

AP #: 014

DATE: 9/02/09

Attention: Don Schofield  
Sandia National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

URS Corporation  
6501 Americas Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

Subject: CMIP Re-Vegetation Modification

URS Project No. 24343640

Item No.	Layer	Description
1.	Topsoil Layer placement of seed and mulch	Placement of seed and mulch approved

 Approved, conforms to CMIP Conditionally Approved Declined, does not conform to CMIP

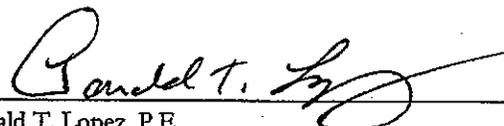
Remarks:

1. The placement of seed and mulch is approved based on visual inspection.

Attachments: 1. None.

URS Corporation

Approved By:

  
Donald T. Lopez, P.E.  
CQA Engineer

9/02/09

Date:

## **ATTACHMENT 3**

### **Daily Quality Control Reports**



## **2006 Daily Quality Control Reports**



**2006 Daily Quality Control Reports**

**October 2006**





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/2/2006	REPORT NO. 001
--------------	---	-------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low	40s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	Weekly Meeting / CQA
Kelly Peil	CQA Engineer	MKM	Weekly Meeting

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Collected initial proctor for subgrade material and proctor for existing surface

**SUMMARY OF MEETINGS HELD & ATTENDEES**

Weekly Managers' Meeting, attendees included Tim Goering, Joe Fritts, Kelly Peil, Anthony Martinez, Stacy Griffin, Ben Martinez, Corey Woods, Tony Shurter, Brian Fockett, and Don Schofield. See Agenda and Record of Meeting.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: TI-04

	10/2/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/3/2006	REPORT NO. 002
--------------	---	-------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**  
None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**  
None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*  
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**  
None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

<u><i>[Signature]</i></u> QC INSPECTOR	<u>10/3/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	------------------------	--	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia <del>EWL</del> CQA	DATE 10/4/2006	REPORT NO. 003
--------------	--	-------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

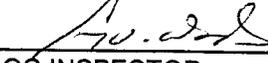
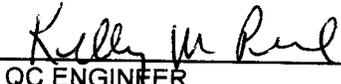
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: None.

 QC INSPECTOR	<u>10/4/06</u> DATE	 QC ENGINEER	<u>10/4/06</u> DATE
---	------------------------	---	------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>QWL</del> CQA	DATE 10/5/2006	REPORT NO. 004
--------------	---	-------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

None.

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

*[Signature]*      10/5/06      *Kelly M Reed*      16 Nov 06  
QC INSPECTOR      DATE      QC ENGINEER      DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 10/9/2006	REPORT NO. 005
--------------	---	-------------------	-------------------

WEATHER Heavy rains	TEMPERATURE Low 40s High 50s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: None.

<u><i>[Signature]</i></u> QC INSPECTOR	<u>10/9/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	------------------------	--	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>SWE</del> CQA	DATE 10/10/2006	REPORT NO. 006
WEATHER Rain in a.m., clearing in p.m.	TEMPERATURE Low 40s High 60s		
WEATHER EFFECTS			

### PERSONNEL ON-SITE

( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	Meeting
Kelly Peil	CQA Engineer	MKM	Meeting

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

Weekly Managers' Meeting, attendees included Anthony Martinez, Paula Schuh, Don Lopez, Kelly Peil, Joe Fritts, Corey Woods, Harry Buckner, Don Schofield, Tony Shurter, Brian Hunt. See Agenda and Record of Meeting.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: None.

*[Signature]*  
QC INSPECTOR

*10/10/06*  
DATE

*Kelly M Peil*  
QC ENGINEER

*16 Nov 06*  
DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 10/11/2006	REPORT NO. 007
WEATHER Clear, Cool		TEMPERATURE Low	40s High 60s

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

*[Signature]*      10/11/06      *Kelly M Paul*      16 Nov 06  
 QC INSPECTOR      DATE      QC ENGINEER      DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL Sandia <del>SWL</del> CQA</i>	DATE 10/12/2006	REPORT NO. 008
--------------	--	--------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**  
None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**  
None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*  
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**  
None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

*[Signature]*      10/12/06      *[Signature]*      16 Nov 06  
 QC INSPECTOR      DATE      QC ENGINEER      DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 10/16/2006	REPORT NO. 009
--------------	---	--------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Kelly Peil	CQA Engineer	MKM	Site Audit

WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  Yes  No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

None.

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

*[Signature]*      10/16/06      *Kelly M Peil*      16 Nov 06  
QC INSPECTOR      DATE      QC ENGINEER      DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia CWL CQA	DATE 10/17/2006	REPORT NO. 010
--------------	--	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low 40s High 70s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

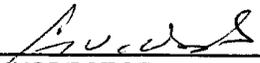
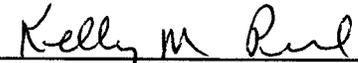
### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

	10/17/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> <i>Sandia GWT CQA</i>	DATE <i>10/18/2006</i>	REPORT NO. <i>011</i>
--------------	---	---------------------------	--------------------------

WEATHER <i>Clear, Warm</i>	TEMPERATURE <i>Low 40s High 70s</i>
-------------------------------	--

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

<i>[Signature]</i> QC INSPECTOR	<i>10/18/06</i> DATE	<i>Kelly M Paul</i> QC ENGINEER	<i>16 Nov 06</i> DATE
------------------------------------	-------------------------	------------------------------------	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/19/2006	REPORT NO. 012
--------------	---	--------------------	-------------------

WEATHER Mostly cloudy, cool	TEMPERATURE Low 40s High 50s
--------------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	Meeting
Kelly Peil	CQA Engineer	MKM	Meeting

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

Weekly Managers' Meeting. Attendees included Dick Fate, Joe Fritts, Don Schofield, Tim Goering, Ben Martinez, Kelly Peil, Corey Woods, Don Lopez, Paula Schuh, Anthony Martinez, Brian Fockett. See Agenda and Record of Meeting.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: None.

*[Signature]*      10/19/06      *Kelly M Peil*      16 Nov 06  
 QC INSPECTOR      DATE      QC ENGINEER      DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/23/2006	REPORT NO. 013
--------------	---	--------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

<u><i>[Signature]</i></u> QC INSPECTOR	<u>10/23/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	-------------------------	--	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>EWL</del> CQA	DATE 10/24/2006	REPORT NO. 014
--------------	---	--------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

PERSONNEL ON-SITE  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: None.

<u>Corey Woods</u>	<u>10/24/06</u>	<u>Kelly M Reul</u>	<u>16 Nov 06</u>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 10/25/2006	REPORT NO. 015
--------------	---	--------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low	40s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

PERSONNEL ON-SITE  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Wes Newman	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing on existing surface. Moisture levels low, tests not recorded.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

Moisture levels on existing surface are low, crew will add water over next two days, will retest on 10/27.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-01

<u><i>[Signature]</i></u> QC INSPECTOR	<u>10/25/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>10/25/06</u> DATE
---	-------------------------	--	-------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/26/2006	REPORT NO. 016
--------------	---	--------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

None.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

Moisture levels on existing surface are low, crew adding water, will retest on 10/27.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None.

<u><i>[Signature]</i></u> QC INSPECTOR	<u>10/26/06</u> DATE	<u><i>Kelly M Ruel</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	-------------------------	---	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <b>MWL</b> Sandia <del>CWL</del> CQA	DATE 10/27/2006	REPORT NO. 017
--------------	---	--------------------	-------------------

WEATHER Clear, cool	TEMPERATURE Low 40s High 50s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Wes Newman	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

Performed compaction testing on existing surface, test numbers MWL-ES1-001 through -015. Also collected additional samples for proctor analysis, sample numbers MWL-ES-002, -003, and -004.

### SUMMARY OF MEETINGS HELD & ATTENDEES

Meeting held between Corey Woods and Joe Fritts regarding existing surface moisture levels. Decision was made to proceed with subgrade installation. Kelly Peil, CQA Engineer, concurred with decision.

### LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)

Moisture levels still low on existing surface after adding water for two days. Decision was made that moisture levels cannot be consistently obtained, will proceed with subgrade installation. Density measurements meet specification (90% maximum) at all locations.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: TI-01, TI-04, and TI-07

	10/27/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 10/30/2006	REPORT NO. 018
--------------	---	--------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**  
None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**  
None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*  
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**  
None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

<u><i>Corey Woods</i></u> QC INSPECTOR	<u><i>10/30/06</i></u> DATE	<u><i>Kelly M Paul</i></u> QC ENGINEER	<u><i>16 Nov 06</i></u> DATE
---	--------------------------------	---	---------------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <b>MWL Sandia <del>CWL</del> CQA</b>	DATE 10/31/2006	REPORT NO. 019
--------------	--	--------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction tests on Lifts 1 through 4, all tests passed (See TI-07). Also collected samples for proctor analysis from subgrade stockpile, sample numbers MWL-SG-002, -003, and -004.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

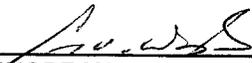
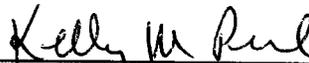
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

	10/31/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE



# **2006 Daily Quality Control Reports**

**November 2006**





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 11/1/2006	REPORT NO. 020
--------------	---	-------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

PERSONNEL ON-SITE  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Kelly Peil	CQA Engineer	MKM	Meeting
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

Performed compaction tests on Lifts 4 and 5, all tests passed (See TI-07).

SUMMARY OF MEETINGS HELD & ATTENDEES

Weekly Managers' Meeting, attendees included Don Schofield, Don Lopez, Corey Woods, Ben Martinez, Joe Fritts, Tim Goering, Kelly Peil, Harry Buckner, Anthony Martinez, Stewart Pike, and Stacy Griffith. See Agenda and Record of Meeting.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

<u><i>[Signature]</i></u> QC INSPECTOR	<u>11/1/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	------------------------	--	--------------------------









MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <b>MWL</b> Sandia <del>GW</del> CQA	DATE 11/6/2006	REPORT NO. 022
--------------	--	-------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction tests on Lift 7, all tests passed (See TI-07).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

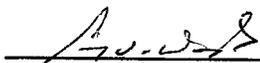
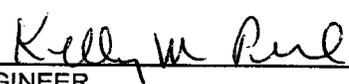
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

	11/6/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>EWL</del> CQA	DATE 11/7/2006	REPORT NO. 023
--------------	---	-------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 60s
------------------------	---------------------------------

WEATHER EFFECTS

PERSONNEL ON-SITE  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

Performed compaction tests on Lifts 8 and 9, all tests passed (See TI-07).

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

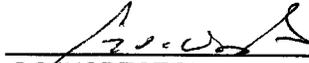
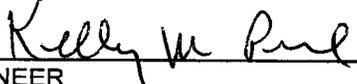
LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

	11/7/06		16 Nov 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>EWL</del> CQA	DATE 11/8/2006	REPORT NO. 024
--------------	---	-------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 70s
------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction test on Lift 9, test passed (See TI-07). Collected three samples for proctor analysis from 2" minus stockpile.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

<u><i>Corey Woods</i></u>	<u>11/8/06</u>	<u><i>Kelly M Paul</i></u>	<u>16 Nov 06</u>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 11/9/2006	REPORT NO. 025
--------------	---	-------------------	-------------------

WEATHER Clear, warm	TEMPERATURE Low 40s High 70s
------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing/Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

Performed compaction tests on Lifts 9 and 10, all tests passed (See TI-07).

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

<u><i>Corey Woods</i></u> QC INSPECTOR	<u>11/9/06</u> DATE	<u><i>Kelly M. Paul</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	------------------------	--	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL Sandia CWL CQA</i>	DATE 11/13/2006	REPORT NO. 026
--------------	---	--------------------	-------------------

WEATHER Overcast, Cool	TEMPERATURE Low 40s High 50s
---------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

None.

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

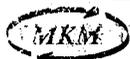
MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

<u><i>Corey Woods</i></u> QC INSPECTOR	<u>11/13/06</u> DATE	<u><i>Kelly M Paul</i></u> QC ENGINEER	<u>16 Nov 06</u> DATE
---	-------------------------	---	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 11/14/2006	REPORT NO. 027
--------------	---	--------------------	-------------------

WEATHER Overcast, cool, high winds	TEMPERATURE Low 40s High 60s
---------------------------------------	---------------------------------

WEATHER EFFECTS Field activities shut down at 1330 due to high winds

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Kelly Peil	CQA Engineer	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing/sample collection

WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  Yes  No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

Performed compaction testing on Lift 10, all tests passed (see TI-07). Collected three samples for proctor analysis.

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

	11/14/06		7 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia CWL CQA	DATE 11/15/2006	REPORT NO. 028
--------------	---	--------------------	-------------------

WEATHER Overcast, cool	TEMPERATURE Low 30s High 50s
---------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing on Lift 11, all tests passed (see TI-07).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

	11/15/06		7 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 11/16/2006	REPORT NO. 29
--------------	---	--------------------	------------------

WEATHER Overcast, cool	TEMPERATURE Low	30s High 50s
---------------------------	--------------------	--------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Kelly Peil	CQA Engineer	MKM	CQA/Meeting
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing on Lift 11, all tests passed (see TI-07).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

Managers' Meeting, attendees included Kelly Peil, Don Schofield, Joe Fritts, Jerry Peace, Tim Goering, Stacy Griffith, Corey Woods, Ben Martinez, Anthony Martinez, Tony Shurter, and Harry Buckner. See Agenda and Meeting Notes.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

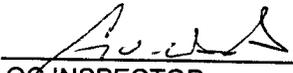
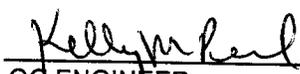
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

	<i>11/16/06</i>		<i>7 Dec 06</i>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 11/20/2006	REPORT NO. 030
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low 30s High 60s
------------------------	---------------------------------

PERSONNEL ON-SITE  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

DESCRIPTION OF TESTING PERFORMED

Performed compaction testing on Lift 11, all tests passed (see TI-07). Collected three proctor samples, MWL-SG-016, -017, and -018.

SUMMARY OF MEETINGS HELD & ATTENDEES

None.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

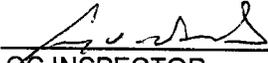
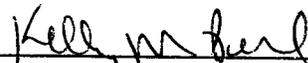
None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

 QC INSPECTOR	<i>11/20/06</i> DATE	 QC ENGINEER	<i>7 Dec 06</i> DATE
---	-------------------------	---	-------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 11/21/2006	REPORT NO. 031
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low 30s High 60s
WEATHER EFFECTS	

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing on Lift 11, all tests passed (see TI-07).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

<u><i>Corey Woods</i></u>	<u>11/21/06</u>	<u><i>Kelly M Paul</i></u>	<u>7 Dec 06</u>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia CWL CQA	DATE 11/22/2006	REPORT NO. 032
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low	30s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed final compaction test on Lift 11, test passed (see TI-07).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

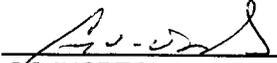
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, and TI-07

	11/22/06		7 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 11/27/2006	REPORT NO. 033
--------------	---	--------------------	-------------------

WEATHER Overcast, breezy	TEMPERATURE Low 20s High 50s
-----------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Collected three samples for proctor analysis from 2" screened stockpile at CAMU Borrow Area, MWL-SG-019, -020, and -021.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: TI-04

<u><i>Corey Woods</i></u> QC INSPECTOR	<u>11/27/06</u> DATE	<u><i>Kelly M Paul</i></u> QC ENGINEER	<u>7 Dec 06</u> DATE
---	-------------------------	---	-------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL Sandia GWL CQA</i>	DATE 11/28/2006	REPORT NO. 034
--------------	---	--------------------	-------------------

WEATHER Overcast, breezy	TEMPERATURE Low 20s High 50s
-----------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No  
 WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

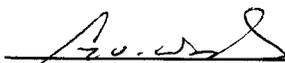
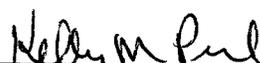
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

	<i>11/28/06</i>		<i>7 Dec 06</i>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia GWL CQA	DATE 11/29/2006	REPORT NO. 035
--------------	---	--------------------	-------------------

WEATHER Overcast, intermittent snow	TEMPERATURE Low	10s High 30s
--	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

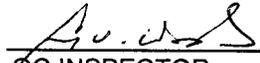
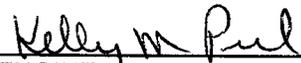
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02

	11/29/06		7 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 11/30/2006	REPORT NO. 036
--------------	---	--------------------	-------------------

WEATHER Overcast, cold	TEMPERATURE Low 10s High 30s
---------------------------	---------------------------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction tests on Lift 12, all tests passed. See TI-07.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: TI-02, TI-07

<u><i>[Signature]</i></u> QC INSPECTOR	<u>11/30/06</u> DATE	<u><i>[Signature]</i></u> QC ENGINEER	<u>7 Dec 06</u> DATE
---	-------------------------	--	-------------------------



**2006 Daily Quality Control Reports**

**December 2006**





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWE</del> CQA	DATE 12/4/2006	REPORT NO. 037
--------------	---	-------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low	20s High 50s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

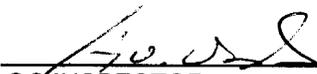
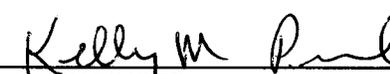
**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

	12/4/06		27 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>OWL</del> CQA	DATE 12/5/2006	REPORT NO. 038
--------------	---	-------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low	20s High 50s
------------------------	--------------------	-----------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing, Lift 12, all tests passed. Collected one additional proctor from newly screened material (MWL-SG-022).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, TI-07

 QC INSPECTOR	<i>12/5/06</i> DATE	 QC ENGINEER	<i>27 Dec 06</i> DATE
---	------------------------	---	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 12/6/2006	REPORT NO. 039
--------------	---	-------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low	20s High 50s
------------------------	--------------------	-----------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

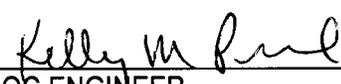
**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

 QC INSPECTOR	<i>12/6/06</i> DATE	 QC ENGINEER	<i>27 Dec 06</i> DATE
---	------------------------	---	--------------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWE</del> CQA	DATE 12/7/2006	REPORT NO. 040
--------------	---	-------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low	20s High 50s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

Performed compaction testing on Lift 12, all tests passed, see form TI-07.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

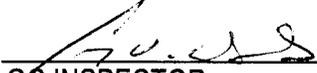
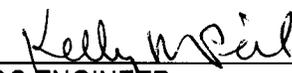
None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-07

	12/7/06		27 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION Sandia <sup>MWL</sup> <del>GWL</del> CQA	DATE 12/11/2006	REPORT NO. 041
--------------	--	--------------------	-------------------

WEATHER Clear, Cool	TEMPERATURE Low	20s High 50s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

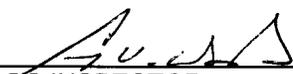
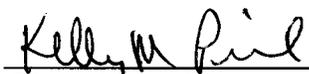
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

 QC INSPECTOR	12/11/06 DATE	 QC ENGINEER	27 Dec 06 DATE
---	------------------	---	-------------------





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia-GWL CQA	DATE 12/12/2006	REPORT NO. 042
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low	20s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

AMEC on site to conduct compaction testing, but proctor results have not been completed, so no tests performed. Collected two additional samples for proctor analysis (MWL-SG-023 and -024).

**SUMMARY OF MEETINGS HELD & ATTENDEES**

Managers' Meeting held. Attendees included Joe Fritts, Tim Goering, Corey Woods, Harry Buckner, Ben Martinez, Anthony Martinez. See Agenda and Record of Meeting.

**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: TI-04

	12/12/06		27 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>EWL</del> CQA	DATE 12/13/2006	REPORT NO. 043
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low	20s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

AMEC on site to conduct compaction testing, Lift 12, all tests passed. See Form TI-07.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

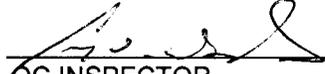
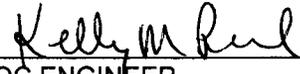
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: TI-02, TI-07


12/13/06

27 Dec 06

**QC INSPECTOR**
**DATE**
**QC ENGINEER**
**DATE**





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia GWC CQA	DATE 12/14/2006	REPORT NO. 044
--------------	---	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low	20s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

### PERSONNEL ON-SITE

( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Sample Collection

WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  Yes  No

*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

AMEC collected two additional samples for proctor analysis from newly screened material, MWL-SG-025 and -026.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-04

QC INSPECTOR

12/14/06  
DATE

QC ENGINEER

27 Dec 06  
DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION Sandia <sup>mw</sup> CWT CQA	DATE 12/15/2006	REPORT NO. 045
--------------	--	--------------------	-------------------

WEATHER Clear, Warm	TEMPERATURE Low	20s High 60s
------------------------	--------------------	--------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Miguel Chavez	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

AMEC on site to conduct compaction testing, all tests passed, see Form TI-07.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)

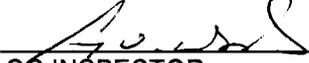
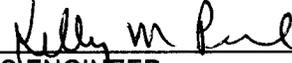
None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-07

	12/15/06		27 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION MWL Sandia <del>CWL</del> CQA	DATE 12/18/2006	REPORT NO. 046
--------------	--	--------------------	-------------------

WEATHER Overcast, cold, windy	TEMPERATURE Low 10s High 40s
----------------------------------	---------------------------------

WEATHER EFFECTS

### PERSONNEL ON-SITE ( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA
Robert Carr	Technician	AMEC	Compaction Testing

WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  Yes  No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

### DESCRIPTION OF TESTING PERFORMED

AMEC on site to conduct compaction testing, all tests passed, see Form TI-07.

### SUMMARY OF MEETINGS HELD & ATTENDEES

None.

### LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)

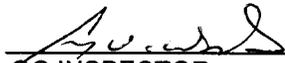
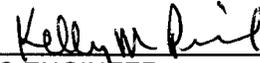
None.

### MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-07

	12/18/06		27 Dec 06
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 12/19/2006	REPORT NO. 047
--------------	---	--------------------	-------------------

WEATHER Cold, windy, intermittent snow	TEMPERATURE Low	10s High 30s
---	--------------------	--------------

WEATHER EFFECTS

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY
Corey Woods	CQA Inspector	MKM	CQA

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

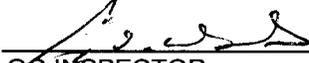
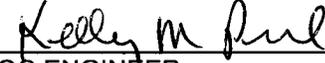
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: CI-02

	<i>12/19/06</i>		<i>27 Dec 06</i>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>CWL</del> CQA	DATE 12/20/2006	REPORT NO. 048
--------------	---	--------------------	-------------------

WEATHER Snow	TEMPERATURE Low	10s High 30s
-----------------	--------------------	--------------

WEATHER EFFECTS No personnel on site due to snow.

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No

*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

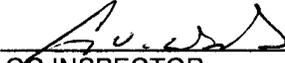
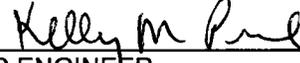
**LOCATION AND DESCRIPTION OF DEFICIENCIES (Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)**

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None

	<i>12/20/06</i>		<i>27 Dec 06</i>
QC INSPECTOR	DATE	QC ENGINEER	DATE





MKM Engineers, Inc.

# DAILY QUALITY CONTROL REPORT

CONTRACT NO.	PROJECT TITLE / LOCATION <i>MWL</i> Sandia <del>GWL</del> CQA	DATE 12/21/2006	REPORT NO. 049
--------------	---	--------------------	-------------------

WEATHER Cold, muddy conditions	TEMPERATURE Low 10s High 30s
-----------------------------------	---------------------------------

WEATHER EFFECTS Final grading operations not conducted due to snow and muddy conditions

**PERSONNEL ON-SITE**  
( If space provided below is inadequate, use additional sheets )

NAME	POSITION	EMPLOYER	ACTIVITY

WAS A JOB SAFETY MEETING HELD THIS DATE?       Yes       No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?       Yes       No  
*(if yes, attach meeting copy of completed OSHA / accident report)*

**DESCRIPTION OF TESTING PERFORMED**

None.

**SUMMARY OF MEETINGS HELD & ATTENDEES**

None.

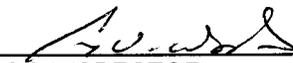
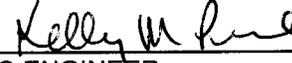
**LOCATION AND DESCRIPTION OF DEFICIENCIES** *(Materials, Equipment, Safety, and/or Workmanship / Action taken or to be taken)*

None.

**MATERIAL or EQUIPMENT RECEIVED or RELEASED:**

None.

CALIBRATIONS: None.  
DAILY INSPECTION CHECKLISTS: None

 QC INSPECTOR	<i>12/21/06</i> DATE	 QC ENGINEER	<i>27 Dec 06</i> DATE
---	-------------------------	---	--------------------------



## **2009 Daily Quality Control Reports**



2009 MWL Daily Summary Report Data Location Table:

Throughout construction in 2009 of the MWL ET Cover, Daily Quality Control Reports were prepared by URS CQA personnel as specified in the CMIP CQA Plan (Appendix B, SNL/NM November 2005). The Daily QC Reports included information such as text describing construction activities and daily tasks, meeting summaries, equipment used, personnel on site, inspection checklists/forms, sketches of placed material, field and laboratory testing activities, verification survey activities, etc. All of the information listed above was included in one comprehensive Daily QC Report volume, compiled throughout the duration of the project. At the conclusion of the MWL ET Cover Construction Project, the daily reports were reviewed and finalized in preparation for inclusion as an Attachment within the MWL Alternative Cover CQA Report.

All references to attached information, drawings (i.e. `dwg_xx/xx/09_Construction_0x`), Appendices, and photos within 2009 Daily QC Reports included in Attachment 3 are no longer valid. Please refer to the cross-reference list provided below for the location of this information in the MWL Alternative Cover CQA Report.

Description:	CQA Report Location:
2009 Daily QC Summary Reports (text describing construction procedures and daily tasks)	Attachment 3
Summary of 2009 ET Cover construction activities and schedule	Table 1
Daily sign-in sheet and visitors log	Not Included <sup>1</sup>
Survey verification grid points and field testing grid blocks	Figure 18
Daily Tailgate Meeting Forms	Not Included <sup>1</sup>
Quality Resolution Meetings and Cover Layer Approval Forms	Table 3
2009 Saturated Hydraulic Conductivity test results	Table 8 and Attachment 7
2009 Standard Proctor, Gradation, and Classification test results	Tables 5-7 and Attachment 7
List of heavy equipment used the MWL ET Cover construction	Table 13
Approximate surface area of material placed	2009 Photographic Log in tabbed section at end of report, Volume 1
Locations of QC and CQA density and moisture tests	Figures 21-29
Location of grubbed material after it was removed from the MWL Subgrade surface.	Not Included <sup>1</sup>
Receiving, construction, and testing inspection forms	Attachments 4-6
QC survey data provided by EDi	Table 12 and 2009 Alternative Cover As-Built Drawings Figure No. 1 - 4 in tabbed section at end of report, Volume 1.
QA verification surveys performed by URS	Quality Assurance Verification Survey Plates 1 – 3 in tabbed section at end of report, Volume 1
Daily photos of construction activities	2009 Photo Log in tabbed section at end of report, Volume 1
Summary report for the extension of monitoring well MWL-MW4	Attachment 8

1. Information maintained in the SNL/NM ES&H and Security Records Center.



**2009 Daily Quality Control Reports**

**May 2009**



## DAILY SUMMARY REPORT

**DATE:** 20 May 2009 (Wednesday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Partly cloudy.

**WEATHER (PM):** Partly cloudy, heavy clouds are rolling in from East Mountains.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Notice to proceed has been issued and the initial construction has begun early. EDi has updated the schedule accordingly. EDi began removal of the fence surrounding the landfill. Clear and grubbing has started on the slopes of the Existing Subgrade surface.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade.
2. Perimeter surrounding Mixed Waste Landfill Cover.

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00-7:30 AM

Attendees: See attached sign in sheet.

Issues:

-Safety: Snakes, footing, and equipment awareness.

-Tasks: Remove fence and begin clearing and grubbing MWL.

2. Description: Afternoon Safety Briefing

Time: 7:00-7:30 AM

Attendees: See attached sign in sheet.

Issues:

-Safety: Snakes, footing, and equipment awareness.

-Tasks: Clearing and grubbing MWL.

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: MWL Perimeter Fence Removal

Remove the perimeter fence surrounding the Mixed Waste Landfill. The removed fence post placed north of the MWL (See dwg\_5/20/09\_Construction\_01).

#### B. ISSUES/COMMENTS:

1. None

C. EQUIPMENT USED:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Task was completed. The fence was completely removed and placed on north side of MWL.

F. PICTURES OBTAINED:

1. No pictures were collected of this procedure.

**II.**

A. TASK DESCRIPTION: Clear and Grub MWL

Clear and grubbing of the mixed waste landfill has begun. The items to be removed on the MWL surface, as well as the side slopes of the landfill, appear to be small vegetative material, erosion controlling matting, and small rocks (less than 2"). There is no vegetation that exceeds a height of 6". Most vegetation appears to be dead and does not appear to have any roots exceeding 1/2-inch.

A loader was used to clear and grub the site. The bucket of the loader was dragged across the surface while the loader moved in reverse. The loader began the removal of vegetative material, erosion controlling matting, and small rocks on the West slope. The loader continued the procedure around the entire perimeter slope of the MWL (See dwg\_5/20/09\_Construction\_01). Due to the dead, dry nature of the vegetation, the method is very effective. The items removed have been stockpiled on the southwest side of the MWL (See dwg\_5/20/09\_Construction\_01).

B. ISSUES/COMMENTS

1. No penetrations to the MWL 6.0-inch or greater occurred.

C. EQUIPMENT USED (See Appendix B for equipment description/details)

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Clear and grubbing of the MWL perimeter slopes has been completed (See dwg\_5/20/09\_Construction\_01). Clear and grubbing of the MWL surface will be continued on 05/21/2009.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

### III.

#### A. TASK DESCRIPTION: MWL Survey

The survey team for EDi was present to collect existing survey data. See [REDACTED] for existing survey data collected by the EDi survey team.

#### B. ISSUES/COMMENTS:

1. The EDi survey team was instructed to do a topographic survey of the current, existing conditions of the Existing Subgrade Layer. The EDi survey team will create topographic surveys of each layer (i.e. Existing Subgrade, Biointrusion, Native Soil, etc.). The topographic survey information collected by the EDi survey team will be compared to the QA survey collected by URS. Approval of each finished layer is required before the next layer may begin.
2. EDi's survey team was initially confused because they did not have an electronic copy of the existing conditions survey, which is located in the Mixed Waste Landfill Corrective Measures Implementation Plan (CMIP). EDi's survey team was advised not to use the Existing Subgrade information in the contract drawings. Also, we are not concerned with what the existing conditions were when the drawings were created, but the current existing conditions.
3. URS provided survey control information to the EDi survey team. The control matched information collected by the EDi survey team.

#### C. EQUIPMENT USED:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. The Existing Subgrade Surface Survey has been collected (See Appendix A). The survey control provided by URS matched EDi's survey team as a QA check.

#### F. PICTURES OBTAINED:

No pictures were collected of this procedure.

#### INSPECTION CHECKLISTS REQUIRED

1. Construction Inspection Form CI-01, Existing Landfill Surface and Perimeter Clear and Grub Field Form.

#### PROPOSED NEXT DAY ACTIVITIES (date: 05/21/2009):

1. Finish clear and grubbing Existing Subgrade.
2. Place fence around metering wells surrounding MWL perimeter.
3. Compact Existing Subgrade.



## DAILY SUMMARY REPORT

**DATE:** 21 May 2009 (Thursday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Cloudy, potential for rain.

**WEATHER (PM):** Cloudy, light rain during afternoon.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- EDi continued the process of clearing and grubbing and began compaction of the Existing Subgrade Surface. Fences were placed around the wells on the west perimeter of the MWL.

### LOCATION OF CONSTRUCTION

1. Tech Area III (Site 13), Mixed Waste Landfill, Existing Subgrade.

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00-7:25 AM

Attendees: See attached sign in sheet.

Issues:

- a. Daily activities: (see below)
- b. Safety: Today's safety included a discussion on being aware of the heavy machinery in use and the three items required to operate heavy equipment (backup siren, seatbelt, and fire hydrant).

2. Description: Afternoon Safety Briefing

Time: 12:30-12:40

Attendees: See attached sign in sheet.

Issues:

- a. Afternoon activities (see below)
- b. Safety: Afternoon safety covered slips trips and falls.

### DAILY TASK

#### I.

A. TASK DESCRIPTION: Clear and Grub MWL

Clear and grubbing of the MWL continued (See task description on the Daily Summary Report dated 05/20/2009 for existing site conditions). Yesterday the side slopes of the MWL were cleared. Today the top surface will be cleared.

A loader was used to clear and grub the site. The bucket of the loader was dragged across the Existing Surface while the loader moved in reverse. The loader began the removal of vegetative material, erosion control matting, and small rocks on the west side of the MWL. The loader continued the procedure across the entire top cover of the Existing Subgrade. Due to the dead, dry nature of the vegetation, the method was very affective. The items removed have been stockpiled on the southeast side of the MWL (see dwg\_05/21/09\_01).

**B. ISSUES/COMMENTS:**

1. No penetrations 6.0" or deeper occurred.
2. After clearing and grubbing, a visual inspection was performed by Paul Molina to determine if vegetative material, erosion control matting, and rocks larger then 2" had been removed. It was determined by inspection the materials listed above had indeed been removed
3. Heavy equipment used to clear and grub the MWL did not come within the distance specified in the Corrective Measures Implementation Plan to Monitoring Well M-4.

**C. EQUIPMENT USED (See Appendix B for equipment description)**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. The clearing and grubbing of the site has been completed.

**F. PICTURES OBTAINED:**

1. Pictures of this procedure were collected and filed.

**II.**

**A. TASK DESCRIPTION: Compaction of Existing Subgrade**

The compaction of the Existing Subgrade began today. A vibrating, smooth drum roller was used for the compaction process. The roller began in the southwest corner and made its first pass across the entire Existing Surface moving from south to north and vice versa. A second pass was made across the Existing Subgrade surface starting in the northeast corner and made the pass from east to west. Compaction was performed across the entire surface as well as the side slopes of the MWL. During the process, the Existing Subgrade surface was sprayed with water to aid in the compaction process. (See dwg\_05/21/09\_Construction\_02).

**B. ISSUES/COMMENTS**

1. The Subgrade appeared very dense during and after compaction. Density testing will be performed to confirm.
2. The vibrating, smooth drum roller was used to compact the existing Subgrade Layer. Caution was used around monitoring well MW-4 as specified. EDi did not bring heavy equipment within bollard area, which protects the monitoring well.
3. The MWL received rain during the compaction process.
4. It was determined that it was best to turn off the vibration device on the roller for the following reasons:
  - The Existing Subgrade Layer is rock hard and the roller was bouncing uncontrollably.
  - Because the Subgrade Surface was already hard, there was concern the vibration would crack the surface below.

**C. EQUIPMENT USED (See Appendix B for Equipment Description)**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Two passes of compaction with the vibrating, smooth drum roller were completed (see dwg\_05/21\_Construction\_02). The surface is now ready for the density tests, which is scheduled for tomorrow (05/22/09).

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. CI-01 Construction Inspection Form, Existing Landfill Surface and Perimeter Clear and Grub Field Form.

**PROPOSED NEXT DAY ACTIVITIES (date: 05/22/09)**

1. Density testing of compacted Existing Subgrade.



## DAILY SUMMARY REPORT

**DATE:** 5/22/2009 (Friday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Cloudy

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Field density test were performed using the Nuclear Method, ASTM D2922, D3017, and D2950. AMEC performed thirteen tests for EDi. An additional six test were performed by AMEC for URS CQA.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade Surface.

### LIST OF PERSONNEL:

Please see Appendix C for sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:30 AM

Attendees: See attached sign in sheet.

Issues:

- a. Safety: Stay at least six feet back from density test units

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Field Density and Moisture Test (Construction)

Field density test were taken at thirteen different locations. The Existing Subgrade surface was divided into thirteen grids (see attached grid). A density/moisture test was performed at random locations within each of the thirteen grids. Survey data was collected on all testing locations.

#### B. ISSUES/COMMENTS:

1. All thirteen moisture and density tests met the MWL specification requirements and were approved by Don Lopez, CQA Engineer.

#### C. EQUIPMENT USED:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. All thirteen moisture and density tests met the MWL specifications requirements and were approved by Don Lopez.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II. A. TASK DESCRIPTION: Field Density Test (COA)**

Six CQA tests were taken by AMEC for URS. The AMEC representative for the CQA was Robert Carr. A firewall is setup between AMEC representatives Robert Carr and Miguel Chavez to prevent any conflict of interest. Robert Carr was instructed to perform his field moisture/density within an approximate 3-foot radius of every other QC test performed by Miguel Chavez. Density test locations and elevations were collected and plotted by the EDi surveyor.

B. ISSUES/COMMENTS

1. All six CQA moisture and density tests met the MWL specifications requirements and were approved by Don Lopez.
2. QC survey indicates some parts of the 2.0% east-to-west slope and 6:1 side slopes do not meet the design. It was decided to adjust the 6:1 side slopes as well as the 2.0% east-to-west design slope during the construction of overlaying layers.
3. Don Lopez has approved the MWL Existing Surface. Construction of the Biointrusion Layer may now begin.

C. EQUIPMENT USED

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Density tests have been completed and approved by Don Lopez.

G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED (See attached)**

1. TI-02; Subgrade Fill Field Test Form

**PROPOSED NEXT DAY ACTIVITIES (date: 05/26/2009)**

1. Begin Test Biointrusion Barrier.

## DAILY SUMMARY REPORT

**DATE:** 5/26/09 (Tuesday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Slightly Cloudy, good conditions (58 deg)

**WEATHER (PM):** Slightly Cloudy, good conditions (72 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- The test section for the Biointrusion Layer was executed today. The initial test procedure discussed in the Construction Site Safety Plan (CSSP, page 37) was determined to be unsuccessful. A second method for the installation of the Biointrusion Barrier was derived and was successful (See below *Biointrusion Test Area II* for details).

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade.
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location).
3. Borrow Pit, (Pre-screened Soil Stockpile).

### LIST OF PERSONNEL:

Please see Appendix C for sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:30 AM

Attendees: See attached sign in sheet.

Issues:

- a. The test Biointrusion procedure to be followed.

2. Description: Biointrusion Barrier Procedure Briefing

Time: 9:45-10:15 PM

Attendees: See attached sign in sheet.

Issues:

- a. Discussion of responsibilities and measures that needed to be taken into consideration to have a successful Biointrusion Test.

3. Description: Afternoon Safety Briefing

Time: 1:00-1:18 PM

Attendees: See attached sign in sheet.

Issues:

- a. Rock Delivery: The procedure for continuing with the delivery of rock.
- b. Safety: Proper ear protection and the truck routes needed ensure safety.
- c. Construction: The procedure for continuing the placement of Biointrusion barrier rock.

## DAILY TASK

### I.

#### A. TASK DESCRIPTION: Biointrusion Test Area I (as discussed in CSSP)

Please see CSSP (page 37) for procedure description.

The test area consisted of two truckloads of dry, screened loose soil distributed over an approximate 20 x 20-foot area. Using a builder's level, the thickness of the test loose soil layer was determined to be 6-to-8-inch as specified in the CSSP. The soil was initially spread using a motor grader, but EDi later switched to a dozer in an attempt to reduce the soil compaction.

The Biointrusion rock was then placed onto the 6-to-8-inch loose soil layer. The Biointrusion rock was spread to an approximate thickness of 1.0-foot or slightly less. A dozer then compacted the rock in an attempt to push the rock down into the soil layer. After several passes with the dozer, Don Lopez (URS CQA) was not convinced that the Biointrusion rock was being pressed down through the loose soil layer to the existing Subgrade Layer. This raised concerns of the possibility of future settling due to the layer of sand between the Subgrade Layer and the Biointrusion Layer. It was determined this procedure was not adequate to meet Specification Section 02115 located in the CMIP.

#### B. ISSUES/COMMENTS:

1. There was a discussion about extending the Biointrusion Barrier past the toe of the existing Subgrade Layer. It was determined that it is not necessary to extend the Biointrusion Barrier past the toe.
2. The current slope is approximately 1.8% from East to West in lieu of the 2.0% as specified. The slope will be adjusted to the specified 2.0% during the course of construction. It will be corrected during the Native Soil Layer as apposed to the Biointrusion Barrier due to material availability and ease of construction.
3. The method of constructing the Biointrusion described in the CSSP (Page 37) was determined to be insufficient by Don Lopez PE URS CQA Engineer.

#### C. EQUIPMENT USED (See Appendix B for Equipment Description)

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. This procedure was ineffective and was canceled. A new method was derived and used as described below.

#### F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

### A. TASK DESCRIPTION: Biointrusion Test Area II

After it was determined that the procedure described above in Test Area I was ineffective, a second test area was created using the tracks of the dozer to scarify the existing Subgrade Surface. It was determined the tracks of the dozer created a texture, which was ideal for the Biointrusion Rock placement. The scarified surface had enough loose soil to fill some of the voids in the rock, as well as create a grooved pattern, which made it easy for the rock to fall into place and interlock. The rock was compacted with the dozer a minimum of four times. Loose, screened soil was then placed over the rock layer and worked into the voids by spreading with the dozer. This method proved to be very effective. (See below for updated Biointrusion installation procedure).

#### The Following is the Updated Biointrusion Layer Installation Procedure:

The Biointrusion layer will be constructed in compliance with the CMIP, Specification Section 02115. The following is the procedure recommended by Don Lopez PE (URS CQA Engineer) for the Biointrusion Layer:

The rock used for the Biointrusion Layer will continue to be the rock acquired by SNL. The rock is located at the former Bulk Waste Staging Area in TA 3.

The EDI Team will scarify the Existing Subgrade Surface using the tracks of a dozer. A minimum of four passes with the dozer tracks is required across the existing Subgrade Surface. Once the Subgrade Surface has been prepared, the Biointrusion Rock may be spread across the scarified surface. The rock layer will then be compacted with a minimum of four passes by the dozer to ensure compaction and interlocking of the rock. Compaction shall be performed until rocks are firmly locked into place. The entire Biointrusion Rock Layer Surface must be completed, surveyed, and approved before any further construction may take place.

Once the rock layer is compacted in place and approved, additional dry loose soil will be placed over the surface. A dozer will then spread the loose soil across the rock surface and work the loose soil into the voids. The soil will then be compacted with a minimum of four passes with the vibratory roller. After this is completed and approved, water will be applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content.

END

### B. ISSUES/COMMENTS

1. After the Test Method II was determined to be affective, it was applied for the remainder of the day to the South side of the MWL. Approximately 300-CY of the Biointrusion layer was installed.
2. Water was not applied to the Biointrusion Layer to fill voids today.

3. No survey was performed today. The survey team should be out tomorrow for as-built conditions and elevation confirmations for the Biointrusion Layer.
4. Crushed rock used for the Biointrusion Layer did meet specifications by method of visual inspection.
5. No heavy equipment was operated around the monitoring wells.

**C. EQUIPMENT USED (See Appendix B for Equipment Description):**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**F. STATUS:**

1. Approximately 300 CY of the Biointrusion Layer was installed today (20 Truck Loads @ approx 15 CY/truck). See dwg\_05/26/09\_Construction\_01.
2. Approximately 90 CY of the loose, dry soil for the voids was installed in test pad (6 truck loads @ approx 15 CY/truck). This was only for the test pad and will not be continued until the Biointrusion Rock Layer is completed and approved.
3. Water was not applied to the Biointrusion Layer today.

**G. PICTURES**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 05/27/09)**

1. Continue installation of the Biointrusion Barrier.
2. Raise Well

## I DAILY SUMMARY REPORT

**DATE:** 5/27/09 (Wednesday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Clear Sky (54 deg.)

**WEATHER (PM):** Partly Cloudy (71 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of the Biointrusion Layer continued today.
- The Monitoring Well MW-4 Extension procedure occurred today.

### LOCATION OF CONSTRUCTION

1. Tech Area 3, Sandia Mixed Waste Landfill, Existing Subgrade Layer
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see Appendix C for sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

#### 1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:25 AM

Attendees: See attached sign in sheet.

Issues:

#### CONSTRUCTION:

- a. The haul road from the borrow pit is going to need some regular maintenance. The road is starting to fall apart.
- b. EDi needs to keep a count on the number of rock and sand loads hauled from the Borrow Site to the MWL.
- c. Procedure: Continue Biointrusion Rock Barrier construction.

#### SAFETY:

- a. Be sure to stay upwind of the rock pours due to the dust.
- b. Be sure to have the proper ear and eye protection.
- c. Weekly safety inspections are going to be conducted for the duration of the project.

#### 2. Description: Afternoon Safety Briefing

Time: 12:37 – 12:47 PM

Attendees: See attached sign in sheet.

Issues: Same as morning session

### DAILY TASK

I.

A. TASK DESCRIPTION: *Installation of Biointrusion Layer*

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See drwg\_05/26/09\_Construction\_01 for illustration of installed Biointrusion Layer.

EDi provided spot survey today to verify the 1.0-foot minimum thickness. The survey followed the dozer and verified thickness of the layer placed. Some areas were 1.0-foot as specified; however, some were below the 1.0-foot or above the 1.25-foot requirement. A final survey will need to be conducted once the Biointrusion Layer is installed to confirm the 1.0-foot thickness as specified.

B. ISSUES/COMMENTS:

1. A defined method to test the thickness of the Biointrusion layer has not been established. A surveyor was checking the thickness as the rock was installed; however, the method did not ensure the entire surface met specification thicknesses before the soil was to be placed to fill the voids. Paul Molina spoke with Don Schofield, Mike Mitchell, and Chris Edgman regarding the situation. It was agreed there needs to be survey data verifying the specification thickness requirements before the soil to fill the voids was placed. The method decided upon is to place the entire Biointrusion Layer before proceeding with the placement of the soil to fill the voids. A survey of the entire surface will then be conducted, checked, and approved. This will ensure the 1.0-foot depth as specified (see Biointrusion Installation Procedure in Revised Daily Report 05/22/09).

C. EQUIPMENT USED:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 900 CY of the Biointrusion Layer was installed today (60 Truck Loads @ approx 15 CY/truck). See dwg\_05/27/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

II.

A. TASK DESCRIPTION: *Monitoring Well MW-4 Extension*

The extension of the MW-4 Extension Well began about 10:30 AM. A team used on a regular basis for maintenance of the Sandia Monitoring Wells was brought in to conduct the procedure. Submittal and procedure outline have been provided by Mike Saunders (see attached).

B. ISSUES/COMMENTS

1. No concrete pad was located around Monitoring Well MW-4. The pad was previously buried during the Subgrade Installation. A new pad will be poured around the well once the final layer is completed.
2. The bollards were cut in place. This was to prevent pulling up the concrete anchors, which are buried under the Subgrade Layer.

**C. EQUIPMENT USED**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**F. STATUS:**

1. The Monitoring Well extension was completed.

**G. PICTURES**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form (see attached)

**PROPOSED NEXT DAY ACTIVITIES (date: 05/28/09)**

1. Continue with Biointrusion Layer



## DAILY SUMMARY REPORT

**DATE:** 05/28/09 (Thursday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:50 AM, Clear sky (58 deg.)

**WEATHER (PM):** 1:50 PM, Cloudy, received rain and 10-mile lightning warning.

Crew was brought back to trailer or asked to stay in equipment if it had an enclosed cab.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- The ribbon cutting occurred today directly after the morning Tailgate Meeting
- Construction of the Biointrusion Layer continued.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Subgrade Layer.
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

#### 1. Description: Morning Tailgate Meeting

Time: 7:00-8:30 AM

Attendees: See attached sign in sheet.

Issues:

- a. Construction Procedure: The same procedure as yesterday regarding the installation of the Biointrusion Layer is to be followed. It is important for EDI to keep count of the number of loads of rock and sand brought from the borrow site to the Mixed Waste Landfill.
- b. QA Issues: Soil samples of the borrow area material plan to be taken today.
- c. Safety: Hearing protection needs to be worn around heavy equipment on site.
- d. Heavy Equipment Refueling: The Sandia Mixed Waste Landfill does not have a designated area for refueling onsite. Instead, a fuel truck will go to the heavy equipment to refuel when needed. This is acceptable onsite as long as the refueling does not take place on the Mixed Waste Landfill Cover. Spill prevention measures need to be taken while refueling onsite equipment.

### INCIDENT REPORT:

Chris Timm lost consciousness this morning during the Tailgate Meeting (approximately 7:15 AM). Chris fell from a standing position onto his front side without warning. Chris was unconscious and did not move for approximately 10 seconds. 911 was dialed and Emergency Responders were contacted as specified in the CSSP. Members of EDI drove to the front gate to direct the Emergency Responders to the Mixed Waste Landfill. Chris regained consciousness and was talking. He did appear to understand what had happened and where he was.

## **RIBBON CUTTING**

After the AM Tailgate Meeting a ribbon cutting was performed. The procedure ended at 8:30. Pictures were taken of the event.

## **DAILY TASK**

### **I.**

#### **A. TASK DESCRIPTION: Biointrusion Layer Construction**

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See dwg\_05/27/09\_Construction\_01 for illustration of installed Biointrusion Layer.

#### **B. ISSUES/COMMENTS:**

1. Temporary bollards were set around MW-4, which had been extended yesterday.

#### **C. EQUIPMENT USED:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### **D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### **E. STATUS:**

1. Approximately 630 CY of the Biointrusion Layer was installed today (42 Truck Loads @ approx 15 CY/truck). See dwg\_05/27/09\_Construction\_01.

#### **F. PICTURES OBTAINED:**

1. Pictures of this procedure were collected and filed.

## **INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

## **PROPOSED NEXT DAY ACTIVITIES (date: 05/28/09)**

1. Continue with Biointrusion Construction

## DAILY SUMMARY REPORT

**DATE:** 5/29/09 (Friday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 11:30 (73 deg)

**WEATHER (PM):** 3:34 (80 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of the Biointrusion Layer continued today.
- Marshall Nay (URS CQA) arrived at the MWL and collected data to classify the Biointrusion rock.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade Surface.
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location).

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:25 AM

Attendees: See attached sign in sheet.

Issues:

- a. Procedure: Continuation of the Biointrusion Layer.
- b. Safety: Do not refuel on landfill.
- c. Safety: The minimum distance away from equipment without hearing protection is 30-feet.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See dwg\_05/29/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Equipment did not come within specified distance to Monitoring Well MW-4.
2. Joe Estrada from the DOE made a site visit to observe construction. Joe appeared to be pleased with the procedure as well as the progress.

##### C. EQUIPMENT USED:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 810 CY of the Biointrusion Layer was installed today (54 Truck Loads @ approx 15 CY/truck). See dwg\_05/29/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: **QA Biointrusion Rock Classification**

Marshall Nay (URS CQA) arrived on site and collected 25 random samples of the Biointrusion rock. Measurements and weights of the 25 samples were recorded. two rock samples were collected and taken offsite with Marshall for additional density testing.

B. ISSUES/COMMENTS

1. Marshall Nay and Paul Molina collected data. Marshall Nay will perform the analysis and create the report.

C. EQUIPMENT USED

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. The samples have been collected. Marshall Nay will conduct the test and formulate the report at later date.

G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form
2. A checklist is not required for the rock classification test conducted by Marshall Nay.

**PROPOSED NEXT DAY ACTIVITIES (date: 06/01/09)**

1. Continuation of Biointrusion Layer.

# **2009 Daily Quality Control Reports**

**June 2009**



## DAILY SUMMARY REPORT

**DATE:** 06/01/09 (Monday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:00 AM (60 deg) Clear sky

**WEATHER (PM):** 4:04 PM (79 deg) Clear sky, wind

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of the Biointrusion Layer continued today.
- Don Lopez, Marshall Nay and Harry Buckner arrived onsite to discuss the QA Survey and the topsoil gravel admixture.
- The roads need to be re-graded as specified in the Storm Water Pollution Prevention Plan.

### LOCATION OF CONSTRUCTION

1. Tech Area III; Sandia Mixed Waste Landfill; Existing Subgrade Layer
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00-7:25 AM

Attendees: See attached sign in sheet.

Issues:

- a. Construction: The roads may need to be worked on. The criteria are ½-inch of rain or 14-days.
- b. Continuation of Biointrusion Layer on West end of Existing Subgrade.
- c. Safety: Heavy equipment operators and drivers should not talk on phones while operating heavy equipment.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/01/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Equipment did not come within specified distance of Monitoring Well MW-4.

- C. EQUIPMENT USED (See Appendix B for Equipment Description):
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 840 CY of the Biointrusion Layer was installed today (56 Truck Loads @ approx 15 CY/truck). See dwg\_06/01/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

II.

A. TASK DESCRIPTION: Construction/QA Survey Coordination

Harry Buckner (URS) and Jerome Sanchez (EDi) discussed procedures to coordinate the construction and QA survey.

B. ISSUES/COMMENTS

1. Jerome (EDi survey rep.) was not sure how URS was going to perform the QA check. Jerome was instructed to use the 50-foot grid created for the Existing Subgrade. Jerome is to take elevations of the Biointrusion Barrier Layer at the exact locations he took elevations on the Existing Subgrade. Harry Buckner will do his QA on the exact same locations using the 50-foot grid.

C. EQUIPMENT USED

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Harry Buckner will do the CQA survey check on Friday (06/05/09) or Monday (06/08/09) depending on the status of the Biointrusion Layer. Harry will use the method described above to check the thickness of the Biointrusion Rock Barrier.

F. PICTURES OBTAINED

1. Pictures of this procedure will be collected and filed.

III.

A. TASK DESCRIPTION: 3/8-inch Crushed Gravel

EDi has submitted the 3/8-inch crushed gravel to be combined with the topsoil.

B. ISSUES/COMMENTS

1. The following are the main functions of the 3/4 -inch gravel. These will be taken into consideration and will be the criteria used for determination of the 3/4-inch rock substitution:

- a. Erosion control.
- b. Permeability in the soil matrix, which will allow the water to penetrate for plant growth.
- c. Aerate the soil for the plant root structure.

C. EQUIPMENT USED

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Chris Edgmon will prepare a submittal of the three rock samples he was able to obtain. URS will make a determination of the rock to be used based off of this submittal. (See attached for rock substitution submittal)

G. PICTURES OBTAINED

1. Pictures of the ¾-inch rock substitution samples are included in the Rock Substitution Submittal. These pictures are also filed.

**IV.**

A. TASK DESCRIPTION: **Re-Grade Dirt Roads**

The dirt road surrounding the Mixed Waste Landfill was re-graded as specified in the MWL Storm Water Pollution Prevention Plan (SWPPP). The SWPPP requires the road to be re-graded every 17-days or if the site receives ½-inch of rain.

B. ISSUES/COMMENTS

1. Road graded as specified in the SWPPP.

C. EQUIPMENT USED (See Appendix B For Equipment Description)

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Road has been re-graded as required.

G. PICTURES OBTAINED

1. No pictures taken.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 05/02/2009)**

1. Continue with installation of Biointrusion Layer.



## DAILY SUMMARY REPORT

**DATE:** 06/02/2009 (Tuesday)

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:52 (70 deg.); Partly cloudy

**WEATHER (PM):** 4:00 (79 deg); Partly cloudy; lightning warning stopped construction at 4:00 PM today.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of the Biointrusion Layer continued today.

### LOCATION OF CONSTRUCTION

1. Tech Area III; Sandia Mixed Waste Landfill; Existing Subgrade
2. Former Bulk Waste Staging Area, TA 3, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

#### 1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign-in sheet.

Issues:

- a. Safety: Truck route established for the day
- b. Procedure: Continuation of the rock layer

#### 2. Description: Afternoon Safety Briefing

Time: 12:40-12:50 PM

Attendees: See attached sign in sheet.

Issues:

- a. Safety: Truck route will stay the same as this morning.
- b. Continuation of the rock layer

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today on the west slope. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/02/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. None

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Approximately 780 CY of the Biointrusion Layer was installed today (52 Truck Loads @ approx 15 CY/truck). See dwg\_06/02/09\_Construction\_01.

**F. PICTURES OBTAINED:**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/02/09)**

1. Continue with construction of Biointrusion Layer

## DAILY SUMMARY REPORT

**DATE:** 06/03/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:06 AM; Clear sky (57 deg.)

**WEATHER (PM):** 1:38 PM; Clear sky, clouds in the distance, (75 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of Biointrusion layer continued on west and northwest side.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Former Bulk Waste Staging Area, TA-III, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:06 AM – 7:18 AM

Attendees: See attached sign in sheet.

Issues:

- a. Procedure: Continuation of Biointrusion Laydown. Be sure to use caution around Monitoring Well MW-4.
- b. Safety: Be aware of heat stress. Drink water throughout the day.

2. Description: Afternoon Safety Briefing

Time: 12:30 PM- 12:45 PM

Attendees: See attached sign in sheet.

Issues:

- a. Same as morning tailgate meeting.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today on the west slope. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/03/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. None

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Approximately 1035 CY of the Biointrusion Layer was installed today (69 Truck Loads @ approx 15 CY/truck). See dwg\_06/02/09\_Construction\_01.

**F. PICTURES OBTAINED:**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/04/09)**

1. Continue the construction of the Biointrusion Barrier.

## DAILY SUMMARY REPORT

**DATE:** 06/04/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:02 AM; Clear sky (60 deg.)

**WEATHER (PM):** 2:10 PM; Partly cloudy, (79 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of Biointrusion layer continued on north side.
- A meeting was held regarding the QA survey procedure and the Biointrusion Rock.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM – 7:26 AM

Attendees: See attached sign in sheet.

Issues:

- a. Procedure: Continuation of Biointrusion Laydown. Be sure to use caution around Monitoring Well MW-4.
- b. Safety: Emergency Contact 911, Non-Emergency 311.

2. Description: Afternoon Safety Briefing

Time: 12:30 PM- 12:45

Attendees: See attached sign in sheet.

Issues:

- a. Same as morning tailgate meeting.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/04/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Rock was placed around the Monitoring well MW-4. Heavy equipment was not used for compaction within the specified radius of the Monitoring Well MW-4.

2. It was determined that there is not enough rock in the Former Bulk Waste Staging Area, TA III, to complete the Biointrusion Barrier Layer.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The last of the rock located in the Former Bulk Waste Staging Area, TA 3, will be used by tomorrow. Additional rock is being tested for compliance and will be purchased if acceptable. Approximately 1020 CY of the Biointrusion Layer was installed today (68 Truck Loads @ approx 15 CY/truck). See dwg\_06/04/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

A. TASK DESCRIPTION: *QA Survey/Biointrusion Rock Meeting (1:00 –1:45 pm)*

A meeting was held between Sandia, EDi, and this afternoon to discuss the following:

1. There is not going to be enough rock in the Former Bulk Waste Staging Area, TA III, to complete the Biointrusion layer. The original rock was purchased at the San Lazarus Gulch in the San Pedro Mountains (San Pedro rock). Ben Martinez (Sandia) contacted San Pedro Rock and was informed that there is more of the same rock available; however, it has more fines in it then the original rock. Don Lopez has requested a sample of the proposed rock for his inspection. Don Lopez will make his decision to approve/disapprove the additional Biointrusion rock based on visual inspection/Engineering Judgment.
2. Harry Buckner (URS) will begin the QA survey on Friday (06/05/09). Harry will begin his survey on the south end of the MWL and proceed north. Harry will convert the survey data collected into a usable format on Saturday (06/06/09) to determine the Biointrusion Layer thickness. URS intends to provide EDi with approval/disapproval of at least the south portion of the Biointrusion Layer Monday morning. Any survey not completed on Friday will be collected on Monday.
3. There was a discussion over the “actual thickness” of the Biointrusion Layer compared to the “computed thickness”. The computed Biointrusion Layer thickness is determined by comparing the elevation of the Existing Subgrade to the elevation of the Biointrusion Layer. However, the rock is being placed onto a scarified surface, not the surveyed Existing Subgrade, which allows the rock to

push down into the Existing Subgrade approximately 1-to-2 inches. This causes the actual thickness to be greater than what the computed thickness derived from survey data is showing. Don Lopez has decided to accept a computed Biointrusion Layer thickness of 11-inches to compensate for the above.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/05/09)**

1. Continue the construction of the Biointrusion Barrier.
2. QA Survey



## DAILY SUMMARY REPORT

**DATE:** 06/05/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:20 am (64 deg); partly cloudy

**WEATHER (PM):** 1:00 pm (76 deg); partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continued construction of Biointrusion Layer
- Field CQA Survey of South side of MWL (URS)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/05/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. The last of the rock in the Former Bulk Staging Area was used today. Additional rock is going to need to be purchased to finish the Biointrusion Layer. The original rock was purchased at San Pedro Rock. There is more of the same rock available, however, Don Lopez will need to approve the rock before it is used. EDi hopes to start shipment of the rock the following Monday (06/08/09).
2. Don Schofield has decided to allow EDi to order more rock from San Pedro Rock at risk. The rock available at San Pedro Rock is the exact same rock and is from the same stockpile.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. All available rock in Bulk Staging Area was used today. Approximately 435 CY of the Biointrusion Layer was installed today (29 Truck Loads @ approx 15 CY/truck). See dwg\_06/05/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *COA Survey of Biointrusion Thickness*

Harry Buckner (URS) and Paul Molina (URS) conducted the QA survey on the south end of the MWL. The survey data collected will be converted into a usable format to determine the Biointrusion Layer thickness (See results attached). URS intends to provide EDi with approval/disapproval of at least the south end of the Biointrusion Layer. Additional QA Survey will be conducted on Monday (6/8/09).

B. ISSUES/COMMENTS

1. Four Points on the southwest slope did not pass the 1-foot minimum thickness requirement (See results attached). EDi will need to place more rock on this section. URS will then recheck the survey at these four spots. All other areas on the south portion of the Biointrusion layer are approved.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. See attached for QA Survey Results

G. PICTURES OBTAINED

1. Pictures of this procedure were not collected

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/08/09)**

1. Continue with Biointrusion Layer if rock is delivered.
2. Begin placing the loose sand and working into voids of Biointrusion Layer in approved sections.
3. Continue QA Survey on north end of MWL

## DAILY SUMMARY REPORT

**DATE:** 06/08/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10(67 deg); partly cloudy

**WEATHER (PM):** 2:00 (78 deg); partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continued construction of Biointrusion Layer on northeast side.
- Field CQA Survey of northwest side of MWL (URS).
- Begin placement of loose soil into Biointrusion Layer voids in approved areas.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade.
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location).

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/08/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Additional rock was purchased from San Pedro Rock to finish the Biointrusion Layer. Don Lopez approved the rock after a visual inspection. Don Lopez also checked with San Pedro Rock to confirm the rock purchased was from the same stockpile as the original.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Rock was shipped from San Pedro Rock and placed directly on the Existing Subgrade. Approximately 479 CY of the Biointrusion Layer was installed today. 313.94 tons of rock was delivered on site.

##### F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

### A. TASK DESCRIPTION: COA Survey of Biointrusion Thickness

Harry Buckner (URS) and Paul Molina (URS) conducted the QA survey on the Northwest end of the MWL. The survey data collected will be converted into a usable format on Tuesday morning (06/09/09) to determine the Biointrusion Layer thickness (see results attached). URS intends to provide EDi with approval/disapproval of the Northwest portion of the Biointrusion Layer Tuesday morning (06/09/09). The final QA Survey will be performed when the Biointrusion Layer is completed on the Northeast end.

### B. ISSUES/COMMENTS

1. Two Points on the Northwest end did not pass the 1-foot minimum thickness requirement. EDi will need to place more rock on this section. URS will then recheck the survey at these two points.
2. EDi corrected the four points that did not pass the 1-foot minimum thickness requirement (see results attached). URS has rechecked these points and will give approval tomorrow (6/09/09).

### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### E. STATUS:

1. See attached for QA Survey Results

### F. PICTURES OBTAINED

1. Pictures of this procedure were not collected

## III

### A. TASK DESCRIPTION: Placement Of Loose Soil In Biointrusion Voids

The south portion of the MWL has been approved for the placement of loose soil into the Biointrusion Voids (with the exception of 4 low areas). See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids.

### B. ISSUES/COMMENTS

1. None

### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**F. STATUS:**

1. Approximately 612 CY of loose soil was placed and worked into the Biointrusion voids today (with the exception of 4 low areas) (34 Truck Loads @ approx 18 CY/truck). See dwg\_06/08/09\_Construction\_02.

**G. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/09/09)**

1. Continue with Biointrusion Layer with delivered rock.
2. Continue placing the loose sand and working into voids of Biointrusion Layer in approved sections.



## DAILY SUMMARY REPORT

**DATE:** 06/09/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:08; Partly cloudy (56 deg)

**WEATHER (PM):** 4:06; Partly cloudy (71 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continued construction of Biointrusion Layer on northeast side
- Place loose soil into Biointrusion Voids of approved area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/09/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Additional rock was purchased from San Pedro Rock to finish the Biointrusion Layer. Don Lopez approved the rock after a visual inspection.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Rock was shipped from San Pedro Rock and placed directly on the Existing Subgrade. Approximately 307 CY of the Biointrusion Layer was installed today  
429.57 tons of rock was delivered on site.

##### F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

#### II.

A. TASK DESCRIPTION: Placement Of Loose Soil Into Biointrusion Voids

The Northwest portion of the MWL has been approved for the placement of loose soil into the Biointrusion Voids (with the exception of 2 locations) . See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Approximately 864 CY of loose soil was placed and worked into the Biointrusion voids today (48 Truck Loads @ approx 18 CY/truck). See dwg\_06/08/09\_Construction\_02.

G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: COA Survey of Biointrusion Thickness

Approval of Northwest and resurveyed areas.

B. ISSUES/COMMENTS

1. EDi corrected the four points that did not pass the 1-foot minimum thickness requirement (see results attached). URS has rechecked these points and they are now approved.
2. Northwest Biointrusion Layer approved with the exception of 2 locations on North Slope.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. See attached for QA Survey Results

G. PICTURES OBTAINED

1. Pictures of this procedure were not collected

## **INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

## **PROPOSED NEXT DAY ACTIVITIES (date: 06/10/09)**

1. Continue with Biointrusion Layer with delivered rock.
2. Continue placing the loose sand and working into voids of Biointrusion Layer in approved sections.



## DAILY SUMMARY REPORT

**DATE:** 06/10/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** Heavy Rain

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- No construction was performed today due to weather conditions.
- A meeting was held with URS, Sandia, and EDi for coordination of the Biointrusion survey and the Final Report.

### LOCATION OF CONSTRUCTION

1. NA

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Issues: No construction today

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Meeting

A meeting was held to discuss the continuation of construction for the Biointrusion Layer and to coordinate the Final Report.

##### B. ISSUES/COMMENTS:

- The Biointrusion Layer (without the soil in the voids) may be a difficult layer to use as a new datum due to irregularities in the rock. Also, the rock is being pushed flat when the soil is placed and spread with a dozer into the voids and then compacted with a vibrating, smooth drum roller. Because of rock being pushed flat under the soil, we would not know the exact elevation of the rock after the sand has been placed and compacted. A better datum may be to use the Biointrusion Layer after the voids have been filled with loose soil and compacted with the vibrating, smooth drum roller. The loose soil makes a thin soil layer above the rock, which may be a better surface to create a starting datum for the Native Soil Layer.

1. It was decided that to make the corrections for the 2.0% surface slope and 6:1 side slopes during the Native Soil Layer because of construction constraints due to the

Biointrusion rock. It will be very difficult to adjust the Biointrusion rock surface to meet the specifications. As of now, the surface slopes are approximately at an average of 1.8%. Correcting the slope with the first couple of Native Soil Lifts will give us a better idea of how much material we are going to be short on the native soil layer. It will also be a much easier material to adjust to the specification requirements.

2. Most of the Biointrusion Layer thickness was within the specified thickness. There were a couple of points on the orange corner post that were high. These points are going to be corrected for the final QA survey on Friday.
3. We are expecting information from Jerry Peace regarding the Biointrusion Rock. This information is to be incorporated into the final report. (Jerry Peace information attached)
4. Mike Mitchell reviewed the Final Report Outline provided by Marshall Nay. Mike approved the outline and requested that the outline be updated throughout the duration of the project.

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Meeting complete

**F. PICTURES OBTAINED:**

1. NA

**INSPECTION CHECKLISTS REQUIRED**

None required

**PROPOSED NEXT DAY ACTIVITIES (date: 06/11/09)**

1. Continue with Biointrusion Layer rock construction
2. Continue placing loose sand and compacting into Biointrusion rock voids in approved areas.

## DAILY SUMMARY REPORT

**DATE:** 06/11/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:00; Partly cloudy (56 deg)

**WEATHER (PM):** 4:06 PM; Partly cloudy (71 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continued construction of Biointrusion Layer on northeast side
- Place Loose soil into Biointrusion Voids of approved area.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade.
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location).

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today on the northeast surface and slope. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/11/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. Additional rock was purchased from San Pedro Rock to finish the Biointrusion Layer.
2. The final Biointrusion rock should be installed by 12:00 PM tomorrow (06/12/09). Harry Buckner (URS) will be out at that time to finish his QA survey.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Rock was shipped from San Pedro Rock and placed directly on the Existing Subgrade. Approximately 558 CY of the Biointrusion Layer was installed today 781.88 tons of rock was delivered on site.

##### F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

### A. TASK DESCRIPTION: Placement Of Loose Soil In Biointrusion Voids

The northwest portion of the MWL has been approved for the placement of loose soil into the Biointrusion Voids. See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids.

### B. ISSUES/COMMENTS

1. None

### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### F. STATUS:

1. Approximately 1044 CY of loose soil was placed and worked into the Biointrusion voids today (58 Truck Loads @ approx 18 CY/truck). See dwg\_06/08/09\_Construction\_02.

### G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

### INSPECTION CHECKLISTS REQUIRED

1. Biointrusion Inspection Form

### PROPOSED NEXT DAY ACTIVITIES (date: 06/12/09)

1. Continue with Biointrusion Layer with delivered rock.
2. Continue placing the loose sand and working into voids of Biointrusion Layer in approved sections.
3. Survey QA on Final section.

## DAILY SUMMARY REPORT

**DATE:** 06/12/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; Partly Cloudy (57 deg)

**WEATHER (PM):** 3:50 PM; Partly Cloudy (76 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Biointrusion Layer
- Field CQA Survey of Northeast side of MWL (URS)
- Place Loose soil into Biointrusion Voids of approved area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Former Bulk Waste Staging Area, TA III, (Biointrusion Rock Location)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:03 am

Attendees: See attached sign in sheet.

Procedure:

- Please see general description above

Safety:

- Be sure to use proper eye protection
- New people need to be informed to drive patterns and other safety precautions.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Installation of Biointrusion Layer

The installation of the Biointrusion Layer continued today on the northeast surface and slopes. See the Daily Report dated 05/26/09 for the revised method of installation for the Biointrusion Layer. See attached dwg\_06/12/09\_Construction\_01 for illustration of installed Biointrusion Layer.

##### B. ISSUES/COMMENTS:

1. The final area to have the Biointrusion Rock Installed was completed today at 12:00 PM.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The construction of the Biointrusion Rock Layer (not including loose sand to fill voids) was completed today. Rock was shipped from San Pedro Rock and placed directly on the Existing Subgrade. Approximately 197 CY of the Biointrusion Layer was installed today. 275.88 tons of rock was delivered on site.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *COA Survey of Biointrusion Thickness*

Harry Buckner (URS) and Paul Molina (URS) conducted the QA survey on the Northeast portion of the MWL. The survey data collected will be converted into a usable format on Monday (06/15/09) and reviewed to determine the Biointrusion Layer thickness (see results attached). URS intends to provide EDi with approval/disapproval of the Biointrusion Layer Monday morning (06/15/09).

B. ISSUES/COMMENTS

1. The two locations that did not meet the minimum thickness requirement on the previous QA survey (See survey Data 06/08/09) were corrected.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. See attached for QA Survey Results

**III.**

A. TASK DESCRIPTION: *Placement Of Loose Soil In Biointrusion Voids*

The northwest end of the MWL has been approved for the placement of loose soil into the Biointrusion Voids. See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**F. STATUS:**

1. Approximately 165 CY of loose soil was placed and worked into the Biointrusion voids today (11 Truck Loads @ approx 18 CY/truck). See dwg\_06/08/09\_Construction\_02.

**G. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/15/09)**

1. Continue placing the loose sand and working into the voids of the Biointrusion Rock layer in approved sections.



## DAILY SUMMARY REPORT

**DATE:** 06/15/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; Partly cloudy (57 deg)

**WEATHER (PM):** 3:50; Partly cloudy (76 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Place loose soil into Biointrusion Voids of approved area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pits, TA-3

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I

##### A. TASK DESCRIPTION: COA of Biointrusion Rock Thickness

The Biointrusion northeast and northwest corrections (2 locations) are approved. The entire Biointrusion Layer (rock) is now approved.

#### II

##### A. TASK DESCRIPTION: Placement Of Loose Soil In Biointrusion Voids

The northeast surface and slopes of the MWL has been approved for the placement of loose soil into the Biointrusion Voids. See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids. The two grid point locations on the north slope have been corrected, resurveyed, and are approved.

##### B. ISSUES/COMMENTS

1. None

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Approximately 522 CY of loose soil was placed and worked into the Biointrusion voids today (29 Truck Loads @ approx 18 CY/truck). See dwg\_06/15/09\_Construction\_01.

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/16/09)**

1. Continue placing the loose soil and working into voids of Biointrusion Layer in approved sections.
2. Meeting regarding the procedure for the Native Soil Lifts 10:00 AM.

## DAILY SUMMARY REPORT

**DATE:** 06/16/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:00; Clear sky (58 deg)

**WEATHER (PM):** 3:00; Clear sky (86 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continued placing loose soil into Biointrusion Voids and compacting with roller.
- A meeting was held with URS, Sandia, and EDi for coordination of the Biointrusion survey and construction of the Native Soil Layer.
- Began placement of 6:1 slope around MWL where required for lifts #1 and #2.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Borrow Pits

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 AM  
Attendees: See attached sign in sheet.  
Issues: None

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Placement Of Loose Soil In Biointrusion Voids

The Northeast surface and slopes of the MWL has been approved for the placement of loose soil into the Biointrusion Voids. See the Daily Report dated 05/26/09 for the method of installation and compaction of the loose soil into the voids.

#### B. ISSUES/COMMENTS

1. None

#### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### F. STATUS:

1. Approximately 108 CY of loose soil was placed and worked into the Biointrusion voids today (34 Truck Loads @ approx 18 CY/truck). See dwg\_06/16/09\_Construction\_01.
2. Biointrusion Layer Completed and surveyed by EDi.

#### G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

## II.

### A. TASK DESCRIPTION: Meeting

A meeting was held to discuss the new datum on the Biointrusion Layer and the construction of the Native Soil Layer.

### B. ISSUES/COMMENTS:

1. Vladimir Jirik (Subcontractor Survey for EDi) attended today's meeting to discuss potential solutions for construction of the Native Soil Layer. There is currently an approximate 3-inch or less (nominal) compacted soil layer from the loose soil that was worked into the Biointrusion Rock voids. The thin soil layer creates a better surface to build the Native Soil Layer on due to the irregularities of the Biointrusion Rock. Vladimir Jirik is going to verify the nominal 3-inch thickness via survey CADD software. This thin soil layer will be the new construction datum. Vladimir has also been asked to create a topographic survey of the current existing surface (thin soil layer). This topographic survey will be based on the same 50-foot grid previously used on the Existing Subgrade and Biointrusion Rock Layer. The topographic survey will show the current elevations as well as the slope across the MWL surface. There will also be section cuts to show the difference in the current existing slope and a projected 2.0% slope to meet the contract specifications. Based off of this data, an approach will be determined to continue the construction of the Native Soil Layer.
2. Vladimir Jirik made a suggestion to bring the Native Soil up as a flat surface rather than correct the 2.0% slope on the final lift. This has already been discussed and is not the preferred method due to foreseeing soil shortages. It is also believed it is better to start correcting for the 2.0% slope as soon as possible due to some deviations in elevation existing in the Subgrade, which have continued through the Biointrusion Layer. Vladimir also suggested reverting back to the contract design for the remainder of the project. This is not ideal to use because the contract design does not fit exactly with what the existing conditions are. A final decision will be made based off of the survey data expected tomorrow.
3. The actual size of the MWL is greater than the 2.6-acre originally anticipated. The larger cover footprint due to the thicker Biointrusion Layer and resulting side slopes is anticipated to result in a shortage of screened soil fill. The actual size of the MWL as of now is about 3.05 acres. Additional soil can be extracted from the

Borrow Area, however, the exact amount is not known. Additional testing may need to be conducted in the Borrow Area to determine the depth of the Calichie layer.

4. Marshall Nay did an average on the thickness of the Biointrusion Rock Layer. The nominal thickness is approximately 1.29-feet, which is very close to the 1.25-foot maximum specified in the CMIP.
5. As of now, URS is not going to do a QA survey on the MWL until the 2-1/2-foot Native Soil Layer is complete. URS will do QA density/moisture test every 6-inch lift as specified in the CMIP.
6. It appears that we are not going to be able to correct the slope to 2.0% on the first lift of Native Soil due to the thickness requirements in the CMIP (8-inch loose, 6-inch compacted). The 2.0% slope will probably need to be made up incrementally with multiple lifts. To be discussed more when additional survey information is received tomorrow (06/17/09).
7. Specification section 02200 requires a hydraulic conductivity testing on each Native Soil Layer lift (8-inch loose, 6-inch compacted). No ASTM Standard was specifically called out in the Specifications and there are a couple of test to choose from:
  - a. The first test, ASTM D-5084, is a flexible wall hydraulic conductivity test. This test requires an "undisturbed" compacted sample to be taken in the field. The sample is then taken back to the lab to determine the hydraulic properties.
  - b. The second test, ASTM-5856, is a rigid wall hydraulic conductivity test. This test requires a sample to be taken from the field and returned to the lab. The sample is then compacted and tested at the lab. This test will take 3-5 days and is the most appropriate method based upon the CMIP and a team evaluation of the K-Sat testing logistics and alternatives.
8. During the pre-bid there was discussion concerning the potential for delay in schedule due to the hydraulic conductivity testing. The bidding contractors concern was they could control the moisture content and the density in the soil, however, because they are required to use the soil pre-determined by Sandia, they would not have control over the outcome of the hydraulic conductivity test. As a solution, Sandia agreed to not delay the project due to hydraulic conductivity testing.
9. EDi will begin adjusting the slopes of the MWL to 6:1 as specified on the north, east, and west slopes during the Native Soil Layer. The lifts will be placed in 8-inch loose, 6-inch compacted lifts as specified. Density/Moisture testing will be conducted after the completion of two 6-inch lifts. The Density/Moisture tests will be performed by driving the stake down and testing at 6-inches. The stake will then be driven an additional 6-inches (12-inch total) to test the first 6-inch

Native Soil Lift. A random location will be chosen on each side to be tested (3 locations; 6 test) per 12-inch lift. URS will perform random QA Density/Moisture tests to verify the results obtained by EDi. This procedure of adding the 6:1 slope is significantly adding to the size of the MWL.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Meeting to be continued tomorrow when additional survey information is obtained.

F. PICTURES OBTAINED:

1. NA

**III.**

A. TASK DESCRIPTION: **Begin Construction of 6:1 Slope around MWL Perimeter**

Construction of the 6:1 Slope on the North, East, and West slopes began today (Lifts #1 and #2).

B. ISSUES/COMMENTS

1. The slope will be constructed in 12-inch compacted increments because it is not part of the actual cover. Testing will be performed every 12-inches both at a depth of 12-inches and 6-inches.
2. The east and west slope will require about 6 lifts to reach the 6:1 slope requirement. The north slope will require 8 lifts to reach the 6:1 slope.
3. The actual size of the footprint will be between 3.0-to-4.0-acres in size in lieu of 2.6-acres as specified in the CMIP. A final survey will be conducted around the perimeter toe of the MWL to determine the actual size once complete.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 504 CY of loose soil was placed and compacted for the 6:1 side slope lifts #1 and #2. See dwg\_06/16/09\_Construction\_02.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Biointrusion Layer Inspection Form
2. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 06/17/09)**

1. A meeting will be conducted on how to proceed with the construction of the Native Soil Layer based on the survey data.
2. Continue placing the 6:1 slope around MWL where required.
3. Density Testing on 6:1 slope as required.



## DAILY SUMMARY REPORT

**DATE:** 06/17/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:00; Clear Sky (58 deg)

**WEATHER (PM):** 3:00; Clear Sky (86 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- The slope continued to be adjusted to a 6:1 slope around MWL where required
- Density/Moisture testing on 6:1 Slope Lift #1, #2, #3 and #4 (EDi).
- Meeting Regarding Native Soil construction

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Borrow Pits

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Meeting

A meeting was held to discuss the beginning the Native Soil Layer construction.

##### B. ISSUES/COMMENTS:

- A meeting was held with Sandia, EDi, and URS to discuss the construction of the Native Soil Layer. The topographic survey depicting the current existing conditions was provided by Vladimir Jirik (EDi surveyor). The Topographic map shows existing elevations, the thickness of the thin soil layer covering the Biointrusion Layer, section cuts of existing slopes, and the projected 2.0% slope.
1. After reviewing the topographic survey, it was determined the thin soil layer filling the Biointrusion voids was a nominal 3.0" thickness. It was determined that this was an acceptable thickness. The thin soil layer is now approved.
  2. After reviewing the survey, it was determined imperfections in the Biointrusion Layer that had been inherited by the low areas in the Existing Subgrade Layer were still present. Grid Blocks #7, #8, and #11 have low areas that require additional Native Soil material in order to achieve the 2.0% slope required across the MWL from east to west. Because of the maximum 8-inch loose, 6-inch compacted soil constraint in the CMIP, the difference in thickness will need to be constructed in two individual "wedge lifts". Each of the wedge lifts thickness will be within the specified requirements and will receive Moisture/Density testing as required. Once the slope is corrected using the wedge lifts, the additional lifts

(Lifts 3 through 8) will be placed in uniform 6-inch compacted lifts across the entire surface to achieve the 30.0-inch minimum requirement.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Meeting completed

F. PICTURES OBTAINED:

1. NA

**II.**

A. TASK DESCRIPTION: *Continue Construction and Testing of 6:1*

Construction of the 6:1 Slope on the North, East, and West slopes continued today. Lifts #1 and #2 were continued and completed today. Lifts #3 and #4 began and were completed today. Density/Moisture tests were conducted for Slope Lifts #1, #2, #3 and #4.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 792 CY of loose soil was placed and compacted for the 6:1 side slope lifts #1, #2, #3, and #4. See dwg\_06/17/09\_Construction\_01.
2. Density/Moisture testing was conducted by EDi for Slope Lifts # 1, #2, #3 and #4. All test results were in accordance with the Specifications.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

Native Soil Inspection Sheet  
Density/Moisture Tests Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/18/09)**

1. Continue construction and testing of 6:1 slope surrounding the MWL.

## DAILY SUMMARY REPORT

**DATE:** 06/18/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:09; Clear Sky (76 deg)

**WEATHER (PM):** 2:00; Clear Sky (deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- The slope continued to be adjusted to a 6:1 slope around MWL where required.
- Density/Moisture testing on 6:1 slopes; slope lifts #5, and #6 Side (EDi).
- Begin Construction of Lift #7 and #8 on North Slope only.
- Grade stakes were placed for the construction of the Native Soil "wedge lifts".

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pits, TA-III

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 AM  
Attendees: See attached sign in sheet.  
Issues: None

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Continue Construction and Testing of 6:1

Construction of the 6:1 Slope on the North, East, and West slopes continued today. Lifts #5 and #6 were continued and completed today. Lifts #7 and #8 began today. Density/Moisture tests were conducted for Slope Lifts #5 and #6.

#### B. ISSUES/COMMENTS

1. Slope lifts #7 and #8 will only occur on the North face of the MWL. The East and west slopes were brought to a 6:1 slope in six lifts.

#### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. Approximately 1170 CY of loose soil was placed and compacted for the 6:1 side slope lifts #5 and #6. See dwg\_06/17/09\_Construction\_01.
2. Density/Moisture testing was conducted by EDi for Slope Lifts # 5 and #6. All test results were in accordance with the Specifications.

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Sheet
  
1. Moisture/Density Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/19/09)**

1. Continue the construction and testing of the 6:1 slope on the north face of the MWL.
  
2. Construct Native Soil Wedge Lifts #1 and #2.

## DAILY SUMMARY REPORT

**DATE:** 06/19/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:00; Clear sky (77deg)

**WEATHER (PM):** 2:10; Clear sky (deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Complete and test 6:1 slope on north side of MWL
- Finish construction of 1<sup>st</sup> Native Soil lift, Wedge Lift #1
- Construct 2<sup>nd</sup> Native Soil lift, Wedge Lift #1
- Density/Moisture tests on 1<sup>st</sup> and 2<sup>nd</sup> Wedge Lifts
- QA Density/Moisture tests on north, east, and west 6:1 slopes (URS)
- QA Density/Moisture tests on north 6:1 slope (EDi)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Borrow Pits

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Construction and Testing of 1<sup>st</sup> Native Soil Lift, Wedge Lift #1

EDi completed the construction on Wedge Lift #1 (Native Soil Lift 1). Density/Moisture testing by EDi occurred in grid blocks #7, #8, and #11. Density/Moisture testing by URS occurred in grid blocks #8 and #11.

##### B. ISSUES/COMMENTS:

1. None

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Density/Moisture tests conducted for EDi and URS were in compliance with specifications (See Appendix C-06/19/09)

##### F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

### A. TASK DESCRIPTION: Construction and Testing of 2<sup>nd</sup> Native Soil Lift, Wedge Lift #2

EDi began and completed the construction of Wedge Lift #2 (Native Soil Lift #2). Density/Moisture testing by EDi occurred on grid blocks, #8, and #11. Density/Moisture testing by URS occurred in grid block #11.

### B. ISSUES/COMMENTS

1. None

### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### E. STATUS:

1. Density/Moisture test conducted for EDi and URS were in compliance with specifications (See Appendix C-06/19/09)

### F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

## III.

### A. TASK DESCRIPTION: QA Density/Moisture Tests on 6:1 Side Slopes

The construction of the final lifts on the north slope of the MWL (lift #7 and #8) were completed and tested today. QA testing was also conducted on the final lifts (lift #5 and #6) on the east and west slopes of the MWL.

### B. ISSUES/COMMENTS

1. The results of the QA (URS) Moisture/Density test conducted on the 6-inch 6:1 North slope (lift 8) appears erroneous. The results were not consistent with tests performed prior or with results obtained by EDi in the same location (See Appendix C-URS-6/19/09).

### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

### E. STATUS:

1. Density/Moisture Tests on east and west slopes are in accordance with the Specifications for both EDi and URS.

2. Density/Moisture Tests on the north slope appear to have a gross error for URS. The results obtained do not appear reasonable based on the results obtained by EDi and prior tests conducted by URS on similar soil material. URS will retest the north slope on 06/22/09.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Sheet
2. Density/Moisture Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/22/09)**

1. Retest density and moisture content on north Slope of MWL



## DAILY SUMMARY REPORT

**DATE:** 06/22/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:38; (72 deg); Partly Cloudy

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Soil from the berm surrounding the MWL was taken to the borrow area to be screened and mixed with the Native Soil.
- A meeting was conducted to review the MWL now that the Wedge Lifts (#1 and #2) have been completed.
- 6-inch Density/Moisture CQA (URS) retesting of the 6:1 north slope, Lift 8.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pits, TA-3

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 am

Attendees: See attached sign in sheet.

Procedure:

- Remove soil berm surrounding the MWL and take to borrow area to be screened and mixed with Native Soil.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: COA (URS) Retesting of 6:1 North Slope

The results from the density test conducted on the 6-inch 6:1 north slope (Lift #8) on 6/19/09 appear erroneous. The results were not consistent with tests performed prior on the moisture and density results (See Appendix C-URS-6/19/09). Paul Molina (URS) decided to redo the QA 6-inch Density/Moisture test on the 6:1 north Slope.

##### B. ISSUES/COMMENTS:

1. Robert Carr arrived onsite at 10:00 am. Robert was instructed by Paul Molina (URS) to perform three 6-inch tests across the 6:1 north slope (See attached for tests locations). One test was taken per grid block (#5, #10, and #13) across the north slope to confirm the moisture and density. One of the tests conducted was in the same area of the erroneous test performed on 6/19/09. The three tests met

the Specifications, which confirmed our suspicion that the test performed on 6/19/09 was a faulty reading.

2. Chris Williams (Sandia) allowed Robert Carr to come onsite without checking Roberts Troxler machine. Chris was in a meeting, which did not allow him to come to the MWL. Chris checked Robert's testing equipment last on 06/19/09.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The North 6:1 slope is in compliance with the Specification requirements.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

## II.

A. TASK DESCRIPTION: Meeting (URS, EDi, Sandia)

Chris Edgman (EDi) received an updated topographic map with section cuts of the MWL, which includes the installation of the two wedge lifts (See Appendix A). The maps and section cuts were reviewed to discuss how construction of the Native Soil Layer should continue.

B. ISSUES/COMMENTS

1. Chris Edgman wanted to know if URS wanted EDi to perform their Density/Moisture tests in the exact same location for each lift. Marshall Nay and Paul Molina (URS) decided it was best not to have the Density/Moisture tests performed in the same location, but to have them randomly selected within the 13 grids previously established (one test per grid).
2. Discussion on identifying which proctor is to be used for different locations on the MWL occurred. There is currently a range of proctor maximum densities and optimum moisture content from 112.2-to-119.1 pcf and 10.3-to-14.4% respectively. Marshall Nay (URS) calculated the average of all of the current proctors. Marshall received an average maximum density and optimum moisture content of 116.0 pcf and 12.3% respectively. Jon Schermerhorn (AMEC) conducted field proctors as the two wedge lifts were being placed and received a maximum density and optimum moisture content of 115.7 pcf and 12.6% respectively. Both Marshall and Jon acquired similar results, which supported the Density/Moisture tests results.
3. After reviewing the new topographic map it was determined there are still slopes that do not meet the 2.0% requirement. The Native Soil Layer was brought up into

the specified tolerance range, however, after reviewing the section cuts there are still some areas that are below the 2.0% grade line that will need correction. EDi proposed correcting these low areas during the third lift of Native Soil. The third lift will fill the low areas with approx 3-to-6-inches of soil while placing only a thin layer of soil, if any, on the areas with higher elevations. This will create a flat surface at approximately 2.0% across the entire MWL. Because soil will only be placed in the low areas, it is not sufficient to perform Density/Moisture tests on all 13 grids. Only the areas that receive enough soil (approximately 4-inch minimum) will be tested. The areas that do not receive enough soil to test during the third lift will be tested during the fourth lift.

4. After the third lift is tested and approved, the fourth lift will begin. The fourth lift will also be a thin lift (less than 6-inches) to prevent the areas that received a small amount of soil in the third lift, but not enough soil to test, from exceeding the 6-inch maximum thickness specification constraint. The fourth lift will also be used to "fine-tune" the 2.0% slope. After the fourth lift, the Native Soil remaining lifts (5 through 8) will be constructed and tested in consistent 6-inch lifts at the 2.0% slope. EDi will provide Marshall Nay with a copy of the Topographic Survey Data after the fourth lift (See Appendix A).

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Meeting concluded

**F. PICTURES OBTAINED**

1. NA

**INSPECTION CHECKLISTS REQUIRED**

1. Density/Moisture Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/23/09)**

1. Begin third lift of Native Soil Layer
2. Test third lift of Native Soil Layer



## DAILY SUMMARY REPORT

**DATE:** 06/23/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:38, (72 deg); Partly Cloudy

**WEATHER (PM):** 1:21; (72 deg); Cloudy, 10 mi. lightning warning @ 1:15 pm

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Placement of the Native Soil Lift #3. Density/Moisture testing were conducted for the Native Soil, lift 3.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Borrow Pits

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- Place Native Soil Lift #3 onto the MWL.
- Test Native Soil Lift #3

Safety:

- Keep interior of trucks clean to prevent slip/falls

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, 3<sup>rd</sup> Lift

The 3<sup>rd</sup> lift of the Native Soil Layer began today.

##### B. ISSUES/COMMENTS:

1. After reviewing the new topographic map it was determined there are still slopes that do not meet the 2.0% requirement. EDi proposed correcting these low areas during the third lift of Native Soil. The third lift will fill the low areas with approx 3-to-6-inches of soil while placing only a thin layer of soil, if any, on the areas with higher elevations. This will create a flat surface at approximately 2.0% across the entire MWL.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 1206 CY of Native Soil was placed and compacted on the west side of the MWL in grid blocks #1, #2, #3, and #4. See dwg\_06/23/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Density/Moisture Testing, 3<sup>rd</sup> Lift*  
Moisture/Density test on the Native Soil 3<sup>rd</sup> lift.

B. ISSUES/COMMENTS

1. Because soil will only be placed in the low areas, it is not sufficient to perform density/moisture tests on all 13 grids on the 3<sup>rd</sup> lift. Only the areas that receive enough soil (approximately 4-inch) will be tested (See Appendix C-6/23/09). The areas that do not receive enough soil to test during the third lift will be tested during the fourth lift. Caution will be taken not to exceed the 6-inch thickness specification constraint during the 4<sup>th</sup> lift on areas not tested during the 3<sup>rd</sup> lift.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. One QA Density/Moisture test was performed in grid block #2. EDi performed Density/Moisture test in grid blocks #1 and #2 (See Appendix C).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Sheet
2. Moisture/Density Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 6/24/09)**

1. Finish constructing and testing Native Soil Lift #3.
2. Begin construction of Native Soil Lift #4.

## DAILY SUMMARY REPORT

**DATE:** 06/24/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 9:21; (72 deg); Partly Cloudy

**WEATHER (PM):** 3:30; (87 deg); Partly Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Completion of Native Soil lift #3. Density/Moisture testing were conducted for the Native Soil, Lift #3.
- Begin Native Soil Lift #4
- Meeting

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Borrow Pits

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- Place and test Native Soil Lift #3 onto the MWL.
- Begin Native Soil Lift #4.

Safety:

- Speed limits around Tech Area III have been reduced to 30 MPH.
- Review of water truck safety.

### DAILY TASK

I.

A. TASK DESCRIPTION: Native Soil, 3<sup>rd</sup> Lift

Continue construction and testing of the Native Soil Layer 3<sup>rd</sup> lift.

### ISSUES/COMMENTS:

1. After reviewing the new topographic map it was determined there are still slopes that do not meet the 2.0% requirement. EDi proposed correcting these low areas during the third lift of Native Soil. The third lift will fill the low areas with approx 3-to-6-inches of soil while placing only a thin layer of soil, if any, on the areas with higher elevations. This will create a flat surface at approximately 2.0% across the entire MWL.

2. URS tested grid block #8. EDi tested grid blocks # 6, and #8.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 500 CY of Native Soil was placed and compacted on the East side of the MWL. See dwg\_06/24/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: Native Soil, 4<sup>th</sup> Lift

Begin construction of the Native Soil Layer 4<sup>th</sup> lift. Construction from west to east.

ISSUES/COMMENTS:

1. The areas that did not receive enough soil to test during the 3<sup>rd</sup> lift. These areas will be tested during the 4<sup>th</sup> lift. Caution will be taken not to exceed the 6-inch thickness specification constraint during the 4<sup>th</sup> lift on areas not tested during the 3<sup>rd</sup> lift. The locations of the tested areas will be surveyed. The 4<sup>th</sup> lift was not tested for density and moisture today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 616 CY of Native Soil was placed and compacted on the west side of the MW. See dwg\_06/24/09\_Construction\_01. The soil was only placed; it will need to be compacted tomorrow.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: Meeting (9:00 am) Sandia, EDi, URS

See Issues/Comments for meeting description.

B. ISSUES/COMMENTS:

1. Edgewood Aggregate may not be able to provide enough crushed gravel to meet the current schedule. Edgewood Aggregate is providing the 3/8" crushed gravel previously approved for the Topsoil Layer. EDi is resubmitting the Crushed Gravel from Fisher as an alternative to the crushed gravel previously approved by Edgewood Aggregate (See Appendix G, Submittals #1 and #8). EDi may use crushed gravel from both Edgewood aggregate and Fisher. A new sample of the Fisher aggregate was provided today and appears very similar to the previously approved Edgewood aggregate.
2. Approximately 2000 tons of 3/8" crushed gravel was estimated. Due to the MWL being greater than 2.6-acres specified in the CMIP, additional 3/8" crushed gravel will be needed.
3. Due to the MWL being greater than 2.6-acres specified in the CMIP, additional soil will need to be excavated out of the borrow area. The decision was made not to do any borings in the borrow area to determine the depth of the caliche layer because the caliche layer can be mixed to meet the specification requirements. We will only want to use the caliche soil mix in the Native Soil Layer because of the high level of alkalines found in caliche. Alkalines are not ideal for the Topsoil Layer because they will hinder the growth of surface vegetation.
4. It was determined the 6:1 slope on the west face of the MWL is going to cover the bottom portion of the west Monitoring Wells. Additional discussion will occur on how to prevent the Monitoring Wells from being covered after we determine what the Monitoring Well Inspection requirements are.

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

Meeting concluded

**F. PICTURES OBTAINED:**

1. Native Soil Inspection Sheet
2. Moisture/Density Tests Sheet

**INSPECTION CHECKLISTS REQUIRED**

**PROPOSED NEXT DAY ACTIVITIES (date: 6/25/09)**

1. Continue constructing and testing Native Soil Lift 4.



## DAILY SUMMARY REPORT

**DATE:** 06/25/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:33; (71 deg); Partly cloudy

**WEATHER (PM):** 12:45; (82 deg); Cloudy, lightning warnings.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue the construction of Native Soil Layer lift 4

### LOCATION OF CONSTRUCTION:

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:03

Attendees: See attached sign in sheet.

Procedure:

- Will do SWPPP requirements due to ½-inch of rain received yesterday
- EDi and URS will conduct testing on the 4<sup>th</sup> Native Soil Lift

Safety:

- Equipment operators need to use stairs to exit equipment to prevent injury.
- Be sure to have proper MSDS for hazardous materials.

2. Description: Afternoon Safety Briefing

Time:

Attendees: See attached sign in sheet.

Issues:

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil Layer, 4<sup>th</sup> Lift

Continue the construction of the Native Soil Layer, Lift #4. Construction will occur from west to east.

##### B. ISSUES/COMMENTS:

1. Native Soil Layer, Lift #4 was not completed today because of weather delays.
2. Native Soil Lift #4 cannot be placed in grid block 11 until Native Soil Lift #3 is tested in grid block 11.

3. No Density/Moisture testing occurred today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 1170 CY of Native Soil was placed and compacted for Lift #4.  
See dwg\_06/25/09\_Construction\_01.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

II.

A. TASK DESCRIPTION: *3/8-Inch Topsoil Crushed Gravel*

Edgewood Aggregate may not be able to provide enough crushed gravel to meet the current schedule. Edgewood Aggregate is providing the 3/8-inch crushed gravel previously approved for the Topsoil Layer. EDi is resubmitting the Crushed Gravel from Fisher as an alternative to the crushed gravel previously approved by Edgewood Aggregate (See Appendix G, Submittals #1 and #8). EDi is proposing to use crushed gravel from both Edgewood aggregate and Fisher. A new sample of the Fisher aggregate was provided yesterday and contains similar physical properties as the previously approved Edgewood aggregate.

B. ISSUES/COMMENTS:

1. EDi plans to mix the 3/8-inch crushed gravel available by Edgewood Aggregate with the 3/8-inch crushed gravel from Fisher.
2. Approximately 2,300-tons of crushed gravel will be needed.
3. No available aggregate met specifications for % passing through the #4 sieve. An aggregate was selected and approved using engineering judgment. Marshall Nay (URS) has approved the Fisher 3/8-inch crushed gravel today in lieu of Don Lopez.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Marshall Nay (URS) has approved the Fisher 3/8-inch crushed gravel today.

F. PICTURES OBTAINED

1. NA

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/26/09)**

1. Test Grid Block 11, Native Soil Lift #3.
2. Test Grid Blocks 1-10, Native Soil Lift #4
3. Complete Native Soil Lift #4



## DAILY SUMMARY REPORT

**DATE:** 06/26/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:41; (67 deg); Clear Sky

**WEATHER (PM):** 3:00; (78 deg); Cloudy, 10 Mile Lightning Warning

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue the construction of Native Soil Lift #4
- Density/Moisture tests, Native Soil Lift #3, Grid Block 11
- Density/Moisture tests, Native Soil Lift #4, Grid Blocks 1-10
- NMED tour of MWL at 2:00 pm
- Begin EDi survey of Native Soil Lift #3 and #4.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00-7:20 AM

Attendees: See attached sign in sheet.

#### Procedure:

- NMED tour will be conducted at 2:00pm today
- Density/Moisture tests will be conducted today
- EDi plans to start shipping the 3/8-inch crushed gravel to borrow pit next week

#### Safety:

- Be sure to wear proper eye protection.

### DAILY TASK

#### I.

A. TASK DESCRIPTION: Native Soil Lift #4 and Testing of Native Soil Lift #3  
Native Soil Layer, Lift #4 was continued today. Native Soil Layer, Lift #4 was not completed due to a lightning. Construction continued from east to west.

#### B. ISSUES/COMMENTS:

1. Density/Moisture testing was conducted for Native Soil Layer, Lift #3 in Grid Block 11 prior to installing Native Soil Lift #4 in Grid Block 11.
2. URS conducted Density/Moisture testing for Lift #3 in Grid Block 11.

3. Density/Moisture testing was conducted for Native Soil Layer, Lift #4 in Grid Blocks 1-10 by EDi. The final testing of the 4<sup>th</sup> Native Soil Lift will be performed on 06/29/09. URS conducted testing in Grid Blocks 1, 3, 5, 9, and 7.
4. EDi began survey of Native Soil Lifts #3 and #4 today. Survey will continue 6/29/09.

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Approximately 432 CY of Native Soil was placed and compacted for Lift #4. See dwg\_06/26/09\_Construction\_01. Moisture/Density Tests will be conducted on 06/29/09. Survey data collected today will also be reviewed on 06/30/09.

**F. PICTURES OBTAINED:**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Sheet
2. Density/Moisture Sheet

**ADDITIONAL NOTES:**

1. Mike Mitchell provided URS with a copy of the Topsoil Layer compaction data for the Chem. Waste Landfill. The information discusses the difference in compaction of the Topsoil Layer using a dozer and loader (See attached). This information may be used to resolve compaction issues on the Mixed Waste Landfill Topsoil Layer.

**PROPOSED NEXT DAY ACTIVITIES (date: 06/29/04)**

1. Perform survey of Native Soil Lifts #3 and #4.
2. Final Construction of Native Soil, Lift #4.
3. Final Moisture/Density Tests on Native Soil, Lift #4.

## DAILY SUMMARY REPORT

**DATE:** 06/29/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:34; (61 deg), Clear Sky

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Complete the construction, testing and survey of Native Soil, Lift #4
- Begin shipment of 3/8-inch crushed gravel
- Hand compaction of Native Soil, Lift #4 around Monitoring Well, M-4
- EDi survey of Native Soil Lifts #3 and #4 continued today.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:03 AM

Attendees: See attached sign in sheet.

Procedure:

- Complete construction, survey, and testing of NS Lift #4.
- Begin shipment of 3/8-inch crushed gravel for topsoil.

Safety:

- Be sure to use proper eye protection.
- New people need to be informed to drive patterns and other safety precautions.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #4

The construction, testing and survey of Native Soil Lift #4 continued today.

##### B. ISSUES/COMMENTS:

1. EDi conducted a survey of the MWL after Native Soil Lift #4 was completed. The survey data will be converted into a topographic map to be reviewed prior to starting Native Soil Lift #5.
2. Density/Moisture testing was conducted on the remaining grid blocks for the Native Soil Lift, #4. URS provided QA testing on Grid Blocks #11 and #13. EDi conducted testing on Grid Blocks # 11, #12, and #13.

3. Native Soil, Lift #4 was compacted around the Monitoring Well (M-4) using hand compaction methods as specified.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The construction, testing, and survey of Native Soil Lift #4 were completed today. A topographic map of the survey will be Constructed and verified before Native Soil Lift #5 may begin.
2. Hand compaction around the Monitoring Well (M-4) was completed today.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *3/8-Inch Crushed Gravel Shipment*

The 3/8-inch crushed gravel for topsoil shipment began today.

B. ISSUES/COMMENTS

1. 3/8-inch crushed gravel is being stored at the Borrow Pit.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. 18 loads (Approximately 450-tons) of 3/8-inch crushed gravel was shipped and stored at the Sandia Borrow Pit.

F. PICTURES OBTAINED

1. No pictures of this procedure were collected today.

**INSPECTION CHECKLISTS REQUIRED**

1. Density/Moisture Tests Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 06/30/09)**

1. Review topographic map of Native Soil Lift #4.
2. Begin Construction of Native Soil Lift #5 if topographic survey is approved.

3. Continue shipment of 3/8-inch crushed gravel for Topsoil Layer.



## DAILY SUMMARY REPORT

**DATE:** 06/30/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:24 (75 deg); Partly cloudy

**WEATHER (PM):** 3:00 (86 deg); 10 Mile lightning warning

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Review topographic map of Native Soil Lift #4 for approval
- Minor corrections to Native Soil Lift #4
- Begin construction of Native Soil Lift #5
- Continue shipment of 3/8-inch crushed gravel for the Topsoil Layer.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:02 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

-The Site Safety Plan is being edited to allow the site safety officer to allow the continuation of work even if clearance has not been given by Sandia Officials.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topographic Map For Native Soil Lift #4

The topographic map of Native Soil Lift #4 was reviewed to ensure the lift was in compliance with the CMIP.

##### B. ISSUES/COMMENTS:

1. The topographic survey is very close to the anticipated slopes and thickness required in the CMIP.
2. Section Cut #6 of the topographic survey has approximately 1.0-inch of soil over the ideal 2.0% slope line. This section has been tested and has met all Moisture/Density requirements. This section will be placed in a 5.0-inch lift for

Native Soil Lift #5 to comply with the 6.0-inch maximum of compacted soil constraint.

3. Section Cut #7 of the topographic survey has a small area that is approximately 1.0-to-2.0-inch below the ideal 2.0% slope line. This area will be reworked, recompacted, and resurveyed before Native Soil Lift #5 will begin. The topographic survey will be updated accordingly.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Section Cut #7 has been reworked, recompacted, and resurveyed. Native Soil Lift #4 has been approved. Native Soil Lift #5 may now begin.

F. PICTURES OBTAINED:

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: Native Soil, Lift #5

Begin construction of Native Soil Lift #5. Construction will proceed from east to west.

B. ISSUES/COMMENTS

1. No Density/Moisture testing was conducted today

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 756 CY of Native Soil was placed and compacted for Lift #5. See dwg\_06/30/09\_Construction\_01. Moisture/Density Tests will be conducted on 07/01/09.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: 3/8-Inch Crushed Gravel Shipment

The 3/8-inch crushed gravel for topsoil shipment continued today.

B. ISSUES/COMMENTS

1. 3/8-inch crushed gravel is being stored at the Borrow Pit.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. 25 loads (Approximately 625-tons) of 3/8-inch crushed gravel was shipped and stored at the Sandia Borrow Pit.

F. PICTURES OBTAINED

1. No pictures of this procedure were collected today.

**INSPECTION CHECKLISTS REQUIRED**

**PROPOSED NEXT DAY ACTIVITIES (date: 07/01/09)**

1. Continue the construction of Native Soil Lift #5
2. Density/Moisture tests on completed portions of Native Soil Lift #5
3. Continue shipping the 3/8-inch crushed gravel to the Sandia Borrow Pit.



**2009 Daily Quality Control Reports**

**July 2009**



## DAILY SUMMARY REPORT

**DATE:** 07/01/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15; (67 deg); Partly cloudy

**WEATHER (PM):** 2:33; (88 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #5.
- Density/Moisture tests of Native Soil Lift # 5 in completed areas.
- Continue shipment of 3/8-inch crushed gravel for the Topsoil Layer.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:02 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Be aware of traffic on turns that are not 90 deg.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction of Native Soil Lift #5. Construction will continue from east to west. Density/Moisture testing on Native Soil Lift #5 will begin today.

##### B. ISSUES/COMMENTS

1. Density/Moisture testing was conducted today. URS tested grid block 12. EDi tested grid blocks 11, 12, and 13.
2. A location on the corner of Grid Block 7 (See Attached) was found which requires a fill of 0.90-feet to achieve the proper elevation. 0.45-feet of Native Soil was placed yesterday (06/30/09) at this location. This location will receive Density/Moisture testing today. An additional 0.45-feet of Native Soil will then be placed to achieve the 0.90-feet required. The second lift of 0.45-feet will be tested with the remainder of Native Soil Lift #5 as required in the CMIP.

3. The first 0.45-foot layer placed yesterday was tested for moisture/density, but failed. The area was reworked, recompact, and retested. The moisture/density test was then successful. The second 0.45-foot layer was then placed (to account for the 0.9-foot thickness). EDi performed a moisture/density test in this location which also passed.
4. The grader had a small leak which caused a small delay in the construction of Native Soil Lift #5.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 792 CY of Native Soil was placed and compacted for Lift #5. See dwg\_07/01/09\_Construction\_01. Moisture/Density tests were conducted today for Native Soil Lift #5.
2. The 0.9-foot low area was corrected and tested in two 0.45-foot lifts in compliance with the CMIP.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: **3/8-Inch Crushed Gravel Shipment**

The 3/8-inch crushed gravel for topsoil shipment continued today.

B. ISSUES/COMMENTS

1. 3/8-inch crushed gravel is being stored at the Borrow Pit.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. 25 loads (628-tons) of 3/8-inch crushed gravel was shipped and stored at the Sandia Borrow Pit.

F. PICTURES OBTAINED

1. No pictures of this procedure were collected today.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 07/02/09)**

1. Continue the construction of Native Soil Lift #5
2. Density/Moisture tests on completed portions of Native Soil Lift #5



## DAILY SUMMARY REPORT

**DATE:** 07/02/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 9:38; (74 deg); Partly cloudy

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #5.
- Density/Moisture tests of Native Soil Lift # 5 in completed areas.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:02 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Be aware of traffic on turns that are not 90 deg.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction of Native Soil Lift #5. Construction will continue from east to west. Density/Moisture testing on Native Soil Lift #5 will continue today.

##### B. ISSUES/COMMENTS

1. Density/Moisture testing was conducted today. URS tested grid blocks # 6, 8, and 10. EDi tested grid blocks 6, 7, 8, 9, and 10.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Approximately 630 CY (35 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/02/09\_Construction\_01. Moisture/Density tests were conducted today.

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 07/06/09)**

1. Continue the construction of Native Soil Lift #5
2. Density/Moisture tests on completed portions of Native Soil Lift #5

## DAILY SUMMARY REPORT

**DATE:** 07/06/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:20; (66 deg); Clear sky

**WEATHER (PM):** 2:34; (86 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #5
- Calibration of Pug Mill

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:02 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

Safety:

- Be aware of traffic on turns that are not 90 deg.

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction of Native Soil Lift #5. Construction will continue from east to west.

#### B. ISSUES/COMMENTS

1. No density/moisture testing today.

#### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. Approximately 756 CY (42 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/06/09\_Construction\_01. Moisture/Density Tests will be conducted on 07/07/09.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Calibration of Pug Mill*

Pioneer Industries has completed the setup of the Pug Mill and has begun calibration.

B. ISSUES/COMMENTS

1. Gravel and soil are being weighed using the Pug Mill. The gravel and soil are then taken to a Sandia scale located off site. The Pug Mill is then adjusted to match the Sandia scale as to get accurate soil-to-rock ratios required in CMIP.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Calibration will continue tomorrow (07/07/09).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Forms.

**PROPOSED NEXT DAY ACTIVITIES (date: 07/07/09)**

1. Continue the construction of Native Soil Lift #5
2. Density/Moisture tests on completed portions of Native Soil Lift #5

## DAILY SUMMARY REPORT

**DATE:** 07/07/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:11; (65 deg); Clear sky

**WEATHER (PM):** 4:30; (91 deg) Clear sky

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction and testing of Native Soil Lift #5
- Calibration of Pug Mill/ Production of Topsoil with 3/8-inch gravel
- Begin excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Weekly inspection today
- Wear proper PPE
- Use ladder's properly
- Be aware of traffic at Borrow area due to higher activity

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction and testing of Native Soil Lift #5. Construction will continue from east to west. See Drawing 07/07/09.

##### B. ISSUES/COMMENTS

1. Density/Moisture tests were conducted at 3:00 PM today within grids 1, 2, 3, 4, and 5 by EDi. Numerous moisture tests were below the requirement (Required Density: 117 pcf, Required Moisture: 12.0 +/- 2.0%). It was determined grids 1 through 5 are to be scarified and reworked. URS postponed QA testing due to EDi test failures. URS will conduct QA test on 7/09/09.

2. Grids 1, 2, 3, 4, and 5 were scarified using the rippers on the grader. Some additional water was added.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 756 CY (42 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/07/09\_Construction\_01. Moisture/Density Tests were conducted today. Retest to be conducted on 07/09/09.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

II.

A. TASK DESCRIPTION: Calibration of Pug Mill/3-8-Inch Gravel and Topsoil Mix

Pioneer Industries has completed the setup of the pug mill and has begun the calibration. The calibration will be completed today and the production of 3/8-inch crushed gravel/Topsoil Mix will begin.

B. ISSUES/COMMENTS

1. Gravel and topsoil are being weighed using the Pug Mill. The gravel and topsoil are then taken to a calibrated Sandia scale located off of the jobsite. Once the topsoil and gravel are weighed using the Sandia scale, the Pug Mill is adjusted to match the Sandia scale +/- 1.0%. Once the Pug Mill is calibrated, topsoil and 3/8-inch crushed gravel will be added. The Pug Mill will combine the gravel and topsoil to produce the topsoil/gravel mixture as specified in the CMIP. The Topsoil Specifications require a 25%, by volume admixture of 3/8-inch crushed gravel to the topsoil. By knowing the weight of the crushed gravel and topsoil and adding to the Pug Mill accordingly, this has been accomplished.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Calibration was completed today
2. Approximately 100 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: *Excavation of Additional Topsoil*

Additional topsoil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. The west portion of the Sandia Borrow Pit (TA-3) is being excavated for additional Top/Native Soil for the MWL .

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 125 CY of topsoil was excavated and screened today. Additional Top/Native Soil will continue to be excavated out of the Borrow Pit (TA-3) tomorrow.

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form
2. Moisture/Density Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 07/08/09)**

1. Continue the construction of Native Soil Lift #5
2. Continue reworking grids 1, 2, 3, 4, and 5.
3. Continue the excavation for additional Top/Native Soil out of the West portion of Borrow Pit (TA-3)
4. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/08/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 9:26; (79 deg); Clear sky

**WEATHER (PM):** 4:00; (92 deg); Clear sky

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #5
- Production of Topsoil with 3/8-inch gravel
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area
- NMED arrived onsite at 9:30 AM

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

Safety:

-Use caution at borrow site due to numerous vehicles being operated.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction of Native Soil Lift #5. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Grids 1, 2, 3, 4, and 5 were reworked today. The reworked grids will be tested tomorrow (07/09/09).
2. EDi had equipment problems today. The excavator has a broken track, the grader has a flat tire, and one of the screens has a filter that is not working. EDi is working to fix the equipment quickly.

- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 720 CY (40 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/08/09\_Construction\_01
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

## II.

- A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix  
The production of 3/8-inch crushed gravel/Topsoil mix continued today.
- B. ISSUES/COMMENTS
  - 1. The Topsoil Specifications require a 25%, by volume admixture of 3/8-inch crushed gravel to the topsoil. By knowing the weight of the crushed gravel and topsoil and adding to the Pug Mill accordingly, this has been accomplished this.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 780 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

## III.

- A. TASK DESCRIPTION: Excavation of Additional Topsoil  
Additional soil is being excavated and screened at the Sandia Borrow Pit (TA-3).
- B. ISSUES/COMMENTS
  - 1. The west portion of the Sandia Borrow Pit (TA-3) is being excavated for additional Top/Native Soil for the MWL. The additional volume of material excavated will be recorded once determined at a later date.
  - 2. Large rocks were noticed in the Native Soil stockpile. When the screen was inspected, a hole was found which was allowing a couple of larger rocks to slip

through. The screen was shut down and will be replaced or fixed tomorrow. The large rocks that were found were removed from the Native Soil.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Additional Top/Native Soil will continue to be excavated out of the Borrow Pit (TA-3) tomorrow. Total volume will be determined at a later date.

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

Native Soil Inspection Form

**IV.**

**A. TASK DESCRIPTION: NMED SITE TOUR**

NMED arrived onsite at 9:30 am. Don Schofield escorted them around the MWL and took them up into the scissor lift.

**PROPOSED NEXT DAY ACTIVITIES (date: 07/09/09)**

1. Continue the construction and testing of Native Soil Lift #5
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/09/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:09; (70 deg); Clear sky

**WEATHER (PM):** 3:00; (91 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction and testing of Native Soil Lift #5
- Production of Topsoil with 3/8-inch gravel
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

Safety:

- Keep hydrated due to hot temperatures
- Pull over vehicle when using cell phone
- Be sure to use seat belt

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction and testing of Native Soil Lift #5. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Grids #1, #2, #3, #4, and #5 were reworked yesterday. Construction of the remaining areas in these grids was completed today.
2. Density/Moisture tests were retaken today within grids #1, #2, #3, #4, and #5 by EDI. URS performed QA Density/Moisture tests in grids #2 and #4.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 522 CY (29 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/09/09\_Construction\_01

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

II.

A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix

The production of 3/8-inch crushed gravel/topsoil mix continued today.

B. ISSUES/COMMENTS

1. Continued production of the 3/8-inch crushed gravel/topsoil mixture.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 625 CY of the 3/8-inch crushed gravel/topsoil mixture was produced today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

III.

A. TASK DESCRIPTION: Excavation of Additional Topsoil

Additional soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. The stationary screen was shutdown this morning to replace the broken screen which allowed a couple of larger rocks to slip through. The broken screen was replaced and excavation and screening continued.
2. The northwest portion of the Sandia Borrow Pit (TA-3) is being excavated for additional Top/Native Soil for the MWL. The additional volume of material excavated will be recorded once determined at a later date.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Additional Top/Native Soil will continue to be excavated out of the Borrow Pit (TA-3) tomorrow. Total volume will be determined at a later date.

**F. PICTURES OBTAINED**

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form
2. Moisture/Density Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 07/10/09)**

1. Complete the construction of Native Soil Lift #5
2. Continue the excavation for additional Top/Native Soil out of the West portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill
4. Begin construction of Native Soil Lift #6
5. Survey of Native Soil Lift #5



## DAILY SUMMARY REPORT

**DATE:** 07/10/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:09; (70 deg); Clear sky

**WEATHER (PM):** 3:00; (91 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Complete the construction of Native Soil Lift #5
- Production of topsoil with 3/8-inch gravel
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area
- Begin construction of Native Soil Lift #6

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

Safety:

- Keep hydrated due to hot temperatures
- Pull over vehicle when using cell phone
- Be sure to use seat belt

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #5

Continue construction and survey of Native Soil Lift #5.

##### B. ISSUES/COMMENTS

1. The west slope was completed for Native Soil Lift #5.
2. QC survey of Lift # 5 was performed and completed today by EDi.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 108 CY (6 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #5. See dwg\_07/10/09\_Construction\_01
2. Construction of Native Soil Lift #5 was completed today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: Native Soil, Lift #6

Construction of Native Soil Lift # 6 began today. Construction will continue from east to west across MWL surface.

B. ISSUES/COMMENTS

1. Construction has begun for Lift #6. Native Soil was only placed today. The Native Soil placed will receive water and compaction on Monday (07/13/09).
2. No moisture/density testing occurred today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 648 CY (36 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed for Lift #6. See dwg\_07/10/09\_Construction\_01. Native soil for this lift will be compacted on Monday (7/13/09)

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix

The production of 3/8-inch crushed gravel/topsoil mix continued today.

B. ISSUES/COMMENTS

1. The production of 3/8-inch crushed gravel/Topsoil mix continued today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 600 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**VI.**

A. TASK DESCRIPTION: *Excavation of Additional Topsoil*

Additional soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. The west portion of the Sandia Borrow Pit (TA-3) is being excavated for additional Top/Native Soil for the MWL. The additional volume of material excavated will be recorded once determined at a later date.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 650 CY of soil was excavated and screened for topsoil.  
2. Approximately 558 CY of soil was excavated and screened for native soil.

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form  
2. Moisture/Density Test Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 07/13/09)**

1. Continue the construction of Native Soil Lift #6  
2. Continue the excavation for additional Top/Native Soil out of the West portion of Borrow Pit (TA-3)  
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/13/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 9:26; (79 deg); Clear sky

**WEATHER (PM):** 3:58; (96 deg); Clear sky

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #6
- Production of Topsoil with 3/8-inch gravel
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Temp may get to 98 deg. Be sure to drink fluids.
- The evacuation location is the Golf Course
- There is a new muster point located at the borrow area by rain gauge

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #6

Continue construction of Native Soil Lift #6. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Construction continued from east to west today for Native Soil Lift #6. Grids #11 and #12 were completed today. EDi began construction on Grids #6, #7, #8, and #9.
2. Soil placed on Friday (07/10/09) was moisture conditioned and compacted today in grid blocks #11, #12, and #13.

3. No moisture/density testing today.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  1. Approximately 738 CY (41 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #6. See dwg\_07/13/09\_Construction\_01
- F. PICTURES OBTAINED
  1. Pictures of this procedure were collected and filed.

## II.

- A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix  
The production of 3/8-inch crushed gravel/Topsoil mix continued today.
- B. ISSUES/COMMENTS
  1. The production of 3/8-inch crushed gravel/Topsoil mix continued today.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  1. Approximately 600 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.
- F. PICTURES OBTAINED
  1. Pictures of this procedure were collected and filed.

## III.

- A. TASK DESCRIPTION: Excavation of Additional Topsoil  
Additional soil is being excavated and screened at the Sandia Borrow Pit (TA-3).
- B. ISSUES/COMMENTS
  1. The west portion of the Sandia Borrow Pit (TA-3) is being excavated for additional Top/Native Soil for the MWL. The additional volume of material excavated will be recorded once determined at a later date.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 600 CY of soil was excavated for Topsoil.
2. Approximately 687 CY of soil was excavated for Native soil.

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/14/09)**

1. Continue the construction and testing of Native Soil Lift #6
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/topsoil mixture in Pug Mill
4. Meeting with URS, EDi, and Sandia to discuss Native Soil and Topsoil volume shortages.



## DAILY SUMMARY REPORT

**DATE:** 07/14/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:13: (74 deg); Clear sky

**WEATHER (PM):** 3:17: (88 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction and testing of Native Soil Lift #6
- Production of Topsoil with 3/8-inch gravel
- Delivery of additional 3/8-inch crushed gravel to Borrow Area
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area
- Volume calculation meeting
- Audit by Sandia and SSO was conducted today

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Use caution around Pug Mill due to dust.
- Weekly Safety Inspection today.
- Consume plenty of fluids due to hot weather.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #6

Continue construction and density/moisture testing of Native Soil Lift #6. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Construction continued from east to west today for Native Soil Lift #6.

2. EDi conducted Density/Moisture testing in grids #11, #12, and #13. URS conducted testing in grids #11 and #13.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
1. Approximately 1170CY (65 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #6. See dwg\_07/14/09\_Construction\_01
- F. PICTURES OBTAINED
1. Pictures of this procedure were collected and filed.

## II.

- A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*  
The production of 3/8-inch crushed gravel/Topsoil mix continued today.
- B. ISSUES/COMMENTS
1. The production of 3/8-inch crushed gravel/Topsoil mix continued today.
  2. More 3/8-inch crushed gravel was delivered to the borrow area by Fisher.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
1. Approximately 800 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.
  2. Approximately 420-tons of 3/8-inch crushed gravel was delivered by fisher.
- F. PICTURES OBTAINED
1. Pictures of this procedure were collected and filed.

## III.

- A. TASK DESCRIPTION: *Excavation of Additional Topsoil*  
Additional soil is being excavated and screened at the Sandia Borrow Pit (TA-3).
- B. ISSUES/COMMENTS
1. Additional soil is being excavated and screened at the Sandia Borrow Pit.

- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 100 CY of soil was excavated and screened for Topsoil.
  - 2. Approximately 582 CY of soil was excavated and screened for Native Soil.
- F. PICTURES OBTAINED
  - Pictures of this procedure were collected and filed.

#### IV.

##### A. TASK DESCRIPTION: Volume Calculation Meeting

A meeting was held with Sandia, EDi, and URS to discuss additional volume calculations for the Native and Topsoil Layers.

##### B. ISSUES/COMMENTS

- 1. Due to the MWL surface area being larger than initially anticipated, additional Native Soil and Topsoil is required. Sandia has requested EDi provide a proposal for the additional volumes/cost to complete the MWL. Sandia has also requested URS provide a third party analysis of the volumes/cost to complete the MWL. The volumes/cost provided by URS shall be used to verify the proposal provided by EDi to Sandia.

- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. EDi provided Sandia with a proposal of 9,615-CY of additional Native Soil and 1,590-CY of additional Topsoil for the completion of the MWL. URS provided an independent review of the additional soil volumes required using two methods (free-body diagram and construction history data). Both methods were close to the results obtained by EDi. URS informed Sandia that EDi's estimate for additional volume calculations are accurate (See attached for calculations/results).

##### F. PICTURES OBTAINED

- 1. NA

#### **INSPECTION CHECKLISTS REQUIRED**

- 1. Native Soil Inspection Form

2. Moisture/Density Testing Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/15/09)**

1. Continue the construction of Native Soil Lift #6
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Fix screen for 3/8-inch/Topsoil mixture

## DAILY SUMMARY REPORT

**DATE:** 07/15/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:15; (79 deg); Clear Sky

**WEATHER (PM):** 1:45; (93 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #6
- Continue production of 3/8-inch/Topsoil Mixture
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:04 – 7:20 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

- Temp may get to 98 deg. Be sure to drink fluids.
- The evacuation location is the Golf Course.
- There is a new muster point located at the borrow area by rain gauge.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #6

Continue construction of Native Soil Lift #6. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Construction continued from east to west today for Native Soil Lift #6.
2. Much of the compaction was not done today due to the grader and loader requiring repairs. The belly dumps of Native Soil continued without the compaction process. The soil will receive moisture and compaction tomorrow.
3. No moisture/density testing was conducted today.

- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 954 CY of Native Soil was placed and compacted for Lift #6. See dwg\_07/15/09\_Construction\_01
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

## II.

- A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*  
The production of 3/8-inch crushed gravel/Topsoil Mix continued today.
- B. ISSUES/COMMENTS
  - 1. The production of 3/8-inch crushed gravel/Topsoil Mix continued today.
  - 2. The Pug Mill was shut down for about two hours today for routine maintenance.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 650 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

## III.

- A. TASK DESCRIPTION: *Excavation of Additional Topsoil/Native Soil*  
Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).
- B. ISSUES/COMMENTS
  - 1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).
- C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Approximately 558 CY of soil was excavated and screened today for Native Soil.

**F. PICTURES OBTAINED**

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/16/09)**

1. Continue the construction of Native Soil Lift #6
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill
4. Meeting with URS, EDi, and Sandia to discuss Native Soil and Topsoil volume shortages.



## DAILY SUMMARY REPORT

**DATE:** 07/16/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:00; (79 deg); Clear sky

**WEATHER (PM):** 2:29; (93 deg); cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #6
- Begin construction of Native Soil Lift #7
- Continue production of 3/8-inch/Topsoil Mixture
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

Safety:

- Be sure to check if eye protection is UV certified.

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #6

Continue construction of Native Soil Lift #6. Construction will continue from east to west.

##### B. ISSUES/COMMENTS

1. Construction continued on west portion of MWL.
2. EDi conducted survey on Native Soil Lift #6 today.
3. No density/moisture testing today.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 700 CY of Native Soil was placed and compacted for Lift #6. See dwg\_07/16/09\_Construction\_01

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Native Soil, Lift #7*

Native Soil Lift #7 began construction today on the east slope.

B. ISSUES/COMMENTS

1. Native Soil Lift #7 began construction today. Construction will continue from east to west.
2. No density/moisture test were conducted today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 164 CY of Native Soil was placed and compacted for Lift #7. See dwg\_07/16/09\_Construction\_02

**III.**

A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*

The production of 3/8-inch crushed gravel/Topsoil Mix continued today.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 900 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

#### **IV.**

##### **A. TASK DESCRIPTION: Excavation of Additional Topsoil/Native Soil**

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

##### **B. ISSUES/COMMENTS**

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

##### **C. EQUIPMENT USED (See Appendix B For Equipment Description):**

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### **D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### **E. STATUS:**

1. Approximately 1000 CY of soil was excavated and screened for Native Soil
2. Approximately 500 CY of soil was excavated and screened for Topsoil.

##### **F. PICTURES OBTAINED**

Pictures of this procedure were collected and filed.

#### **INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

#### **PROPOSED NEXT DAY ACTIVITIES (date: 07/17/09)**

1. Moisture/Density Tests on remaining portions of Native Soil Lift #6
2. Continue construction of Native Soil Lift #7
3. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
4. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/17/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:00; (79 deg); Clear sky

**WEATHER (PM):** 2:29; (93 deg); Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #7
- Density/Moisture Testing of Native Soil Lift #6
- Continue production of 3/8-inch/Topsoil Mixture
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area
- Meeting with URS, Sandia, and EDi

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

I. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

### DAILY TASK

#### I.

A. TASK DESCRIPTION: Native Soil, Lift #6 Density and Moisture Testing Only

Density/Moisture Testing of Native Soil Lift #6.

#### B. ISSUES/COMMENTS

1. The density/moisture test conducted by EDi around MW-4 did not pass. The area is to be reworked and retested on Monday (7/20/09).
2. URS tested grid blocks #2, #4, #6, #8, and #9. EDi tested grid blocks 1-10.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. MW-4 to be retested reworked and retested on Monday (7/20/09)

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: Native Soil, Lift #7

The construction of Native Soil Lift #7 continued today.

B. ISSUES/COMMENTS

1. Construction will continue from east to west.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 828 CY (46 Belly Dumps @ Approx 18 CY per truck) of Native Soil was placed and compacted for Lift #7. See dwg\_07/17/09\_Construction\_01

**III.**

A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix

The production of 3/8-inch crushed gravel/Topsoil Mix continued today.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Approximately 800 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**IV.**

**A. TASK DESCRIPTION: Excavation of Additional Topsoil/Native Soil**

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

**B. ISSUES/COMMENTS**

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3)

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Additional Top/Native soil were excavated out of the Borrow Pit (TA-3).

**F. PICTURES OBTAINED**

Pictures of this procedure were collected and filed.

**V.**

**A. TASK DESCRIPTION: Meeting (Material Volume Calculations)**

A meeting was held with Sandia, EDi, and URS to discuss the material volume shortages of the MWL.

**B. ISSUES/COMMENTS**

1. Mike Mitchell and Paul Molina realized the contract drawings in the CMIP are not correct. The drawings in the MWL show an area of 2.6 acres however, due to the footprint growing the estimated volumes in the CMIP may be incorrect.

**C. EQUIPMENT USED (See Appendix B For Equipment Description):**

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Meeting concluded

**F. PICTURES OBTAINED**

No pictures of this task were obtained.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form
2. Density/Moisture Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/20/09)**

1. Continue construction of Native Soil Lift #7
2. Retest Moisture/Density around Monitoring Well MW-4
3. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
4. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill

## DAILY SUMMARY REPORT

**DATE:** 07/20/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:00; (79 deg); Clear sky

**WEATHER (PM):** 2:29; (93 deg); Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #7
- Density/Moisture Testing of Native Soil Lift #6 around MW-4 (EDi)
- Continue production of 3/8-inch/Topsoil Mixture
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #6

Density/Moisture Testing of Native Soil Lift #6.

##### B. ISSUES/COMMENTS

1. The Density/Moisture test around MW-4 did not pass on 7/17/09 due to low density and high moisture. The area around MW-4 was reworked using hand compaction methods and retested by EDi which met specifications.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Density/Moisture retest around MW-4 passed.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Native Soil, Lift #7*

The construction of Native Soil Lift #7 continued today.

B. ISSUES/COMMENTS

1. Construction will continue from east to west.
2. Additional Belly Dump Trucks were brought in to increase the rate of construction for Native Soil Lifts #7 and #8.

C. EQUIPMENT USED:

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Approximately 1630 CY of Native Soil was placed and compacted for Lift #7. See dwg\_07/20/09\_Construction\_01

**III.**

A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*

The production of 3/8-inch crushed gravel/Topsoil Mix continued today.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 1000 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

#### IV.

##### A. TASK DESCRIPTION: Excavation of Additional Topsoil/Native Soil

Additional top/native soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

##### B. ISSUES/COMMENTS

1. Additional top/native soil is being excavated and screened at the Sandia Borrow Pit (TA-3)

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

3. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Additional Top/Native soil is being excavated and screened at the Sandia Borrow Pit (TA-3)

##### F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

#### **INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form
2. Density/Moisture Inspection Form

#### **PROPOSED NEXT DAY ACTIVITIES (date: 07/21/09)**

1. Continue construction and Density/Moisture testing of Native Soil Lift #7
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/21/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 10:10; (79 deg); Clear sky

**WEATHER (PM):** 4:28; (87 deg); Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #7
- Density/Moisture Testing of Native Soil Lift #7
- Begin construction of Native Soil Lift #8
- Continue production of 3/8-inch/Topsoil Mixture/Delivery of additional 3/8-inch crushed gravel
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 – 7:18 AM  
Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #7 (Construction and Testing)

The construction and testing of Native Soil Lift #7 continued today.

##### B. ISSUES/COMMENTS

1. Construction will continue from east to west.
2. Density/moisture testing occurred today. URS conducted testing in grid blocks #11, #13, #9, and #7. Edi conducted testing in grid blocks #6-13.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 1306 CY of Native Soil was placed and compacted for Lift #7. See dwg\_07/21/09\_Construction\_01
2. Native Soil Lift #7 construction was completed today. Remaining density/moisture tests will be conducted tomorrow (07/22/09) in grid blocks 1-5.

**II.**

A. TASK DESCRIPTION: *Native Soil, Lift #8 (Construction)*

The construction of Native Soil Lift #8 began today.

B. ISSUES/COMMENTS

1. Construction of Native Soil Lift #8 will be from east to west.
2. Native Soil for Lift #8 was only placed today. Compaction will occur tomorrow.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 300 CY of Native Soil was placed and compacted for Lift #8. See dwg\_07/21/09\_Construction\_01.

**III.**

A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*

The production of 3/8-inch crushed gravel/topsoil Mix continued today.

B. ISSUES/COMMENTS

1. Additional 3/8-inch crushed gravel was delivered to Borrow Area today around 9:00 AM.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 400 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

2. Approximately 201-tons of 3/8-inch crushed gravel were delivered to the Borrow Area today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

IV.

A. TASK DESCRIPTION: *Excavation of Additional Topsoil/Native Soil*

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Additional Top/Native Soil will continue to be excavated out of the Borrow Pit (TA-3) tomorrow.

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form
2. Density/Moisture Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/22/09)**

1. Density/Moisture Test on Native Soil Lift #7
2. Continue construction of Native Soil Lift #8
3. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
4. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/22/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (71 deg); Clear sky, muddy conditions due to rain previous night (07/21/09).

**WEATHER (PM):** 4:02; (87 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Density/Moisture Testing of Native Soil Lift #7
- Continue construction of Native Soil Lift #8 (Compaction Only, No Trucks)
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area
- 3/8-inch crushed gravel shipment was delivered

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:18 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

Safety:

-Be aware of slips, trips, and falls

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #7 (Testing)

The Density/Moisture testing of Native Soil Lift #7 continued today.

##### B. ISSUES/COMMENTS

1. URS conducted tests in grid blocks 1, 3, and 5. EDi conducted tests in grid blocks 1-5. All test were passing.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Final Density/Moisture test for Native Soil Lift #7 were completed today. All test were passing.

**II.**

A. TASK DESCRIPTION: Native Soil, Lift #8 (Construction)

The construction of Native Soil Lift #8 continued today.

B. ISSUES/COMMENTS

1. Construction of Native Soil Lift #8 will occur from east to west.
2. The Native Soil for Lift #8 was only compacted today. The belly dump trucks were not able to place additional Native Soil on MWL due to muddy conditions from precipitation received the previous night (07/21/09).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Native Soil for Lift #8 was only compacted today. The belly dump trucks were not able to place additional Native Soil on MWL due to muddy conditions from precipitation received the previous night (07/21/09). Construction will continue tomorrow (7/23/09)

**III.**

A. TASK DESCRIPTION: Pug Mill/3-8-Inch Gravel and Topsoil Mix

The production of 3/8-inch crushed gravel and Topsoil Mix did not occur today due to muddy conditions. Additional 3/8-inch gravel was delivered to Borrow Area.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Additional 3/8-inch crushed gravel was delivered to Borrow Area today. Approximately 142 tons (6-loads) was delivered.

F. PICTURES OBTAINED

1. NA

IV.

A. TASK DESCRIPTION: Excavation of Additional Topsoil/Native Soil

Additional Top/Native soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. The Additional Top/Native soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Additional Top/Native soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Density/Moisture Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/23/09)**

1. Continue construction of Native Soil Lift #8
2. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
3. Continue 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/23/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:39 am (69 deg); Clear sky

**WEATHER (PM):**

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Native Soil Lift #8
- Continue production of 3/8-inch/Topsoil Mixture
- Continue excavation of additional Top/Native Soil out of TA-3 Borrow Area

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 – 7:21 AM  
Attendees: See attached sign in sheet.  
Procedure:  
-(See general description above)

### DAILY TASK

#### I.

- A. TASK DESCRIPTION: Native Soil, Lift #8  
Continue construction of Native Soil Lift #8.

#### B. ISSUES/COMMENTS

1. Construction continued from east to west on MWL for Native Soil Lift #8.

#### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. Approximately 1458 CY of Native Soil was placed and compacted for Lift #8.  
See dwg\_07/23/09\_Construction\_01

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*

The production of 3/8-inch crushed gravel/Topsoil Mix continued today.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

F. STATUS:

1. Approximately 300 CY of the 3/8-inch crushed gravel/Topsoil mixture was produced today.

G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: *Excavation of Additional Topsoil/Native Soil*

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/24/09)**

1. Moisture/Density Tests on completed portions of Native Soil Lift #8
2. Continue construction of Native Soil Lift #8
3. Continue the excavation for additional Top/Native Soil out of the west portion of Borrow Pit (TA-3)
4. Complete 3/8-inch crushed gravel/Topsoil mixture in Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/24/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:28; (68 deg); Clear sky

**WEATHER (PM):** 4:07; (95 deg); Clear sky

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Moisture/Density Tests on completed portions of Native Soil Lift #8 (EDi)
- Continue construction of Native Soil Lift #8
- Continue the excavation for additional Top/Native Soil out of the West portion of Borrow Pit (TA-3)
- Complete 3/8-inch crushed gravel/Topsoil mixture in Pug Mill

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

I. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

A. TASK DESCRIPTION: Native Soil, Lift #8

Continue construction of Native Soil Lift #8.

#### B. ISSUES/COMMENTS

1. Construction continued from east to west on MWL for Native Soil Lift #8.
2. EDi conducted moisture/density tests on grid blocks 11, 12, and 13. All test were passing.
3. URS did not conduct any moisture/density tests today.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Approximately 1410 CY of Native Soil was placed and compacted for Lift #8.  
See dwg\_07/23/09\_Construction\_01

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: **Pug Mill/3-8-Inch Gravel and Topsoil Mix**

The production of 3/8-inch crushed gravel/Topsoil Mix was completed today.

B. ISSUES/COMMENTS

1. Pioneer completed the production of 3/8-inch crushed gravel/topsoil mixture.
2. Pioneer has begun demobilization of the Pug Mill.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Pioneer completed the production of 3/8-inch crushed gravel/topsoil mixture.
2. Pioneer has begun demobilization of the Pug Mill.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: **Excavation of Additional Topsoil/Native Soil**

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

2. Topsoil will no longer be excavated due to the Pug Mill operation being complete.
3. The south portion of the Borrow Area has begun excavation and screening for additional Native Soil material.

**F. PICTURES OBTAINED**

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/27/09)**

1. Continue construction of Native Soil Lift #8.
2. URS QA survey



## DAILY SUMMARY REPORT

**DATE:** 07/27/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15; (67 deg); Clear sky

**WEATHER (PM):** 1:00; (89deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Construction of Native Soil Lift #8
- URS QA survey
- Excavation and screening of Native Soil
- Pug Mill demobilization

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Native Soil, Lift #8

Continue construction of Native Soil Lift # 8

#### B. ISSUES/COMMENTS

1. Construction continued from East to West on MWL for Native Soil Lift #8.
2. Harry Buckner (URS) began QA survey of Native Soil Layer.

#### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

#### E. STATUS:

1. Approximately 962 CY of Native Soil was placed and compacted for Lift #8. See dwg\_07/27/09\_Construction\_01
2. URS will continue QA survey tomorrow (7/28/09).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: **Pug Mill/3-8-Inch Gravel and Topsoil Mix**  
Demobilization of Pug Mill.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Pug Mill continued demobilization.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: **Excavation of Additional Native Soil**

Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

B. ISSUES/COMMENTS

1. Additional Native Soil is being excavated and screened at the Sandia Borrow Pit (TA-3).

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The excavation for both Top and Native Soil was completed today.
2. EDi has begun cleaning and leveling the Borrow Area

F. PICTURES OBTAINED

Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Native Soil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/28/09)**

1. Moisture/Density Tests on completed portions of Native Soil Lift #8
2. QA/QC survey verification
3. Demobilization of Pug Mill



## DAILY SUMMARY REPORT

**DATE:** 07/28/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15 am (67 deg); Clear Sky

**WEATHER (PM):** 1:10 pm (93 deg); Partly Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- URS QA Survey
- Construction and testing of Native Soil Lift #8
- Meeting to discuss additional volume requirements
- Borrow Area cleanup

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 – 7:21 AM  
Attendees: See attached sign in sheet.  
Procedure:  
-(See general description above)

### DAILY TASK

#### I.

- A. TASK DESCRIPTION: Native Soil, Lift #8  
Continue construction and testing of Native Soil Lift #8.

#### B. ISSUES/COMMENTS

1. EDi continued to water and compact soil into place from east to west.
2. URS conducted moisture/density tests on grid blocks #2, #4, #6, #8, #10, and #12. All QA tests were passing.
3. EDi conducted moisture/density tests on grid blocks #1-10 (#11, #12, and #13 had already been tested). Grid blocks #1-7 and #9 passed. Grid blocks #8, #10, and around MW-4 failed due to low moisture. All grid blocks were reworked, re-compacted, and retested. All three passed the second round of tests conducted by EDi.

4. QA survey was continued by URS
  5. QC survey was conducted by EDi.
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
1. Construction and testing of Native Soil Lift #8 is now complete. QA/QC survey will determine if any corrections are needed. If not, the Topsoil Layer may begin.
  2. URS and EDi will continue the QA and QC survey tomorrow.
- F. PICTURES OBTAINED
1. Pictures of this procedure were collected and filed.

## II.

- A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*  
Demobilization of the Pug Mill continued today.
- B. ISSUES/COMMENTS
1. None
- C. EQUIPMENT USED (See Appendix B For Equipment Description):
2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
1. Demobilization of the Pug Mill continued today.
- F. PICTURES OBTAINED
1. No picture were taken.

## III.

- A. TASK DESCRIPTION: *Borrow Area Cleanup*  
EDi continued the cleanup and leveling of the borrow area.

### INSPECTION CHECKLISTS REQUIRED

1. Native Soil Inspection Forms

2. Moisture/Density Form

**PROPOSED NEXT DAY ACTIVITIES (date: 07/29/09)**

1. QA survey meeting.



## DAILY SUMMARY REPORT

**DATE:** 07/29/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15; (67 deg); Clear sky

**WEATHER (PM):** 1:00; (92 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- QA/QC survey
- Meeting with Sandia and EDi to discuss final report and topsoil changes.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #8

Construction has been completed, QA and QC survey continued today.

##### B. ISSUES/COMMENTS

1. QA survey was continued by URS
2. QC survey was conducted by EDi.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. QA survey was completed by URS

2. QC survey was completed by EDi.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Pug Mill/3-8-Inch Gravel and Topsoil Mix*  
Demobilization of Pug Mill.

B. ISSUES/COMMENTS

1. None

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Pug Mill continued demobilization.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: *Borrow Area Cleanup*  
EDi continued the cleanup and leveling of the borrow area.

**INSPECTION CHECKLISTS REQUIRED**

1. NA

**PROPOSED NEXT DAY ACTIVITIES (date: 07/27/09)**

1. Review of Native Soil QA/QC results.

## DAILY SUMMARY REPORT

**DATE:** 07/30/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15; (67 deg); Clear sky

**WEATHER (PM):** 1:00; (92 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- URS presented QA survey of the Native Soil to Sandia and EDi.
- No Construction Today

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #8 Meeting

Review of Native Soil QA/QC survey. .

##### B. ISSUES/COMMENTS

1. The QA/QC was reviewed today to determine if thickness and slopes were in accordance with the CMIP.
2. EDi had survey crew (ASCI) with equipment to address any concerns we may have with the review.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. After reviewing both the QA (URS) and the QC (EDi) topographic surveys, it was determined the results obtained were very similar. Between the two surveys, nine locations were located that needed to be raised in order to be in compliance with the CMIP. These nine areas were only 1-to-4-inches below the required thickness. EDi rechecked these nine areas with survey equipment and confirmed they required 1-to-4-inches of additional soil. These areas are to be filled with soil and resurveyed before construction of the Topsoil Layer may begin at these points. The Native Soil Layer is approved with the exception of the nine locations that require correction.

**F. PICTURES OBTAINED**

1. NA.

**INSPECTION CHECKLISTS REQUIRED**

1. NA

**PROPOSED NEXT DAY ACTIVITIES (date: 07/31/09)**

1. Adjust areas of concern.
2. EDi resurvey areas of concern.

## DAILY SUMMARY REPORT

**DATE:** 07/31/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:15; (67 deg); Clear sky

**WEATHER (PM):** 1:00; (87 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Final Corrections to Native Soil Lift #8
- EDi Survey

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Native Soil, Lift #8

Corrections to Native Soil Lift #8 were made to be in compliance with CMIP requirements.

##### B. ISSUES/COMMENTS

1. EDi performed corrections to the nine areas and 6:1 side slopes identified in the EDi and URS topographic surveys.
2. EDi performed their final survey on the corrected areas.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Soil was removed from areas with extra material on 6:1 side slopes and placed on the nine areas with thickness below 2.5-feet. The material was then compacted, and resurveyed. URS will confirm new thickness of the Native Soil at these locations on Monday (06/03/09).

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. NA

**PROPOSED NEXT DAY ACTIVITIES (date: 08/03/09)**

1. URS survey of nine low areas.

**2009 Daily Quality Control Reports**

**August 2009**



## DAILY SUMMARY REPORT

**DATE:** 08/03/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:20; (69 deg); Clear sky

**WEATHER (PM):** 1:06; (88 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Begin Construction of Topsoil
- URS QA Survey (Final 9 Locations)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

Construction began on the Topsoil Layer

##### B. ISSUES/COMMENTS

1. URS conducted the quality assurance final survey on the remaining nine locations as well as the 6:1 side slopes. EDi will need these areas approved before they continue construction in these areas.
2. EDi began construction of the Topsoil Layer on the areas previously approved by URS. EDi placed the topsoil using belly dumps and then spread the material using the grader. Care is taken not to over compact the topsoil layer.
3. EDi is not allowed to place topsoil around the nine locations awaiting approval from Don Lopez. Approval is expected tomorrow (8/4/09).

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**D. EQUIPMENT CALIBRATION CERTIFICATES:**

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Approximately 2132 CY of Topsoil was placed. See  
dwg\_08/03/09\_Construction\_01

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/04/09)**

1. Continue construction of Topsoil
2. Approval of remaining nine locations.

## DAILY SUMMARY REPORT

**DATE:** 08/04/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:49; (69 deg); Clear sky

**WEATHER (PM):** 1:45; (91 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Topsoil Layer
- URS Approval of final Native Soil Areas and Slopes

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The construction of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. Construction of Topsoil Continued today from east to west
2. Don Lopez (URS) approved the remaining nine areas as well as the 6:1 slopes for topsoil construction. EDi may now place topsoil at these locations.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Approximately 1950 CY of Topsoil was placed. See dwg\_08/04/09\_Construction\_01

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Form

**PROPOSED NEXT DAY ACTIVITIES (date: 08/05/09)**

1. Continue construction of the Topsoil Layer
2. Begin placement of the Soil Vapor Monitoring Wells.

## DAILY SUMMARY REPORT

**DATE:** 08/05/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:30; (69 deg); Clear sky

**WEATHER (PM):** 2:18; (94 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Topsoil Layer
- Begin Placement of Soil Vapor Monitoring Wells

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The construction of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. Construction of Topsoil Continued today from east to west

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Approximately 2028 CY of Topsoil was placed. See  
dwg\_08/06/09\_Construction\_01

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Install Soil Vapor Monitoring Wells*

Construction of the Soil Vapor Monitoring wells began today.

B. ISSUES/COMMENTS

1. The first geo-probe was bored to a depth of approximately 42.0-44.0-feet. The Geo-probe reached the caliche layer at a depth of approximately 37.0-40.0-feet. The caliche layer appeared to be a more difficult layer to penetrate than the Biointrusion Layer. The Biointrusion Layer was passed through with ease.

C. EQUIPMENT USED:

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The first of the two probes was pushed down to approximately 43.0-feet. The additional well materials required for completion will arrive onsite tomorrow (08/06/09).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/06/09)**

1. Continue the placement of the Soil Vapor Monitoring Wells.
2. Continue the construction of the Topsoil Layer. EDi is going to begin their CQ Survey.

## DAILY SUMMARY REPORT

**DATE:** 08/06/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:31; (69 deg); Clear sky

**WEATHER (PM):** 1:54; (94 deg); Heavy rain @ 2:30 pm

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Topsoil Layer
- Continue installation of Soil Vapor Monitoring Wells

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The construction of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. Construction of Topsoil Continued today from east to west

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. Approximately 2106 CY of Topsoil was placed. See dwg\_08/06/09\_Construction\_01.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Instal Soil Vapor Monitoring Wells*

Construction of the Soil Vapor Monitoring Wells continued today.

B. ISSUES/COMMENTS

1. The installation of the first Soil Vapor Monitoring Well was completed today.
2. The installation of the second Soil Vapor Monitoring Well began today.
3. The first attempt at placing the second Soil Vapor Monitoring Well was unsuccessful due to "soil lock" in the casing. The casing was driven about 42.0-feet in depth and the polyethylene tubing and screen were placed to the desired depth. When the soil began to be placed down the casing it locked up causing a failure in the installation.
4. The second attempt of installing the second Soil Vapor Monitoring Well has begun. The casing has been driven down into the MWL about 42.0-feet. The installation will be completed tomorrow (08/07/09). The initial hole for the second attempt will be filled with Bentonite tomorrow.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The installation of the second Soil Vapor Monitoring Wells will be completed tomorrow (8/7/09).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 08/07/09)**

1. Continue the construction of the Topsoil Layer.
2. Complete soil vapor monitoring wells.

## DAILY SUMMARY REPORT

**DATE:** 08/07/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:31; (69 deg); Clear sky

**WEATHER (PM):** 4:27; (92 deg); Heavy rain @ 2:30 pm

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Topsoil Layer
- Complete installation of Soil Vapor Monitoring Wells

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade
2. Sandia Borrow Pit (TA-3)

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The construction of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. Construction of Topsoil Continued today from east to west. The topsoil placement was completed. The QA survey will be conducted on Monday (8/10/09).
2. The remaining soil in the Borrow Area was used before the Topsoil Layer on the west slope was completed. However, the Topsoil Layer has been placed at approximately a 1.4-foot thickness (1.0-foot thickness requirement) which allows for some of the already placed surface to be used to complete the West Slope.
3. EDi conducted survey of the completed areas on Topsoil Layer. Corrections are being made to high and low areas.

- C. EQUIPMENT USED (See Appendix B For Equipment Description):
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. Approximately 962 CY of Topsoil was placed. See dwg\_08/07/09\_Construction\_01.
  - 2. The Topsoil Layer placement is complete. The final QA survey (URS) will be conducted on Monday (08/10/09).
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

**II.**

- A. TASK DESCRIPTION: *Instal Soil Vapor Monitoring Wells*  
Construction of the Soil Vapor Monitoring Wells was completed today.
- B. ISSUES/COMMENTS
  - 1. The installation of the second Soil Vapor Monitoring Well was completed today.
  - 2. The hole created by the geo-probe for the initial failed attempt of the second Soil Vapor Monitoring Well was filled with Bentonite.
- C. EQUIPMENT USED:
  - 2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- D. EQUIPMENT CALIBRATION CERTIFICATES:
  - 1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary
- E. STATUS:
  - 1. The installation of the second Soil Vapor Monitoring Well was completed today.
  - 2. Mike Saunders and WDC demobilized today.
- F. PICTURES OBTAINED
  - 1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

- 1. Topsoil Inspection Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 08/10/09)**

- 1. Continue the construction of the Topsoil Layer.
- 2. Continue adjustment of the Topsoil Layer

3. EDi to conduct blue topping for surevey on Topsoil Layer.



## DAILY SUMMARY REPORT

**DATE:** 08/10/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:20; (72 deg); Clear sky

**WEATHER (PM):** 11:47; (81 deg); Clear sky

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Topsoil Layer
- Blue top of Topsoil layer (EDi)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:21 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The adjustment of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. The Topsoil layer continued to be adjusted. Soil is being moved from thick areas to west slope.
2. The topsoil layer was blue topped by the EDi survey team to ensure accurate thickness and slopes. The Topsoil Layer was adjusted in preparation for the QA survey tomorrow (08/11/09) by URS.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

**E. STATUS:**

1. Final corrections and the QA survey (URS) will be conducted on Tuesday (08/11/09).

**F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. NA

**PROPOSED NEXT DAY ACTIVITIES (date: 08/11/09)**

1. Continue the adjustment of the Topsoil Layer.
2. QA survey (URS) to Topsoil Layer

## DAILY SUMMARY REPORT

**DATE:** 08/11/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:40; (72 deg); Clear sky

**WEATHER (PM):** 4:05; (94 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue adjustment of Topsoil Layer
- Complete Topsoil blue topping (EDi)
- URS QA Survey

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:19 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The adjustment of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. EDi completed adjustment to the Topsoil Layer and the blue topping of the Topsoil Layer.
2. URS was onsite to begin QA survey.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### E. STATUS:

1. EDi has completed the construction and blue topping of the Topsoil Layer. EDi will complete their survey tomorrow (8/12/09).
2. URS completed the QA survey of the Topsoil Layer.

#### **F. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

#### **MEETING**

Marshall Nay and Paul Molina met with Mike Mitchell to discuss/coordinate the quarterly report. Mike presented Paul and Marshall with tasks to complete the quarterly report.

#### **INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Sheet

#### **PROPOSED NEXT DAY ACTIVITIES (date: 08/12/09)**

1. Begin construction of sprinkler system.
2. EDi to complete survey.

## DAILY SUMMARY REPORT

**DATE:** 08/12/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:42; (72 deg); Clear sky

**WEATHER (PM):** 2:05; (86 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- QA approval of Topsoil Layer (URS)
- Begin construction of Sprinkler System (Rain For Rent)
- Install casing, bollards, and concrete pads for soil vapor monitoring wells.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:19 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Topsoil Construction

The construction of the Topsoil layer continued today.

##### B. ISSUES/COMMENTTS

1. Don Lopez approved the QA survey for the Topsoil Layer.
2. ASCI conducted final QC survey of the Topsoil Layer.
3. EDi scarified the Topsoil Layer to stimulate plant growth. The rippers on the back of the grater were used to scarify the surface per the CMIP.

##### C. EQUIPMENT USED (See Appendix B For Equipment Description):

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

##### D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The Topsoil Layer was scarified to break up large dirt clouds and loosen the soil to stimulate seeding germination and plant growth.
2. QC (EDi) survey was completed today.
3. QA approval of Topsoil Layer today.

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: *Soil Vapor and MW-4 Monitoring Wells*

The installation of the concrete pads, casing, and bollards began today for the Soil Vapor Monitoring Wells.

B. ISSUES/COMMENTTS

1. The installation of the concrete pads, casing, and bollards began today for the Soil Vapor Monitoring Wells.
2. Hand tools were used to dig down to the Native Soil Surface for the installation of the casing. The casing was dug and placed down 3.0-feet below topsoil surface.
3. 5.0-foot bollards are being placed around the wells. The bollards will be placed at a depth of 2.0-feet below the Topsoil surface. This will leave 3.0-feet of bollard above the Topsoil surface.
4. 3x3-foot pads will be installed around the Soil Vapor Monitoring Well. 4x4-foot pads will be installed around Monitoring Well M-4.

C. EQUIPMENT USED (See Appendix B For Equipment Description):

2. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:

1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:

1. The installation will be continued tomorrow (08/13/09).

F. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**III.**

A. TASK DESCRIPTION: *Sprinkler System*

The construction of the Sprinkler System/Irrigation System began today.

B. ISSUES/COMMENTTS

1. Sandia has approved the modification for temporary water and seeding to the CMIP. The following is the modification:
  - a. Uniform seeding rate of 80-pounds of seed mix per acre (4x CMIP)
  - b. No fertilizer is to be added due to the timing (August) of seeding.
  - c. Supplemental watering to assist seed germination and root development.

C. STATUS:

1. Irrigation pipe, sprinkler system, and materials were delivered to the site today. The installation of the sprinkler system will begin tomorrow (8/13/09).

D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 08/13/09)**

1. Complete the construction of the concrete pads, bollards, and casing for the Soil Vapor Monitoring Wells.
2. Installation of sprinkler system.



## DAILY SUMMARY REPORT

**DATE:** 08/13/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 8:30; (75 deg); Cloudy

**WEATHER (PM):** 3:31; (88 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction of Sprinkler System
- Install casing, bollards, and concrete pads for soil vapor monitoring wells.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:19 AM

Attendees: See attached sign in sheet.

Procedure:

-(See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Soil Vapor and MW-4 Monitoring Wells

The installation of the concrete pads, casing, and bollards continued today for the Soil Vapor Monitoring Wells.

##### B. ISSUES/COMMENTTS

1. The installation of the concrete pads, casing, and bollards continued today for the Soil Vapor Monitoring Wells and MW-4.
2. Hand tools were used to dig down to the Native Soil Surface for the installation of the casing. The casing was dug and placed down 3.0-feet below topsoil surface.
3. 5.0-foot bollards are being placed around the wells. The bollards will be placed at a depth of 2.0-feet below the Topsoil Layer surface. This will leave 3.0-feet of bollard above the Topsoil Layer surface.
4. 3x3-foot pads will be installed around the soil vapor monitoring well. 4x4-foot pads will be installed around monitoring well M-4.

C. EQUIPMENT USED (See Appendix B For Equipment Description):  
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

D. EQUIPMENT CALIBRATION CERTIFICATES:  
1. Refer to Table 2-1 MWL Alternative Cover Construction Equipment Summary

E. STATUS:  
1. The installation was completed today.

F. PICTURES OBTAINED  
1. Pictures of this procedure were collected and filed.

## II.

A. TASK DESCRIPTION: *Sprinkler System*  
The construction of the sprinkle/irrigation system continued today. (Rain For Rent)

B. ISSUES/COMMENTTS  
1. The sprinkler/irrigation system was inspected and installed across the surface today.

C. STATUS:  
1. The sprinkler/irrigation system was inspected and installed across the surface today.

D. PICTURES OBTAINED  
1. Pictures of this procedure were collected and filed.

### **INSPECTION CHECKLISTS REQUIRED**

1. NA

### **PROPOSED NEXT DAY ACTIVITIES (date: 08/14/09)**

1. Continue installation and testing of the sprinkler/irrigation system.

## DAILY SUMMARY REPORT

**DATE:** 08/14/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:30 am (63 deg); Partly Cloudy

**WEATHER (PM):** 3:00 pm (83 deg) partly Cloudy, Light rain

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Continue construction and testing of Sprinkler System

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:12 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: *Sprinkler System*

The construction of the Sprinkler System/Irrigation System continued today.

##### B. ISSUES/COMMENTTS

1. The sprinkler system installation was completed today. A total of 18 sprinkler lines were installed going from east to west across the MWL.
2. EDi adjusted the sprinkler system and tested a couple of areas. It was determined that all 18 sprinkler lines could be run at the same time if two ports of the fire hydrant were used.
3. There is concern that the sprinklers will not apply a large enough volume of water to the surface to provide 2-to-3-inches of penetration. A meeting is to be held with Jon Schermerhorn (AMEC) and Jennifer Payne (Sandia Biologist) to discuss.

##### C. STATUS:

1. The sprinkler system installation was completed today and Rain For Rent was able to demobilize.

**D. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Topsoil Inspection Sheet

**PROPOSED NEXT DAY ACTIVITIES (date: 08/17/09)**

1. Continue testing of sprinkler system.

## DAILY SUMMARY REPORT

**DATE:** 08/17/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:05; (64 deg); Partly cloudy

**WEATHER (PM):** 3:47; (90 deg) Partly cloudy, light rain

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- No work performed on cover today
- Sprinkler Meeting (Sandia and EDi)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:11 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Sprinkler System

Meeting with Sandia and EDi (URS not present).

##### B. ISSUES/COMMENTS:

1. Jon Schermerhorn (AMEC) had a meeting with Jennifer Payne (Sandia Biologist) to discuss watering issues. The main concern is that the sprinkler heads will not provide enough water to penetrate the Topsoil Layer a depth of approximately 3-inches. It was decided to remove the nozzles on every third sprinkler and test the lines to determine how many lines can be run with the change of volume.

##### C. STATUS:

1. Watering Schedule is yet to be determined.

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. NA

**PROPOSED NEXT DAY ACTIVITIES (date: 08/18/09)**

1. Continue testing of sprinkler system.

## DAILY SUMMARY REPORT

**DATE:** 08/18/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:05; (62 deg); Partly cloudy

**WEATHER (PM):** 4:15; (93 deg) Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- No work performed on cover today
- Sprinkler Meeting (Sandia and EDi)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:11 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Sprinkler System

Meeting with Sandia and EDi (URS not present).

##### B. ISSUES/COMMENTS:

1. Jon Schermerhorn (AMEC) had a meeting with Jennifer Payne (Sandia Biologist) to discuss watering issues. The two of them tried different watering setups to determine the best watering schedule. Jon and Jennifer decided to leave on the (5/64) nozzle.

##### C. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

### INSPECTION CHECKLISTS REQUIRED

1. NA

### PROPOSED NEXT DAY ACTIVITIES (date: 08/19/09)

1. Seeding Contractor to deliver grass seeds and begin mobilization.



## DAILY SUMMARY REPORT

**DATE:** 08/19/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:05; (62 deg); Partly cloudy

**WEATHER (PM):** 4:15; (93 deg); Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Seeding was delivered and Contractor Mobilized (Lee Landscaping)

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting  
Time: 7:00 – 7:11 AM  
Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Seeding

Seeding of MWL

##### B. ISSUES/COMMENTS:

1. Lee Landscaping arrived onsite and mobilized.
2. Native Grass Seed was delivered and stored in the conex to keep dry.
3. Lee Landscaping removed rocks from around the Mixed Waste Landfill cover to prevent damage to equipment
4. Lee Landscaping has some equipment that did not pass inspection. They are required to bring out new equipment tomorrow (8/20/09)
5. The ends of the sprinkler system were removed so Lee Landscaping would be able to maneuver their equipment without damage to the sprinkler system. The sprinkler system ends will be placed back once the seeding is completed.

##### C. STATUS:

1. See issues/comments

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/20/09)**

1. Scarify and break up clumps for seeding.

## DAILY SUMMARY REPORT

**DATE:** 08/20/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:06; (61 deg); Partly cloudy

**WEATHER (PM):** 4:02; (93 deg) Partly cloudy, light rain

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Scarify/Till Topsoil surface for seeding.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:12 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Seeding

Seeding of MWL

##### B. ISSUES/COMMENTS:

1. Lee Landscape tilled the Topsoil Surface with a tractor pulled till. The tractor scarified/tilled the cover, side slopes, and surrounding area in preparation for the seeding. The tractor excavated approximately 3-inches of soil and broke up clods larger than 4-inches in dimension.

##### C. STATUS:

1. Lee Landscapes began scarifying/tiling the topsoil surface. This procedure will be completed tomorrow (8/21/09).

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

### INSPECTION CHECKLISTS REQUIRED

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/21/09)**

1. Scarify and brake up clumps for seeding.

## DAILY SUMMARY REPORT

**DATE:** 08/21/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:15; (66 deg); Partly cloudy

**WEATHER (PM):** 4:03 pm (91 deg) Partly cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Scarify/Till Topsoil surface for seeding.

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:12 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Seeding

Seeding of MWL

##### B. ISSUES/COMMENTS:

1. Lee landscape continued scarifying the Topsoil Surface with a tractor pulled till. The tractor scarified/tilled the cover, side slopes, and surrounding area in preparation for the seeding. The tractor pulled till excavated approximately 3-inches and broke up clods larger than 4-inches in dimension.
2. On the edges of the cover, the tilling was done perpendicular to the slope direction so water will not cause rills to develop.
3. Tilling of the Topsoil Layer surface was completed today.
4. The sprinkler ends were covered with plastic bags to prevent straw from clogging the sprinkler system.
5. Lee Landscapes also had personnel walk along the sprinkler pipe and break up clods that were too close to the system for the tiller to get.

##### C. STATUS:

1. Lee Landscapes finished scarifying/tilling the topsoil surface.

**D. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/24/09)**

1. Begin Seeding

## DAILY SUMMARY REPORT

**DATE:** 08/24/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:15; (61 deg); Partly cloudy

**WEATHER (PM):** 4:03; (79 deg); Partly cloudy,

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- No construction occurred today due to heavy rain on Saturday night (8/23/09).

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 – 7:12 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

### INSPECTION CHECKLISTS REQUIRED

### PROPOSED NEXT DAY ACTIVITIES (date: 08/25/09)

1. Begin Seeding



## DAILY SUMMARY REPORT

**DATE:** 08/25/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:01; (57 deg); Cloudy

**WEATHER (PM):** NA

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Seeding

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

The seeding for the Mixed Waste Landfill officially started today.

##### B. ISSUES/COMMENTTS

1. The volume of drill (80 lb/acre, see attached) seed can not be placed because of equipment constraints. It takes approximately 5 passes with the drill seed to spread the required volume of seed, which is causing more compaction to the scarified/tilled topsoil than desired. It was decided to spread half of the volume of seed (40-lb/acre) by hand and place the other half by making 2 passes with the drill seed.

2. No fertilizer is required due to time of year seeding is occurring (August).

3. Supplemental watering sprinkler system has already been installed.

##### F. STATUS:

1. Seed is being placed from north to south. Lee Landscapes will continue seeding tomorrow.

##### G. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/26/09)**

1. Continue Seeding

## DAILY SUMMARY REPORT

**DATE:** 08/26/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:01 am (57 deg); Cloudy

**WEATHER (PM):** 2:31 pm (78 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Seeding

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

The seeding for the Mixed Waste Landfill continued today.

##### B. ISSUES/COMMENTTS

1. The volume of drill (80 lb/acre) seed cannot be placed because of equipment constraints. It takes approximately 5 passes with the drill seed to spread the required volume of seed, which is causing more compaction to the scarified/tilled topsoil than desired. It was decided to spread half of the volume of seed (40-lb/acre) by hand and place the other half by making 2 passes with the drill seed.

2. No fertilizer is required due to time of year seeding is occurring (August).

3. Supplemental watering sprinkler system has already been installed.

##### C. STATUS:

1. Seed continued being placed from north to south. Approximately 0.75-acres were covered with seed today. Lee Landscapes will continue seeding tomorrow.

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/27/09)**

1. Continue Seeding

## DAILY SUMMARY REPORT

**DATE:** 08/27/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (58 deg); Cloudy

**WEATHER (PM):** 2:59; (75 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Seeding

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

The seeding for the Mixed Waste Landfill continued today.

##### B. ISSUES/COMMENTTS

1. The volume of drill (80 lb/acre) seed cannot be placed because of equipment constraints. It takes approximately 5 passes with the drill seed to spread the required volume of seed, which is causing more compaction to the scarified/tilled topsoil then desired. It was decided to spread half of the volume of seed (40-lb/acre) by hand and place the other half by making 2 passes with the drill seed.

2. No fertilizer is required due to time of year seeding is occurring (August).

3. Supplemental watering sprinkler system has already been installed.

##### C. STATUS:

1. Seed continued being placed from north to south. Approximately 1.0-acres were covered with seed today. Lee Landscapes will continue seeding tomorrow.

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/28/09)**

1. Continue Seeding
2. Lee Landscapes will begin placing and crimping straw

## DAILY SUMMARY REPORT

**DATE:** 08/28/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (58 deg); Cloudy

**WEATHER (PM):** 3:59; (89 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Placing and crimping straw

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

Straw began being placed and crimped into place.

##### B. ISSUES/COMMENTTS

1. Lee Landscapes began covering previously placed and drilled seed with straw. A blower was used to place straw over desired areas. The straw was then crimped into place.
2. The blower used to place the straw broke down at approximately 11:00 am and had to be taken offsite to be repaired.

##### C. STATUS:

1. Lee Landscapes will continue placing straw over placed seed on Monday.

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 08/31/09)**

1. Lee Landscapes will begin placing and crimping straw

## DAILY SUMMARY REPORT

**DATE:** 08/31/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (56deg); Cloudy

**WEATHER (PM):** 4:02; (90 deg)

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Placing and crimping straw
- Installation of perimeter fence

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

Straw continued being placed and crimped into place.

##### B. ISSUES/COMMENTTS

1. Lee Landscapes continued covering previously placed and drilled seed with straw. A blower was used to place straw over desired areas. The straw was then crimped into place.
2. Rocks were applied to the crimper to add additional weight to the crimping process.

##### C. STATUS:

1. Straw was placed and crimped over preplaced seed.

##### D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

#### II.

A. TASK DESCRIPTION: *Installation of Fence Surrounding MWL*

ACME Began installing the MWL perimeter fence

B. ISSUES/COMMENTS

1. ACME began installing the MWL perimeter fence.

C. STATUS:

1. ACME began driving the post surrounding the MWL for fence. The corner post and gate posts for the barbed wire fence have been installed.

D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 09/01/09)**

1. Lee Landscapes will continue placing and crimping straw

# **2009 Daily Quality Control Reports**

**September 2009**



## DAILY SUMMARY REPORT

**DATE:** 09/01/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (56deg); Cloudy

**WEATHER (PM):** 3:22; (85 deg); Rain, lightning warning, did not interfere with construction.

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Placing and crimping straw
- Seeding
- Installation of perimeter fence

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

Seed and straw continued being placed and crimped into place.

##### B. ISSUES/COMMENTTS

1. The volume of drill (80 lb/acre) seed cannot be placed because of equipment constraints. It takes approximately 5 passes with the drill seed to spread the required volume of seed, which is causing more compaction to the scarified/tilled topsoil than desired. It was decided to spread half of the volume of seed (40-lb/acre) by hand and place the other half by making 2 passes with the drill seed.

2. No fertilizer is required due to time of year seeding is occurring (August).

3. Supplemental watering sprinkler system has already been installed.

4. Lee landscapes continued covering previously placed and drilled seed with straw. A blower was used to place straw over desired areas. The straw was then crimped into place.

**C. STATUS:**

1. Straw was placed and crimped over preplaced seed.
2. Seed as placed and drilled on south cover and slope of MWL

**D. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**II.**

**A. TASK DESCRIPTION: Installation of Fence Surrounding MWL**

ACME continued installing the MWL perimeter fence

**B. ISSUES/COMMENTS**

1. ACME continued installing the MWL perimeter fence and barbed wire.

**C. STATUS:**

1. ACME installed fence post around the north, east, and south sides of the MWL. Barbed wire was placed on the post across the south and east sides.

**D. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 09/02/09)**

1. Lee Landscapes will continue placing and crimping straw
2. Continue placing seed
3. Continue installation of fence.

## DAILY SUMMARY REPORT

**DATE:** 09/02/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (56deg); Cloudy

**WEATHER (PM):** 3:22; (85 deg); Cloudy

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Placing and crimping straw
- Seeding
- Installation of perimeter fence
- Survey of perimeter fence

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

##### A. TASK DESCRIPTION: Mixed Waste Landfill Seeding

Seed and straw continued being placed and crimped into place.

##### B. ISSUES/COMMENTTS

1. The volume of drill (80 lb/acre) seed can not be placed because of equipment constraints. It takes approximately 5 passes with the drill seed to spread the required volume of seed, which is causing more compaction to the scarified/tilled topsoil than desired. It was decided to spread half of the volume of seed (40-lb/acre) by hand and place the other half by making 2 passes with the drill seed.

2. No fertilizer is required due to time of year seeding is occurring (August).

3. Supplemental watering sprinkler system has already been installed.

4. Lee Landscapes continued covering previously placed and drilled seed with straw. A blower was used to place straw over desired areas. The straw was then crimped into place.

C. STATUS:

1. The placement of seed and straw was completed today.
2. Lee Landscapes was able to demobilize today

D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**II.**

A. TASK DESCRIPTION: Installation of Fence Surrounding MWL/Fence Survey  
ACME continued installing the MWL perimeter fence

B. ISSUES/COMMENTS

1. ACME continued installing the MWL perimeter fence and barbed wire.
2. The gates were installed today.
3. EDi surveyed the fence post locations.

C. STATUS:

1. ACME completed the installation of the fence and was able to demobilize.
2. The survey of the fence was completed today.
3. The installation of the gates was completed today.

D. PICTURES OBTAINED

1. Pictures of this procedure were collected and filed.

**INSPECTION CHECKLISTS REQUIRED**

1. Seeding Inspection Forms

**PROPOSED NEXT DAY ACTIVITIES (date: 09/03/09)**

1. Sprinkler system adjustment

## DAILY SUMMARY REPORT

**DATE:** 09/03/09

**PROJECT NAME:** Sandia Mixed Waste Landfill

**WEATHER (AM):** 7:10; (56deg); Cloudy

**WEATHER (PM):** 3:22; (88 deg);

**INSPECTED BY:** Paul Molina (URS)

### GENERAL DESCRIPTION:

- Sprinkler System
- Gate Locking ceremony

### LOCATION OF CONSTRUCTION

1. Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

### LIST OF PERSONNEL:

Please see attached sign-in sheet/visitors log.

### SUMMARY OF MEETINGS:

1. Description: Morning Tailgate Meeting

Time: 7:00 AM

Attendees: See attached sign in sheet.

Procedure:

- (See general description above)

### DAILY TASK

#### I.

#### A. TASK DESCRIPTION: Sprinkler System

The sprinkler system was restarted today.

#### B. ISSUES/COMMENTS

1. The sprinkler system was reconstructed and restarted today.

#### C. STATUS:

1. The irrigation pipes were re-connected and aligned. The bags were taken off of the sprinklers and the end pipes.
2. The irrigation pipes were flushed to remove straw and debris that may have gotten inside during the seeding and mulching process.
3. The sprinkler system was started and minor adjustments were made. The system ran for approximately two hours.

**G. PICTURES OBTAINED**

1. Pictures of this procedure were collected and filed.

**GATE LOCKING CEREMONY**

The gate locking ceremony started at approximately 3:00 pm. The site was officially locked and the project was completed at 3:30 pm.

**PROPOSED NEXT DAY ACTIVITIES**

1. NA

**END**

## **ATTACHMENT 4**

### **Receiving Inspection Forms and Documentation**



## **2005 Biointrusion Rock**





PAUL PARKER CONSTRUCTION

P O BOX 459

LOS ALAMOS, NEW MEXICO 87544

PHONE: 505-662-7456 FAX 505-661-6168

October 24, 2005

INVOICE# 05-1021

TO: Sandia National Laboratories  
ATT: Armani Vadiie  
MS 0214  
P. O. Box 5800  
Albuquerque, NM 87185-0214

PROJECT: Document NO.: 494326

PAGE 1

DATE	DESCRIPTION	TICKET NO	DRIVER	TOTAL TONS	PRICE PER TON	TOTAL
10/4/05	1" to 6" Cobble Stone Rock	13115	Joe	13.52	\$26.00	\$351.52
	1" to 6" Cobble Stone Rock	13116	Robin	21.30	\$26.00	\$553.80
	1" to 6" Cobble Stone Rock	13117	Paul	22.34	\$26.00	\$580.84
10/5/05	1" to 6" Cobble Stone Rock	13118	Justin	22.92	\$26.00	\$595.92
	1" to 6" Cobble Stone Rock	13119	Robin	23.52	\$26.00	\$611.52
	1" to 6" Cobble Stone Rock	13120	Robin	22.97	\$26.00	\$597.22
	1" to 6" Cobble Stone Rock	13121	Joe	13.32	\$26.00	\$346.32
	1" to 6" Cobble Stone Rock	13122	Joe	13.79	\$26.00	\$358.54
	1" to 6" Cobble Stone Rock	13123	Robin	23.14	\$26.00	\$601.64
	1" to 6" Cobble Stone Rock	13124	Justin	21.46	\$26.00	\$557.96
	1" to 6" Cobble Stone Rock	13125	Joe	13.21	\$26.00	\$343.46
10/6/05	1" to 6" Cobble Stone Rock	13126	Justin	21.32	\$26.00	\$554.32
	1" to 6" Cobble Stone Rock	13127	Robin	23.45	\$26.00	\$609.70
	1" to 6" Cobble Stone Rock	13128	void		\$26.00	\$0.00
	1" to 6" Cobble Stone Rock	13129	Joe	13.56	\$26.00	\$352.56
	1" to 6" Cobble Stone Rock	13130	Robin	22.34	\$26.00	\$580.84
	1" to 6" Cobble Stone Rock	13131	Justin	23.69	\$26.00	\$615.94
	1" to 6" Cobble Stone Rock	13132	Robin	23.49	\$26.00	\$610.74
	1" to 6" Cobble Stone Rock	13133	Justin	22.75	\$26.00	\$591.50
	1" to 6" Cobble Stone Rock	13134	Joe	13.91	\$26.00	\$361.66
	1" to 6" Cobble Stone Rock	13135	Justin	23.55	\$26.00	\$612.30
10/7/05	1" to 6" Cobble Stone Rock	13136	Robin	23.88	\$26.00	\$620.88
	1" to 6" Cobble Stone Rock	13137	Joe	14.03	\$26.00	\$364.78
	1" to 6" Cobble Stone Rock	13138	Justin	25.89	\$26.00	\$673.14
	1" to 6" Cobble Stone Rock	13139	Robin	21.65	\$26.00	\$562.90
	1" to 6" Cobble Stone Rock	13140	Joe	13.52	\$26.00	\$351.52
	1" to 6" Cobble Stone Rock	13141	Justin	22.79	\$26.00	\$592.54
	1" to 6" Cobble Stone Rock	13142	Robin	23.81	\$26.00	\$619.06
	1" to 6" Cobble Stone Rock	13143	Justin	25.06	\$26.00	\$651.56
	1" to 6" Cobble Stone Rock	13144	Justin	23.54	\$26.00	\$612.04
10/10/05	1" to 6" Cobble Stone Rock	13145	Joe	13.56	\$26.00	\$652.60
	1" to 6" Cobble Stone Rock	13146	Robin	25.10	\$26.00	\$349.70
	1" to 6" Cobble Stone Rock	13147	Joe	13.45	\$26.00	\$349.70
	1" to 6" Cobble Stone Rock	13148	Robin	24.23	\$26.00	\$629.98

	DOCUMENT #: 494326				PAGE #2	
10/11/05	1" to 6" Cobble Stone Rock	13149	Robin	24.88	\$26.00	\$646.88
	1" to 6" Cobble Stone Rock	13150	Joe	14.41	\$26.00	\$374.66
	1" to 6" Cobble Stone Rock	13151	Albert	23.68	\$26.00	\$615.68
	1" to 6" Cobble Stone Rock	13152	Tony	22.72	\$26.00	\$590.72
	1" to 6" Cobble Stone Rock	13153	Meek	14.15	\$26.00	\$367.90
	1" to 6" Cobble Stone Rock	13154	Robin	23.82	\$26.00	\$619.32
	1" to 6" Cobble Stone Rock	13155	Joe	13.21	\$26.00	\$343.46
	1" to 6" Cobble Stone Rock	13156	Albert	22.31	\$26.00	\$580.06
	1" to 6" Cobble Stone Rock	13157	Tony	24.55	\$26.00	\$638.30
	1" to 6" Cobble Stone Rock	13158	Robin	24.44	\$26.00	\$635.44
	1" to 6" Cobble Stone Rock	13159	Meek	13.25	\$26.00	\$344.50
	1" to 6" Cobble Stone Rock	13160	Tony	25.13	\$26.00	\$653.38
	1" to 6" Cobble Stone Rock	13161	Albert	23.72	\$26.00	\$616.72
	1" to 6" Cobble Stone Rock	13162	Joe	13.56	\$26.00	\$352.56
10/12/05	1" to 6" Cobble Stone Rock	13163	Robin	26.60	\$26.00	\$691.60
	1" to 6" Cobble Stone Rock	13164	Albert	23.58	\$26.00	\$613.08
	1" to 6" Cobble Stone Rock	13165	Joe	13.45	\$26.00	\$349.70
	1" to 6" Cobble Stone Rock	13166	Robin	23.58	\$26.00	\$613.08
	1" to 6" Cobble Stone Rock	13167	Joe	13.32	\$26.00	\$346.32
	1" to 6" Cobble Stone Rock	13168	Albert	22.49	\$26.00	\$584.74
	1" to 6" Cobble Stone Rock	13169	Robin	25.38	\$26.00	\$659.88
	1" to 6" Cobble Stone Rock	13170	Joe	13.46	\$26.00	\$349.96
	1" to 6" Cobble Stone Rock	13171	Albert	24.92	\$26.00	\$647.92
10/13/05	1" to 6" Cobble Stone Rock	13172	Tony	22.36	\$26.00	\$581.36
	1" to 6" Cobble Stone Rock	13173	Albert	23.17	\$26.00	\$602.42
	1" to 6" Cobble Stone Rock	13174	Joe	13.40	\$26.00	\$348.40
	1" to 6" Cobble Stone Rock	13175		24.53	\$26.00	\$637.78
	1" to 6" Cobble Stone Rock	13176	Albert	23.11	\$26.00	\$600.86
	1" to 6" Cobble Stone Rock	13177	Tony	24.12	\$26.00	\$627.12
	1" to 6" Cobble Stone Rock	13178	Robin	24.04	\$26.00	\$625.04
	1" to 6" Cobble Stone Rock	13179	Paul	22.67	\$26.00	\$589.42
	1" to 6" Cobble Stone Rock	13180	Albert	22.96	\$26.00	\$596.96
	1" to 6" Cobble Stone Rock	13181	Tony	22.46	\$26.00	\$583.96
10/14/05	1" to 6" Cobble Stone Rock	13182	Robin	23.25	\$26.00	\$604.50
	1" to 6" Cobble Stone Rock	13183	Tony	22.26	\$26.00	\$578.76
	1" to 6" Cobble Stone Rock	13184	Albert	22.22	\$26.00	\$577.72
	1" to 6" Cobble Stone Rock	13185	Robin	25.17	\$26.00	\$654.42
	1" to 6" Cobble Stone Rock	13186	Tony	22.93	\$26.00	\$596.18
	1" to 6" Cobble Stone Rock	13187	Albert	23.29	\$26.00	\$605.54
	1" to 6" Cobble Stone Rock	13188	Robin	24.22	\$26.00	\$629.72
	1" to 6" Cobble Stone Rock	13189	Tony	22.51	\$26.00	\$585.26
	1" to 6" Cobble Stone Rock	13190	Albert	23.56	\$26.00	\$612.56
10/17/05	1" to 6" Cobble Stone Rock	13191	Tony	22.15	\$26.00	\$575.90
	1" to 6" Cobble Stone Rock	13192	Joe	13.59	\$26.00	\$353.34
	1" to 6" Cobble Stone Rock	13193	Robin	25.06	\$26.00	\$651.56
	1" to 6" Cobble Stone Rock	13194	Matt	24.13	\$26.00	\$627.38
	1" to 6" Cobble Stone Rock	13195	Tony	22.31	\$26.00	\$580.06
	1" to 6" Cobble Stone Rock	13196	Robin	24.14	\$26.00	\$627.64
	1" to 6" Cobble Stone Rock	13197	Matt	21.83	\$26.00	\$567.58
	1" to 6" Cobble Stone Rock	13198	Joe	14.02	\$26.00	\$364.52
	1" to 6" Cobble Stone Rock	13199	Tony	25.20	\$26.00	\$655.20



PAUL PARKER CONSTRUCTION

P O BOX 459

LOS ALAMOS, NEW MEXICO 87544

PHONE: 505-662-7456 FAX 505-661-6168

November 10, 2005

INVOICE# 05-1110

TO: Sandia National Laboratories  
ATT: Armani Vadiee  
MS 0214  
P. O. Box 5800  
Albuquerque, NM 87185-0214

PROJECT: Document NO.: 494326 PAGE 1

DATE	DESCRIPTION	TICKET NO	DRIVER	TOTAL TONS	PRICE PER TON	TOTAL
10/24/05	1" to 6" Cobble Stone Rock	13278	Matt	22.01	\$26.00	\$572.26
	1" to 6" Cobble Stone Rock	13279	Eloy	26.11	\$26.00	\$678.86
	1" to 6" Cobble Stone Rock	13280	Albert	24.03	\$26.00	\$624.78
	1" to 6" Cobble Stone Rock	13281	Tony	26.82	\$26.00	\$697.32
	1" to 6" Cobble Stone Rock	13282	Robin	23.66	\$26.00	\$615.16
	1" to 6" Cobble Stone Rock	13283	P Jones	25.71	\$26.00	\$668.46
	1" to 6" Cobble Stone Rock	13284	Justin	23.45	\$26.00	\$609.70
	1" to 6" Cobble Stone Rock	13285	Albert	23.26	\$26.00	\$604.76
	1" to 6" Cobble Stone Rock	13286	Tony	23.98	\$26.00	\$623.48
	1" to 6" Cobble Stone Rock	13287	Eloy	28.96	\$26.00	\$752.96
	1" to 6" Cobble Stone Rock	13288	Robin	23.27	\$26.00	\$605.02
	1" to 6" Cobble Stone Rock	13289	Armenta	24.28	\$26.00	\$631.28
	1" to 6" Cobble Stone Rock	13290	P Jones	25.89	\$26.00	\$673.14
	1" to 6" Cobble Stone Rock	13291	Tony	25.44	\$26.00	\$661.44
	1" to 6" Cobble Stone Rock	13292	Armenta	23.37	\$26.00	\$607.62
	1" to 6" Cobble Stone Rock	13293	Justin	24.07	\$26.00	\$625.82
	1" to 6" Cobble Stone Rock	13294	P Jones	25.65	\$26.00	\$666.90
10/25/05	1" to 6" Cobble Stone Rock	13295	Justin	23.41	\$26.00	\$608.66
	1" to 6" Cobble Stone Rock	13296	Tony	23.20	\$26.00	\$603.20
	1" to 6" Cobble Stone Rock	13297	Albert	24.45	\$26.00	\$635.70
	1" to 6" Cobble Stone Rock	13298	Robin	22.42	\$26.00	\$582.92
	1" to 6" Cobble Stone Rock	13299	P Jones	26.31	\$26.00	\$684.06
	1" to 6" Cobble Stone Rock	13300	Tony	24.08	\$26.00	\$626.08
	1" to 6" Cobble Stone Rock	13301	Albert	25.11	\$26.00	\$652.86
	1" to 6" Cobble Stone Rock	13302	Justin	21.90	\$26.00	\$569.40
	1" to 6" Cobble Stone Rock	13303	Robin	25.95	\$26.00	\$674.70
	1" to 6" Cobble Stone Rock	13304	Eloy	27.98	\$26.00	\$727.48
	1" to 6" Cobble Stone Rock	13305	Tony	22.80	\$26.00	\$592.80
	1" to 6" Cobble Stone Rock	13306	P Jones	26.62	\$26.00	\$692.12
	1" to 6" Cobble Stone Rock	13307	Albert	23.97	\$26.00	\$623.22
	1" to 6" Cobble Stone Rock	13308	Justin	22.02	\$26.00	\$572.52
	1" to 6" Cobble Stone Rock	13309	Robin	23.32	\$26.00	\$606.32
	1" to 6" Cobble Stone Rock	13310	Tony	25.09	\$26.00	\$652.34
	1" to 6" Cobble Stone Rock	13311	P Jones	25.74	\$26.00	\$669.24
	1" to 6" Cobble Stone Rock	13312	Eloy	27.12	\$26.00	\$705.12

	DOCUMENT #: 494326				PAGE #2	
10/25/05	1" to 6" Cobble Stone Rock	13313	Albert	21.89	\$26.00	\$569.14
10/26/05	1" to 6" Cobble Stone Rock	13314	Tony	23.91	\$26.00	\$621.66
	1" to 6" Cobble Stone Rock	13315	Albert	24.51	\$26.00	\$637.26
	1" to 6" Cobble Stone Rock	13316	Eloy	28.84	\$26.00	\$749.84
	1" to 6" Cobble Stone Rock	13317	Albert	25.45	\$26.00	\$661.70
	1" to 6" Cobble Stone Rock	13318	Tony	27.99	\$26.00	\$727.74
	1" to 6" Cobble Stone Rock	13319	Robin	24.83	\$26.00	\$645.58
	1" to 6" Cobble Stone Rock	13320	James	13.43	\$26.00	\$349.18
	1" to 6" Cobble Stone Rock	13321	Justin	24.43	\$26.00	\$635.18
	1" to 6" Cobble Stone Rock	13322	Eloy	28.00	\$26.00	\$728.00
	1" to 6" Cobble Stone Rock	13323	P Jones	27.17	\$26.00	\$706.42
	1" to 6" Cobble Stone Rock	13324	Albert	23.57	\$26.00	\$612.82
	1" to 6" Cobble Stone Rock	13325	Tony	24.08	\$26.00	\$626.08
	1" to 6" Cobble Stone Rock	13326	James	13.51	\$26.00	\$351.26
	1" to 6" Cobble Stone Rock	13327	Robin	23.49	\$26.00	\$610.74
	1" to 6" Cobble Stone Rock	13328	Justin	23.24	\$26.00	\$604.24
	1" to 6" Cobble Stone Rock	13329	Eloy	26.55	\$26.00	\$690.30
	1" to 6" Cobble Stone Rock	13330	P Jones	26.51	\$26.00	\$689.26
	1" to 6" Cobble Stone Rock	13331	Albert	25.38	\$26.00	\$659.88
10/27/05	1" to 6" Cobble Stone Rock	13332	Robin	25.50	\$26.00	\$663.00
	1" to 6" Cobble Stone Rock	13333	P Jones	27.26	\$26.00	\$708.76
	1" to 6" Cobble Stone Rock	13334	Albert	23.26	\$26.00	\$604.76
	1" to 6" Cobble Stone Rock	13335	Eloy	27.37	\$26.00	\$711.62
	1" to 6" Cobble Stone Rock	13336	Matt	24.50	\$26.00	\$637.00
	1" to 6" Cobble Stone Rock	13337	Albert	23.13	\$26.00	\$601.38
	1" to 6" Cobble Stone Rock	13338	Eloy	28.64	\$26.00	\$744.64
	1" to 6" Cobble Stone Rock	13339	Tony	23.83	\$26.00	\$619.58
	1" to 6" Cobble Stone Rock	13340	P Jones	32.54	\$26.00	\$846.04
	1" to 6" Cobble Stone Rock	13341	Albert	23.47	\$26.00	\$610.22
	1" to 6" Cobble Stone Rock	13342	Robin	25.71	\$26.00	\$668.46
	1" to 6" Cobble Stone Rock	13343	Eloy	29.26	\$26.00	\$760.76
	1" to 6" Cobble Stone Rock	13344	Tony	24.72	\$26.00	\$642.72
	1" to 6" Cobble Stone Rock	13345	Matt	24.77	\$26.00	\$644.02
	1" to 6" Cobble Stone Rock	13346	P Jones	28.48	\$26.00	\$740.48
10/28/05	1" to 6" Cobble Stone Rock	13347	Robin	24.23	\$26.00	\$629.98
	1" to 6" Cobble Stone Rock	13348	Justin	23.60	\$26.00	\$613.60
	1" to 6" Cobble Stone Rock	13349	Eloy	27.20	\$26.00	\$707.20
	1" to 6" Cobble Stone Rock	13350	P Jones	26.03	\$26.00	\$676.78
	1" to 6" Cobble Stone Rock	13351	Robin	24.96	\$26.00	\$648.96
	1" to 6" Cobble Stone Rock	13352	Albert	25.03	\$26.00	\$650.78
	1" to 6" Cobble Stone Rock	13353	Justin	23.46	\$26.00	\$609.96
	1" to 6" Cobble Stone Rock	13354	Eloy	26.66	\$26.00	\$693.16
	1" to 6" Cobble Stone Rock	13355	P Jones	28.70	\$26.00	\$746.20
	1" to 6" Cobble Stone Rock	13356	Robin	25.20	\$26.00	\$655.20
	1" to 6" Cobble Stone Rock	13357	Justin	23.71	\$26.00	\$616.46
	1" to 6" Cobble Stone Rock	13358	Albert	23.31	\$26.00	\$606.06
	1" to 6" Cobble Stone Rock	13359	P Jones	28.45	\$26.00	\$739.70
	1" to 6" Cobble Stone Rock	13360	Eloy	27.28	\$26.00	\$709.28
10/31/05	1" to 6" Cobble Stone Rock	13361	Justin	23.54	\$26.00	\$612.04
	1" to 6" Cobble Stone Rock	13362	Paul Jones	28.43	\$26.00	\$739.18
	1" to 6" Cobble Stone Rock	13363	Eloy	27.25	\$26.00	\$708.50
	1" to 6" Cobble Stone Rock	13364	Albert	24.35	\$26.00	\$633.10
	1" to 6" Cobble Stone Rock	13365	Robin	22.14	\$26.00	\$575.64

	DOCUMENT NO: 494326				PAGE 3	
10/31/05	1" to 6" Cobble Stone Rock	13366	Paul Jones	26.19	\$26.00	\$680.94
	1" to 6" Cobble Stone Rock	13367	Albert	23.67	\$26.00	\$615.42
	1" to 6" Cobble Stone Rock	13368	Eloy	25.72	\$26.00	\$668.72
	1" to 6" Cobble Stone Rock	13369	Justin	23.73	\$26.00	\$616.98
	1" to 6" Cobble Stone Rock	13370	Paul Jones	26.78	\$26.00	\$696.28
	1" to 6" Cobble Stone Rock	13371	Robin	26.54	\$26.00	\$690.04
	1" to 6" Cobble Stone Rock	13372	Justin	23.43	\$26.00	\$609.18
	1" to 6" Cobble Stone Rock	13373	Albert	23.43	\$26.00	\$609.18
	1" to 6" Cobble Stone Rock	13374	Eloy	27.10	\$26.00	\$704.60
11/1/05	1" to 6" Cobble Stone Rock	13375	Paul Jones	29.08	\$26.00	\$756.08
	1" to 6" Cobble Stone Rock	13376	Albert	23.50	\$26.00	\$611.00
	1" to 6" Cobble Stone Rock	13377	Eloy	27.01	\$26.00	\$702.26
	1" to 6" Cobble Stone Rock	13378	Paul Jones	25.34	\$26.00	\$658.84
	1" to 6" Cobble Stone Rock	13379	Albert	25.20	\$26.00	\$655.20
	1" to 6" Cobble Stone Rock	13380	Paul Jones	26.30	\$26.00	\$683.80
	1" to 6" Cobble Stone Rock	13381	Eloy	28.00	\$26.00	\$728.00
	1" to 6" Cobble Stone Rock	13382	Albert	23.66	\$26.00	\$615.16
	1" to 6" Cobble Stone Rock	13383	Paul Jones	27.53	\$26.00	\$715.78
	1" to 6" Cobble Stone Rock	13384	Eloy	27.84	\$26.00	\$723.84
11/2/05	1" to 6" Cobble Stone Rock	13385	Albert	22.56	\$26.00	\$586.56
	1" to 6" Cobble Stone Rock	13386	Paul Jones	27.69	\$26.00	\$719.94
	1" to 6" Cobble Stone Rock	13387	Eloy	25.26	\$26.00	\$656.76
	1" to 6" Cobble Stone Rock	13388	Matt	12.54	\$26.00	\$326.04
	1" to 6" Cobble Stone Rock	13389	Tony	23.85	\$26.00	\$620.10
	1" to 6" Cobble Stone Rock	13390	Albert	24.61	\$26.00	\$639.86
	1" to 6" Cobble Stone Rock	13391	Paul Jones	24.18	\$26.00	\$628.68
	1" to 6" Cobble Stone Rock	13392	Tony	24.26	\$26.00	\$630.76
	1" to 6" Cobble Stone Rock	13393	Justin	24.28	\$26.00	\$631.28
	1" to 6" Cobble Stone Rock	13394	Eloy	26.32	\$26.00	\$684.32
	1" to 6" Cobble Stone Rock	13395	Albert	22.74	\$26.00	\$591.24
	1" to 6" Cobble Stone Rock	13396	Paul Jones	25.53	\$26.00	\$663.78
	1" to 6" Cobble Stone Rock	13397	Tony	22.87	\$26.00	\$594.62
	1" to 6" Cobble Stone Rock	13398	Justin	22.63	\$26.00	\$588.38
	1" to 6" Cobble Stone Rock	13399	Eloy	26.45	\$26.00	\$687.70
	1" to 6" Cobble Stone Rock	13400	Robin	23.12	\$26.00	\$601.12
11/3/05	1" to 6" Cobble Stone Rock	3448	Justin	22.54	\$26.00	\$586.04
	1" to 6" Cobble Stone Rock	3449	Albert	24.39	\$26.00	\$634.14
	1" to 6" Cobble Stone Rock	3450	Paul Jones	26.79	\$26.00	\$696.54
	1" to 6" Cobble Stone Rock	3451	Missing Ticket		\$26.00	\$0.00
	1" to 6" Cobble Stone Rock	3452	Eloy	27.48	\$26.00	\$714.48
	1" to 6" Cobble Stone Rock	3453	Justin	23.74	\$26.00	\$617.24
	1" to 6" Cobble Stone Rock	3454	Robin	23.29	\$26.00	\$605.54
	1" to 6" Cobble Stone Rock	3455	Paul Jones	25.91	\$26.00	\$673.66
	1" to 6" Cobble Stone Rock	3456	Albert	23.63	\$26.00	\$614.38
	1" to 6" Cobble Stone Rock	3457	Eloy	27.75	\$26.00	\$721.50
	1" to 6" Cobble Stone Rock	3458	Justin	22.63	\$26.00	\$588.38
	1" to 6" Cobble Stone Rock	3459	Paul Jones	24.50	\$26.00	\$637.00
	1" to 6" Cobble Stone Rock	3460	Albert	22.85	\$26.00	\$594.10
	1" to 6" Cobble Stone Rock	3461	Eloy	26.53	\$26.00	\$689.78
	1" to 6" Cobble Stone Rock	3462	Justin	22.53	\$26.00	\$585.78
11/4/05	1" to 6" Cobble Stone Rock	3463	Robin	23.31	\$26.00	\$606.06
	1" to 6" Cobble Stone Rock	3464	Tony	22.90	\$26.00	\$595.40
	1" to 6" Cobble Stone Rock	3465	Albert	22.31	\$26.00	\$580.06



PAUL PARKER CONSTRUCTION

P O BOX 459

LOS ALAMOS, NEW MEXICO 87544

PHONE: 505-662-7456 FAX 505-661-6168

November 17, 2005

INVOICE# 05-1117

TO: Sandia National Laboratories  
ATT: Armani Vadiee  
MS 0214  
P. O. Box 5800  
Albuquerque, NM 87185-0214

\*\*\*\*\*

PROJECT:	Document NO.: 494326					PAGE 1
DATE	DESCRIPTION	TICKET NO	DRIVER	TOTAL TONS	PRICE PER TON	TOTAL
11/7/05	1" to 6" Cobble Stone Rock	13401	Paul Jones	25.76	\$26.00	\$669.76
	1" to 6" Cobble Stone Rock	13402	Eloy	27.22	\$26.00	\$707.72
	1" to 6" Cobble Stone Rock	13403	Tony	22.90	\$26.00	\$595.40
	1" to 6" Cobble Stone Rock	13404	Justin	22.96	\$26.00	\$596.96
	1" to 6" Cobble Stone Rock	13405	Albert	22.74	\$26.00	\$591.24
	1" to 6" Cobble Stone Rock	13406	Tony	23.87	\$26.00	\$620.62
	1" to 6" Cobble Stone Rock	13407	Paul Jones	25.47	\$26.00	\$662.22
	1" to 6" Cobble Stone Rock	13408	Eloy	26.71	\$26.00	\$694.46
	1" to 6" Cobble Stone Rock	13409	Tony	22.89	\$26.00	\$595.14
	1" to 6" Cobble Stone Rock	13410	Paul Jones	24.80	\$26.00	\$644.80
11/8/05	1" to 6" Cobble Stone Rock	13411	Eloy	25.97	\$26.00	\$675.22
	1" to 6" Cobble Stone Rock	13412	Paul Jones	25.31	\$26.00	\$658.06
	1" to 6" Cobble Stone Rock	13413	Tony	22.93	\$26.00	\$596.18
	1" to 6" Cobble Stone Rock	13414	J. Meek	13.90	\$26.00	\$361.40
	1" to 6" Cobble Stone Rock	13415	Justin	23.41	\$26.00	\$608.66
	1" to 6" Cobble Stone Rock	13416	Paul Jones	25.70	\$26.00	\$668.20
	1" to 6" Cobble Stone Rock	13417	P Jones	25.71	\$26.00	\$668.46
11/9/05	1" to 6" Cobble Stone Rock	13418	Justin	23.69	\$26.00	\$615.94
	1" to 6" Cobble Stone Rock	13419	Tony	23.76	\$26.00	\$617.76
	1" to 6" Cobble Stone Rock	13420	Albert	23.31	\$26.00	\$606.06
	1" to 6" Cobble Stone Rock	13421	P. Jones	25.67	\$26.00	\$667.42
	1" to 6" Cobble Stone Rock	13422	Eloy	25.53	\$26.00	\$663.78
	1" to 6" Cobble Stone Rock	13423	Justin	23.46	\$26.00	\$609.96
	1" to 6" Cobble Stone Rock	13424	Tony	23.24	\$26.00	\$604.24
	1" to 6" Cobble Stone Rock	13425	Albert	23.01	\$26.00	\$598.26
	1" to 6" Cobble Stone Rock	13426	Eloy	28.64	\$26.00	\$744.64
	1" to 6" Cobble Stone Rock	13427	Justin	27.98	\$26.00	\$727.48
11/10/05	1" to 6" Cobble Stone Rock	13428	P. Jones	26.51	\$26.00	\$689.26
	1" to 6" Cobble Stone Rock	13429	Joe	13.69	\$26.00	\$355.94
	1" to 6" Cobble Stone Rock	13430	Albert	24.34	\$26.00	\$632.84
	1" to 6" Cobble Stone Rock	13431	Eloy	24.66	\$26.00	\$641.16
	1" to 6" Cobble Stone Rock	13432	Albert	23.69	\$26.00	\$615.94
	1" to 6" Cobble Stone Rock	13433	Albert	25.09	\$26.00	\$652.34
	1" to 6" Cobble Stone Rock	13434	P Jones	27.67	\$26.00	\$719.42
	1" to 6" Cobble Stone Rock	13435	Eloy	26.94	\$26.00	\$700.44

DOCUMENT #: 494326		PAGE #2				
11/10/05	1" to 6" Cobble Stone Rock	13436	Justin	24.25	\$26.00	\$630.50
	1" to 6" Cobble Stone Rock	13437	Albert	24.97	\$26.00	\$649.22
	1" to 6" Cobble Stone Rock	13438	Eloy	26.67	\$26.00	\$693.42
	1" to 6" Cobble Stone Rock	13439	Paul Jones	23.39	\$26.00	\$608.14
	1" to 6" Cobble Stone Rock	13440	Justin	23.39	\$26.00	\$608.14
	1" to 6" Cobble Stone Rock	13441	Eloy	26.37	\$26.00	\$685.62
	1" to 6" Cobble Stone Rock	13442	Paul Jones	24.07	\$26.00	\$625.82
	1" to 6" Cobble Stone Rock	13443	Justin	23.77	\$26.00	\$618.02
	1" to 6" Cobble Stone Rock	13444	Eloy	25.51	\$26.00	\$663.26
11/11/05	1" to 6" Cobble Stone Rock	13445	Paul Jones	25.68	\$26.00	\$667.68
	1" to 6" Cobble Stone Rock	13446	Albert	23.35	\$26.00	\$607.10
	1" to 6" Cobble Stone Rock	13447	Eloy	26.39	\$26.00	\$686.14
	1" to 6" Cobble Stone Rock	13448	Tony	22.86	\$26.00	\$594.36
	1" to 6" Cobble Stone Rock	13449	Justin	22.71	\$26.00	\$590.46
	1" to 6" Cobble Stone Rock	13450	Tony	21.27	\$26.00	\$553.02
	1" to 6" Cobble Stone Rock	13451	Eloy	26.72	\$26.00	\$694.72
	1" to 6" Cobble Stone Rock	13452	Albert	23.96	\$26.00	\$622.96
	1" to 6" Cobble Stone Rock	13453	P Jones	27.55	\$26.00	\$716.30
	1" to 6" Cobble Stone Rock	13454	Justin	23.51	\$26.00	\$611.26
	1" to 6" Cobble Stone Rock	13455	Tony	23.30	\$26.00	\$605.80
	1" to 6" Cobble Stone Rock	13456	Eloy	26.41	\$26.00	\$686.66
	1" to 6" Cobble Stone Rock	13457	Albert	23.84	\$26.00	\$619.84
	1" to 6" Cobble Stone Rock	13458	Paul Jones	25.94	\$26.00	\$674.44
	1" to 6" Cobble Stone Rock	13459	Justin	25.88	\$26.00	\$672.88
11/14/05	1" to 6" Cobble Stone Rock	13460	Paul Jones	24.24	\$26.00	\$630.24
	1" to 6" Cobble Stone Rock	13462	Robin	24.21	\$26.00	\$629.46
	1" to 6" Cobble Stone Rock	13463	Paul Jones	25.08	\$26.00	\$652.08
	1" to 6" Cobble Stone Rock	13464	Justin	21.03	\$26.00	\$546.78
	1" to 6" Cobble Stone Rock	13465	Elloy	24.90	\$26.00	\$647.40
	1" to 6" Cobble Stone Rock	13466	Paul Jones	24.88	\$26.00	\$646.88
	1" to 6" Cobble Stone Rock	13467	Robin	24.50	\$26.00	\$637.00
						\$41,852.98
			TOTAL TONS:	1609.73		
					NM ST. TAX	\$2,615.81
					TOTAL DUE	\$44,468.79

## **2009 Biointrusion Rock**



**PAUL PARKER CONSTRUCTION**

P O BOX 459

LOS ALAMOS, NEW MEXICO 8754

PHONE: 505-662-7456

DATE: JUNE 12, 2009

INVOICE # 09-0612

TO: ENVIRONMENTAL DIMENSIONS INC.  
P O BOX 6250  
ALBUQUERQUE, NEW MEXICO 87197-6250

REFERENCE	JOB # 288				PAGE # 1 OF 2	
DATE	MATERIAL	TICKET NO.	TONS	PRICE PER TON	JOB NAME	TOTAL
6/8/2009	3"-6" COBBLE	19063	22.19	\$18.00	EDI SNL TECH 3	\$399.42
6/8/2009	3"-6" COBBLE	19064	23.12	\$18.00	EDI SNL TECH 3	\$416.16
6/8/2009	3"-6" COBBLE	19065	23.45	\$18.00	EDI SNL TECH 3	\$422.10
6/8/2009	3"-6" COBBLE	19066	23.34	\$18.00	EDI SNL TECH 3	\$420.12
6/8/2009	3"-6" COBBLE	19067	21.98	\$18.00	EDI SNL TECH 3	\$395.64
6/8/2009	3"-6" COBBLE	19068	22.22	\$18.00	EDI SNL TECH 3	\$399.96
6/8/2009	3"-6" COBBLE	19069	22.32	\$18.00	EDI SNL TECH 3	\$401.76
6/8/2009	3"-6" COBBLE	19070	24.56	\$18.00	EDI SNL TECH 3	\$442.08
6/8/2009	3"-6" COBBLE	19071	22.91	\$18.00	EDI SNL TECH 3	\$412.38
6/9/2009	3"-6" COBBLE	19072	27.83	\$18.00	EDI SNL TECH 3	\$500.94
6/9/2009	3"-6" COBBLE	19073	22.65	\$18.00	EDI SNL TECH 3	\$407.70
6/9/2009	3"-6" COBBLE	19074	23.23	\$18.00	EDI SNL TECH 3	\$418.14
6/9/2009	3"-6" COBBLE	19076	26.16	\$18.00	EDI SNL TECH 3	\$470.88
6/9/2009	3"-6" COBBLE	19077	21.92	\$18.00	EDI SNL TECH 3	\$394.56
6/9/2009	3"-6" COBBLE	19078	24.53	\$18.00	EDI SNL TECH 3	\$441.54
6/9/2009	3"-6" COBBLE	19079	22.94	\$18.00	EDI SNL TECH 3	\$412.92
6/9/2009	3"-6" COBBLE	19080	23.87	\$18.00	EDI SNL TECH 3	\$429.66
6/9/2009	3"-6" COBBLE	19087	22.13	\$18.00	EDI SNL TECH 3	\$398.34
6/9/2009	3"-6" COBBLE	19089	24.96	\$18.00	EDI SNL TECH 3	\$449.28
6/9/2009	3"-6" COBBLE	19092	22.8	\$18.00	EDI SNL TECH 3	\$410.40
6/9/2009	3"-6" COBBLE	19093	25.34	\$18.00	EDI SNL TECH 3	\$456.12
6/9/2009	3"-6" COBBLE	19094	25.81	\$18.00	EDI SNL TECH 3	\$464.58
6/9/2009	3"-6" COBBLE	19095	24.54	\$18.00	EDI SNL TECH 3	\$441.72
6/9/2009	3"-6" COBBLE	19096	23.46	\$18.00	EDI SNL TECH 3	\$422.28
6/9/2009	3"-6" COBBLE	19097	21.92	\$18.00	EDI SNL TECH 3	\$394.56
6/9/2009	3"-6" COBBLE	19098	22.80	\$18.00	EDI SNL TECH 3	\$410.40
6/9/2009	3"-6" COBBLE	19101	24.84	\$18.00	EDI SNL TECH 3	\$447.12
6/9/2009	3"-6" COBBLE	19124	24.07	\$18.00	EDI SNL TECH 3	\$433.26
6/9/2009	3"-6" COBBLE	19186	23.09	\$18.00	EDI SNL TECH 3	\$415.62
6/9/2009	3"-6" COBBLE	19187	22.05	\$18.00	EDI SNL TECH 3	\$396.90
6/9/2009	3"-6" COBBLE	19197	23.61	\$18.00	EDI SNL TECH 3	\$424.98
6/9/2009	3"-6" COBBLE	19198	15.91	\$18.00	EDI SNL TECH 3	\$286.38

**PAUL PARKER CONSTRUCTION**

**P O BOX 459**

**LOS ALAMOS, NEW MEXICO 8754**

**PHONE: 505-662-7456**

DATE: JUNE 12, 2009

INVOICE # 09-0612

PAGE #2

6/12/2009	3"-6" COBBLE	19200	21.87	\$18.00	EDI SNL TECH 3	\$393.66
6/12/2009	3"-6" COBBLE	19131	26.10	\$18.00	EDI SNL TECH 3	\$469.80
6/12/2009	3"-6" COBBLE	19138	25.3	\$18.00	EDI SNL TECH 3	\$455.40
6/12/2009	3"-6" COBBLE	19139	25.07	\$18.00	EDI SNL TECH 3	\$451.26
6/12/2009	3"-6" COBBLE	19140	23.92	\$18.00	EDI SNL TECH 3	\$430.56
6/12/2009	3"-6" COBBLE	19141	23.98	\$18.00	EDI SNL TECH 3	\$431.64
6/12/2009	3"-6" COBBLE	19142	25.6	\$18.00	EDI SNL TECH 3	\$460.80
6/12/2009	3"-6" COBBLE	19143	24.97	\$18.00	EDI SNL TECH 3	\$449.46
6/12/2009	3"-6" COBBLE	19144	25.01	\$18.00	EDI SNL TECH 3	\$450.18
6/12/2009	3"-6" COBBLE	19145	24.78	\$18.00	EDI SNL TECH 3	\$446.04
6/12/2009	3"-6" COBBLE	19146	26.76	\$18.00	EDI SNL TECH 3	\$481.68
6/12/2009	3"-6" COBBLE	19147	24.66	\$18.00	EDI SNL TECH 3	\$443.88
6/12/2009	3"-6" COBBLE	19154	24.78	\$18.00	EDI SNL TECH 3	\$446.04

MATERIALS \$19,248.30

FREIGHT CHARGE 1069.35 TONS @ \$12.00 PER TON

FREIGHT CHARGE \$12,832.20

NM STATE TAX EXEMPT

**TOTAL DUE \$32,080.50**

TERMS: FREIGHT CHARGE DUE 15 DAYS FROM DATE OF INVOICE

MATERIALS DUE 30 DAYS FROM DATE OF INVOICE

**PAUL PARKER CONSTRUCTION**  
**P O BOX 459**  
**LOS ALAMOS, NEW MEXICO 8754**  
**PHONE: 505-662-7456**

DATE: JUNE 15, 2009

INVOICE # 09-0615

TO: ENVIRONMENTAL DIMENSIONS INC.  
 P O BOX 6250  
 ALBUQUERQUE, NEW MEXICO 87197-6250

REFERENCE	JOB # 288	TICKET NO.	TONS	PRICE PER TON	PAGE # 1	TOTAL
6/11/09	3"-6" COBBLE	19099	26.43	\$18.00	EDI SNL TECH 3	\$475.74
6/11/09	3"-6" COBBLE	19102	25.98	\$18.00	EDI SNL TECH 3	\$467.64
6/11/09	3"-6" COBBLE	19103	24.87	\$18.00	EDI SNL TECH 3	\$447.66
6/11/09	3"-6" COBBLE	19104	22.59	\$18.00	EDI SNL TECH 3	\$406.62
6/11/09	3"-6" COBBLE	19105	26.23	\$18.00	EDI SNL TECH 3	\$472.14
6/11/09	3"-6" COBBLE	19106	24.02	\$18.00	EDI SNL TECH 3	\$432.36
6/11/09	3"-6" COBBLE	19107	24.35	\$18.00	EDI SNL TECH 3	\$438.30
6/11/09	3"-6" COBBLE	19108	24.58	\$18.00	EDI SNL TECH 3	\$442.44
6/11/09	3"-6" COBBLE	19109	24.64	\$18.00	EDI SNL TECH 3	\$443.52
6/11/09	3"-6" COBBLE	19110	26.5	\$18.00	EDI SNL TECH 3	\$477.00
6/11/09	3"-6" COBBLE	19111	24.7	\$18.00	EDI SNL TECH 3	\$444.60
6/11/09	3"-6" COBBLE	19112	25.25	\$18.00	EDI SNL TECH 3	\$454.50
6/11/09	3"-6" COBBLE	19113	27.46	\$18.00	EDI SNL TECH 3	\$494.28
6/11/09	3"-6" COBBLE	19114	27.13	\$18.00	EDI SNL TECH 3	\$488.34
6/11/09	3"-6" COBBLE	19115	27.72	\$18.00	EDI SNL TECH 3	\$498.96
6/11/09	3"-6" COBBLE	19116	25.78	\$18.00	EDI SNL TECH 3	\$464.04
6/11/09	3"-6" COBBLE	19118	25.52	\$18.00	EDI SNL TECH 3	\$459.36
6/11/09	3"-6" COBBLE	19119	24.59	\$18.00	EDI SNL TECH 3	\$442.62
6/11/09	3"-6" COBBLE	19120	24.35	\$18.00	EDI SNL TECH 3	\$438.30
6/11/09	3"-6" COBBLE	19122	24.45	\$18.00	EDI SNL TECH 3	\$440.10
6/11/09	3"-6" COBBLE	19123	25.62	\$18.00	EDI SNL TECH 3	\$461.16
6/11/09	3"-6" COBBLE	19121	23.10	\$18.00	EDI SNL TECH 3	\$415.80
6/11/09	3"-6" COBBLE	19133	23.63	\$18.00	EDI SNL TECH 3	\$425.34
6/11/09	3"-6" COBBLE	19135	24.22	\$18.00	EDI SNL TECH 3	\$435.96
6/11/09	3"-6" COBBLE	19137	26.04	\$18.00	EDI SNL TECH 3	\$468.72
	FREIGHT CHARGE	629.75 TONS @	\$12.00 PER TON		MATERIALS	\$11,335.50
					FREIGHT CHARGE	\$7,557.00
					NM STATE TAX	EXEMPT
				PREVIOUS	BALANCE	\$32,080.50
					TOTAL DUE	\$50,973.00

TERMS: FREIGHT CHARGE DUE 15 DAYS FROM DATE OF INVOICE  
 MATERIALS DUE 30 DAYS FROM DATE OF INVOICE

**P O BOX 459  
LOS ALAMOS, NEW MEXICO 8754  
PHONE: 505-662-7456**

DATE: JUNE 15, 2009

INVOICE # 09-0615-A

TO: ENVIRONMENTAL DIMENSIONS INC.  
P O BOX 6250  
ALBUQUERQUE, NEW MEXICO 87197-6250

*****						
REFERENCE	JOB # 288			PAGE # 1		
DATE	MATERIAL	TICKET NO.	TONS	PRICE PER TON	JOB NAME	TOTAL
6/11/2009	3"-6" COBBLE	19100	25.88	\$18.00	EDI SNL TECH 3	\$465.84
6/11/2009	3"-6" COBBLE	19132	22.72	\$18.00	EDI SNL TECH 3	\$408.96
6/11/2009	3"-6" COBBLE	19136	26.48	\$18.00	EDI SNL TECH 3	\$476.64
6/11/2009	3"-6" COBBLE	19150	26.02	\$18.00	EDI SNL TECH 3	\$468.36
6/11/2009	3"-6" COBBLE	19151	24.67	\$18.00	EDI SNL TECH 3	\$444.06
6/11/2009	3"-6" COBBLE	19152	24.47	\$18.00	EDI SNL TECH 3	\$440.46
6/11/2009	3"-6" COBBLE	19153	26.11	\$18.00	EDI SNL TECH 3	\$469.98
		TONS	176.35		MATERIALS	\$3,174.30
	FREIGHT CHARGE	176.35	\$12.00 PER TON		FREIGHT CHARGE	\$2,116.20
				PREVIOUS	BALANCE	\$50,973.00
TERMS: FREIGHT CHARGE DUE 15 DAYS FROM DATE OF INVOICE				Credit on Tickets	19038 & 19072	-\$60.86
MATERIALS DUE 30 DAYS FROM DATE OF INVOICE				Credit on Freight		-\$39.24
				Credit on Ticket	19135 F&M	-\$726.60
					Sub Total	\$55,436.80
					NM STATE TAX	\$3,534.10
					TOTAL DUE	\$58,970.90

## **2009 Aggregate**



**Table 2**  
**Material Receiving for 3/8" Crushed Gravel**

<b>Supplier</b>	<b>Material</b>	<b>Ticket #</b>	<b>Date Received</b>	<b>Quantity (tons)</b>
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62474	6/29/2009	25.27
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62476	6/29/2009	26.08
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62477	6/29/2009	22.29
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62479	6/29/2009	25.42
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62485	6/29/2009	22.63
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62487	6/29/2009	25.75
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62616	6/29/2009	27.74
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62618	6/29/2009	27.86
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62624	6/29/2009	22.60
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62627	6/29/2009	26.39
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62645	6/29/2009	25.94
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62705	6/29/2009	27.04
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62709	6/29/2009	27.20
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62711	6/29/2009	22.17
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62730	6/29/2009	28.01
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62770	6/29/2009	27.55
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62774	6/29/2009	27.65
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62775	6/29/2009	22.29
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62880	6/30/2009	26.24
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62883	6/30/2009	23.05
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62892	6/30/2009	22.71
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62893	6/30/2009	22.76
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62895	6/30/2009	26.63
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	62898	6/30/2009	28.26
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63011	6/30/2009	27.74
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63014	6/30/2009	23.05
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63015	6/30/2009	22.78
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63018	6/30/2009	27.72
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63024	6/30/2009	22.29
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63037	6/30/2009	28.27
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63109	6/30/2009	27.74
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63111	6/30/2009	23.50
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63118	6/30/2009	21.52
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63124	6/30/2009	27.73
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63132	6/30/2009	25.46
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63136	6/30/2009	28.27
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63148	6/30/2009	27.79
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63150	6/30/2009	23.35
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63151	6/30/2009	22.02
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63152	6/30/2009	27.62
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63153	6/30/2009	26.82
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63194	7/1/2009	28.15
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63197	7/1/2009	22.70
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63200	7/1/2009	26.75
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63204	7/1/2009	26.64
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63220	7/1/2009	26.95
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63223	7/1/2009	23.31
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63230	7/1/2009	22.80
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63327	7/1/2009	21.74
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63330	7/1/2009	26.56

Supplier	Material	Ticket #	Date Received	Quantity (tons)
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63331	7/1/2009	25.92
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63341	7/1/2009	26.35
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63357	7/1/2009	27.45
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63361	7/1/2009	23.09
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63363	7/1/2009	22.69
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63428	7/1/2009	22.50
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63430	7/1/2009	27.02
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63434	7/1/2009	26.41
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63458	7/1/2009	27.03
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63460	7/1/2009	27.49
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63462	7/1/2009	22.28
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63481	7/1/2009	21.13
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63482	7/1/2009	27.63
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63483	7/1/2009	26.36
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63491	7/1/2009	22.00
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	63492	7/1/2009	27.64
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65590	7/14/2009	27.90
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65591	7/14/2009	24.54
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65592	7/14/2009	26.93
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65595	7/14/2009	24.41
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65597	7/14/2009	26.57
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65670	7/14/2009	27.80
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65673	7/14/2009	24.79
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65675	7/14/2009	24.19
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65681	7/14/2009	27.78
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65691	7/14/2009	27.68
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65741	7/14/2009	23.40
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65743	7/14/2009	26.07
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65756	7/14/2009	26.09
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65758	7/14/2009	27.59
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65761	7/14/2009	28.41
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	65782	7/14/2009	26.10
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67010	7/21/2009	27.33
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67012	7/21/2009	23.59
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67013	7/21/2009	23.39
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67075	7/21/2009	26.88
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67079	7/21/2009	23.69
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67141	7/21/2009	26.74
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67152	7/21/2009	22.07
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67173	7/21/2009	27.52
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67228	7/22/2009	23.75
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67227	7/22/2009	23.81
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67299	7/22/2009	23.15
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67301	7/22/2009	23.78
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67428	7/22/2009	23.81
Fisher Sand & Gravel Co.	3/8" Minus Crushed Gravel	67432	7/22/2009	24.12
			<b>TOTAL</b>	<b>2435.67</b>

## **2009 Seed and Mulch**



**RI-01  
RECEIVING INSPECTION FORM  
SEED/FERTILIZER/MULCH**

Project Name: Sandia Mixed Waste Landfill

Date: 08/19/2009 Time: N/A

Weather: 62 low – 93 high

Inspected By: Paul Molina (URS)

Material Name: Seed and Mulch

Delivery Shipment No. #1

Transporter/Supplier: Lee Landscaping

Storage Location MWL Conex

Number of Bags/Bales: 26 Bags of seed (80 lb/Acre)

	SPECIFICATION	MATERIAL RECEIVED	NOTE NO.
Supplier: Lee Landscape	_____	_____	_____
Supplier Designation: NA	_____	_____	_____
Material: Seed and Mulch	_____	_____	_____

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
<u>Checks before unloading:</u>		
Have delivery tickets and QC certificates been provided for seed/fertilizer/mulch received?	<u>YES</u>	_____
Does the material description match the construction specifications?	<u>YES</u>	_____
Is the material free of damage?	<u>YES</u>	_____
Is the material acceptable for use?	<u>YES</u>	_____
<u>Checks before unloading:</u>		
Is the material free of damage?	<u>YES</u>	_____
Is the material properly stored?	<u>YES</u>	_____
Is the storage area free of water and/or moisture?	<u>YES</u>	_____

**NOTES:** No fertilizer required per design change due to time of year of seed placement.



## **2009 Seed Bag Labels**

NOTE: The seed bag labels provided in this Attachment include copies of 23 seed bag labels. As stated on each label, the full order included 26 bags, with 25 containing 36.39 pounds of seed and 1 bag containing 10.48 pounds, for total of 926.23 pounds of seed.

Although the full order including 26 bags was received and inspected, 3 labels could not be located after receipt and inspection, and are not included in this attachment. Two of the missing labels were for 36.39 pound bags, and one was for the 10.48 pound bag.



# MWL Seed Bag Label 1

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata Viva	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Black Grama Regal, Certified	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Sand Dropped Not Stated	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Spikes Mainly El Vado	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.03% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres

Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata Viva	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Black Grama Regal, Certified	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Sand Dropped Not Stated	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Spikes Mainly El Vado	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.03% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres

Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata Viva	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Black Grama Regal, Certified	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Sand Dropped Not Stated	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Spikes Mainly El Vado	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.03% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres

Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata Viva	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Black Grama Regal, Certified	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Sand Dropped Not Stated	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Spikes Mainly El Vado	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.03% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres

Total Bulk Pounds: 920.225

# MWL Seed Bag Label 2

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Data	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	0709	201.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	1208	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	0309	075.9
Not Stated							
Spike Mobly	Wyoming	11.69%	56.50%	14.00%	70.50%	0209	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Data	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	0709	201.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	1208	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	0309	075.9
Not Stated							
Spike Mobly	Wyoming	11.69%	56.50%	14.00%	70.50%	0209	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Data	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	0709	201.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	1208	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	0309	075.9
Not Stated							
Spike Mobly	Wyoming	11.69%	56.50%	14.00%	70.50%	0209	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Data	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	0709	201.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	1208	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	0309	075.9
Not Stated							
Spike Mobly	Wyoming	11.69%	56.50%	14.00%	70.50%	0209	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

# MWL Seed Bag Label 3

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grama	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Seed Dressed	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grama	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Seed Dressed	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grama	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Seed Dressed	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grama	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Seed Dressed	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For 25 Acres  
Total Bulk Pounds: 920.225

# MWL Seed Bag Label 4

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00% (TZ)	07/09	202.3
Viva							
Black Grams	Texas	21.95%	93.00%	00.00%	93.00% (TZ)	12/08	151.7
Nogal, Certified							
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%	03/09	075.9
Not Stated							
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%	02/09	075.9
El Vado							

Other Crop: 00.15% There Are 26 Bags For This Mix Total Bulk Pounds: 920.225  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

# MWL Seed Bag Label 5

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00%	(TZ)	07/09	201.3
Viva								
Black Grama	Texas	21.95%	93.00%	00.00%	93.00%	(TZ)	12/08	151.7
Nopal, Certified								
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00%	(TZ)	07/09	201.3
Viva								
Black Grama	Texas	21.95%	93.00%	00.00%	93.00%	(TZ)	12/08	151.7
Nopal, Certified								
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00%	(TZ)	07/09	201.3
Viva								
Black Grama	Texas	21.95%	93.00%	00.00%	93.00%	(TZ)	12/08	151.7
Nopal, Certified								
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres  
Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - .25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - .0725 Acre @ 10.48 Bulk Pounds  
JOB: Sandia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	93.00%	00.00%	93.00%	(TZ)	07/09	201.3
Viva								
Black Grama	Texas	21.95%	93.00%	00.00%	93.00%	(TZ)	12/08	151.7
Nopal, Certified								
Sand Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spike Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres  
Total Bulk Pounds: 920.225

# MWL Seed Bag Label 6

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - 0725 Acre @ 10.48 Bulk Pounds  
JOB: Sardinia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	95.00%	00.00%	95.00%	(12)	07/09	202.3
Viva								
Black Gramma	Texas	21.95%	93.00%	00.00%	93.00%	(12)	12/08	151.7
Nogal, Certified								
Seed Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - 0725 Acre @ 10.48 Bulk Pounds  
JOB: Sardinia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	95.00%	00.00%	95.00%	(12)	07/09	202.3
Viva								
Black Gramma	Texas	21.95%	93.00%	00.00%	93.00%	(12)	12/08	151.7
Nogal, Certified								
Seed Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Total Bulk Pounds: 920.225

Curtis & Curtis Seed  
4500 N. Prince  
Clovis, NM 88101  
Phone: 575-762-4759

Lee Landscaping  
6.3225 Acre Custom Mix  
4 Times the rate (80 PLS/Acre)  
25 - 25 Acre Bags @ 36.39 Bulk Pounds Each  
1 - 0725 Acre @ 10.48 Bulk Pounds  
JOB: Sardinia National Lab

Lot# M-9118

Item	Origin	Purity	Germ	Dormant	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Gallata	Texas	23.14%	95.00%	00.00%	95.00%	(12)	07/09	202.3
Viva								
Black Gramma	Texas	21.95%	93.00%	00.00%	93.00%	(12)	12/08	151.7
Nogal, Certified								
Seed Dropped	New Mexico	08.87%	17.00%	76.00%	93.00%		03/09	075.9
Not Stated								
Spikes Mully	Wyoming	11.69%	56.50%	14.00%	70.50%		02/09	075.9
El Vado								

Other Crop: 00.15% There Are 26 Bags For This Mix  
Weed Seed: 00.05% This Bag Weighs 36.39 Bulk Pounds  
Inert Matter: 34.15% Use This Bag For .25 Acres

Total Bulk Pounds: 920.225

## **ATTACHMENT 5**

### **Construction Inspection Forms**



## **2006 Construction Inspection Forms**



**CI-01  
CONSTRUCTION INSPECTION FORM  
EXISTING LANDFILL SURFACE AND PERIMETER CLEAR AND GRUB FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cowlitz CQA Date 10-25-06 Time 1330  
 Weather Mostly Cloudy Inspected by Corey Woods  
 Compaction Equipment Smooth Drum Roller  
 Surface area and location covered during shift Existing landfill surface and perimeter

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have all shrubs, grass, roots, and other vegetation been completely cleared and grubbed from the landfill surface and perimeter?	<u>YES</u>	_____
Has the landfill surface and perimeter been inspected to ensure that all loose or soft zones have been properly compacted?	<u>YES</u>	<u>1</u>
Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

① Compaction testing at 5 tests/acre will be conducted to ensure adequate coverage of compaction equipment.

CQA Inspector Signature *Corey Woods*

CQA Engineer Signature *Kelly M Paul*

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MVC Cover CRA Date 10/30/06 Time 1430  
 Inspected by Carey Woods  
 Borrow Area west of CAMU Max Dry Density (pcf) 113.2  
 Weather Clear, Cool Optimum Moisture (%) 10.7

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 120 cy, low-lying areas of northern half of unclassified Area, Lift 1

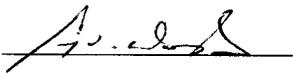
Surface area and location covered during shift low-lying areas, northern half of unclassified area, see lift maps

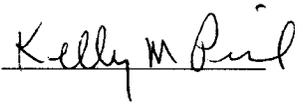
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	<u>        </u>
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>NO</u>	<u>1</u>
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	<u>        </u>
Has approved fill been used during subgrade construction?	<u>YES</u>	<u>        </u>
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	<u>        </u>
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>2</u>

**NOTES:**

- ① Survey crew having problems matching data points to station data. Elevations were surveyed, but grid will be completed at a later date.
- ② Compaction tests will be conducted to ensure adequate coverage.

CQA Inspector Signature 

CQA Engineer Signature 

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MW Cover CQA Date 10/31/06 Time 1400  
 Inspected by Cory Woods  
 Borrow Area West of CAMU Max Dry Density (pcf) 113.2  
 Weather Clear, Cool Optimum Moisture (%) 10.9

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 240 cy, low-lying areas of northern half of unclassified area, lifts 2, 3, 4

Surface area and location covered during shift low-lying areas, northern half of unclassified area, see lift maps.

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	<u>        </u>
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>NO</u>	<u>1</u>
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	<u>        </u>
Has approved fill been used during subgrade construction?	<u>YES</u>	<u>        </u>
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	<u>        </u>
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>2</u>

**NOTES:**

- ① survey crew having problems matching data points to station data. Elevations were surveyed, but grid will be completed at a later date.
- ② Compaction tests will be conducted to ensure adequate coverage

CQA Inspector Signature Cory Woods

CQA Engineer Signature Kelly M. Ford

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWC Cover CQA Date 11/1/06 Time 1130  
 Inspected by Corey Woods  
 Borrow Area West of CAMU Max Dry Density (pcf) 113.2  
 Weather Clear, Warm Optimum Moisture (%) 10.9

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 364 cy, low-lying areas of northern half of unclassified area, lifts 4 and 5

Surface area and location covered during shift low-lying areas, northern half of unclassified area, see lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

① Coverage will be verified with compaction testing

CQA Inspector Signature *[Signature]*

CQA Engineer Signature *[Signature]*

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CRA Date 11/2/06 Time 1400  
 Inspected by Peri Woods  
 Borrow Area west of CAMU Max Dry Density (pcf) 113.2  
 Weather Clear, warm Optimum Moisture (%) 10.9

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 412 cy, low-lying areas of unclassified area, lift 6

Surface area and location covered during shift low-lying areas of unclassified area, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

coverage verified with compaction testing.

CQA Inspector Signature Peri Woods

CQA Engineer Signature Kelley M. Peil

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWC Cover CQA Date 11/6/06 Time 1100  
 Inspected by Percy Woods  
 Borrow Area West of CAMU Max Dry Density (pcf) 113.3  
 Weather Clear, Warm Optimum Moisture (%) 13.2

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 476 cy total, 100 cy lift 7, 376 cy lift 8, see lift maps

Surface area and location covered during shift Lifts 7 and 8, see lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

coverage verified by compaction testing

CQA Inspector Signature Percy Woods

CQA Engineer Signature Kelly M. Paul

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover C&A Date 11/7/06 Time 0730  
 Inspected by Corey Woods  
 Borrow Area west of CAMU Max Dry Density (pcf) 113.3 / 117.4  
 Weather Clear, warm Optimum Moisture (%) 13.2 / 12.9

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 344 cy Lift 9, see Lift Map

Surface area and location covered during shift Lift 9, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**  
 Coverage verified by compaction testing

CQA Inspector Signature Corey Woods

CQA Engineer Signature Kelley M. Piel

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MW2 Cover CQA  
 Inspected by Percy Woods  
 Borrow Area west of CAMU  
 Weather Clear, Warm

Date 11/8/06 Time 1030  
 Max Dry Density (pcf) 117.4  
 Optimum Moisture (%) 12.9

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 576 cy, Lifts 9 and 10, see lift maps  
316 cy placed on lift 9 (completed), 260 cy on lift 10

Surface area and location covered during shift Lifts 9 + 10, see lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

① Coverage verified with compaction testing

CQA Inspector Signature Percy Woods

CQA Engineer Signature Kelly M. Reil

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWC Cover CQA Date 11/9/06 Time 1500  
Inspected by Corey Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 118.3/118.7  
Weather Clear, warm Optimum Moisture (%) 12.7/12.4

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 496 cy, lift 10, see lift map

Surface area and location covered during shift Lift 10, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>No</u>	<u>1</u>

**NOTES:**

① coverage verified with compaction testing

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M. Paul

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA Date 11/13/06 Time 1430  
 Inspected by Lorey Woods  
 Borrow Area west of CAMU Max Dry Density (pcf) 119.0  
 Weather Overcast, Cool Optimum Moisture (%) 11-2

Compaction Equipment Smooth Drum Roller

Fill Description 2" Minus subgrade stockpile

Volume and location of soil placed during shift 580 cy, Lift 10, see Lift Map

Surface area and location covered during shift Lift 10, see Lift Map

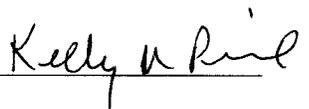
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

① Coverage verified with compaction testing.

CQA Inspector Signature 

CQA Engineer Signature 

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name 4th Cover C&T Date 11/14/06 Time 0830  
 Inspected by Cory Woods  
 Borrow Area West of C&T Max Dry Density (pcf) 115.4  
 Weather Overcast, cold, windy Optimum Moisture (%) 12.7

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 280 cy, completed lift 10, see lift map

Surface area and location covered during shift Lift 10, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**  
 Coverage verified with compaction testing

CQA Inspector Signature Cory Woods

CQA Engineer Signature Kelly M Pirel

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA  
 Inspected by Corey Jacobs  
 Borrow Area west of CQMU  
 Weather clear, cool

Date 11/15/06 Time 1430  
 Max Dry Density (pcf) 115.4 / 116.5  
 Optimum Moisture (%) 12.9 / 13.0

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 5' x 20' x, lift 11, see lift map

Surface area and location covered during shift lift 11, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

Coverage verified with compaction tests

CQA Inspector Signature Corey Jacobs

CQA Engineer Signature Kelly M. Hill

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA  
 Inspected by Parry Woods  
 Borrow Area West of CAMU  
 Weather Overcast, Cool

Date 11/16/06 Time 1000  
 Max Dry Density (pcf) 116.5 / 113.5  
 Optimum Moisture (%) 13.0 / 13.0

Compaction Equipment Smooth Drum Roller

Fill Description 2" Minus Subgrade stockpile

Volume and location of soil placed during shift 464 cubic yards, Lift 11, see Lift Map.  
200 cy proctor MWL-SG-008, 264 cy Proctor MWL-SG-009

Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	<u>1</u>

**NOTES:**

CD coverage verified with compaction testing

CQA Inspector Signature Parry Woods

CQA Engineer Signature Kellyn Hill

**CI-02**  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA Date 11/20/06 Time 1400  
Inspected by Greg Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 113.5 / 113.6  
Weather Clear, Warm Optimum Moisture (%) 13.0 / 12.6

Compaction Equipment Smooth Drum Roller

Fill Description 2" Minus subgrade stockpile

Volume and location of soil placed during shift 624 cy total, (236 proctor MWL-SG-009, 388 proctor MWL-SG-010), Lift 11, see Lift Map

Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Greg Woods

CQA Engineer Signature Kelly M. Paul

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name N.W.C. Cover CQA  
 Inspected by Cory Woods  
 Borrow Area West of CAMU  
 Weather Clear, warm

Date 11/21/06 Time 1400  
 Max Dry Density (pcf) 113.6 / 116.0  
 Optimum Moisture (%) 12.6 / 12.3

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

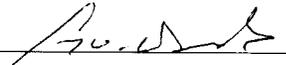
Volume and location of soil placed during shift 856 cy total (112 cy proctor 010, 500 cy proctor 013, 244 cy proctor 014). Lift 11, see lift map

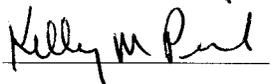
Surface area and location covered during shift Lift 11, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA Date 11/22/06 Time 1000  
Inspected by Brey Woods  
Borrow Area west of CAMU Max Dry Density (pcf) 117.9  
Weather Clear, warm Optimum Moisture (%) 13.0

Compaction Equipment Smooth Drum Roller

Fill Description 2' Minus subgrade stockpile

Volume and location of soil placed during shift 56 cy (Proctor MWL-56-014) completed lift 11

Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Brey Woods

CQA Engineer Signature Kelly M. Paul

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Cover CQA Date 11/28/06 Time 1300  
Inspected by Percy Woods  
Borrow Area west of CAMU Max Dry Density (pcf) 117.9  
Weather overcast Optimum Moisture (%) 13.0

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 284 cy (Proctor 014), began lift 12

Surface area and location covered during shift Began Lift 12, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Percy Woods

CQA Engineer Signature Kelly M Paul

**CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA Date 11/29/06 Time 1400  
Inspected by Cory Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 118.1  
Weather Cold / Snow Optimum Moisture (%) 13.3

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus subgrade stockpile

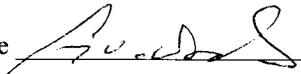
Volume and location of soil placed during shift 648 cy (Pactor 015), Lift 12

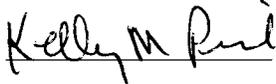
Surface area and location covered during shift Lift 12, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover C&A Date 1/24/2006 Time 1030  
Inspected by Corey Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 118.4  
Weather Clear, Cool Optimum Moisture (%) 12.7

Compaction Equipment Smooth Drum Roller

Fill Description 2" minus screened subgrade

Volume and location of soil placed during shift 160 cy, Lift 12, see Lift Map, Proctor 020

Surface area and location covered during shift Lift 12, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Corey Woods

CQA Engineer Signature Kelly M Paul

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Cover - CQA Date 12/5/06 Time 1430  
Inspected by Cory Woods  
Borrow Area West of CMA Max Dry Density (pcf) 118.4  
Weather Clear, Cool Optimum Moisture (%) 12.7

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" minus screened subgrade

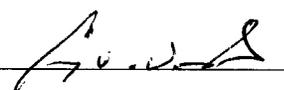
Volume and location of soil placed during shift 340 cy, lift 12, see lift map, Proctor 020

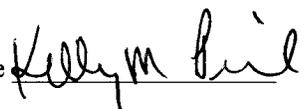
Surface area and location covered during shift Lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

NOTES:

CQA Inspector Signature 

CQA Engineer Signature 

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Cover C&A Date 12/6/06 Time 1100  
Inspected by Perry Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 112.4  
Weather Clear, Cool Optimum Moisture (%) 13.6

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" minus screened subgrade

Volume and location of soil placed during shift 460 cy, lift 12, see lift Map, Proctor 019

Surface area and location covered during shift lift 12, see lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Perry Woods

CQA Engineer Signature Kelly M Paul

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MHW Cover CA# Date 12/7/06 Time 1400  
 Inspected by Perry Woods  
 Borrow Area West of CAMU Max Dry Density (pcf) 119.0  
 Weather Clear, Cool Optimum Moisture (%) 12.0

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Minus Screened subgrade

Volume and location of soil placed during shift 492 cy, lift 12, see lift Map, Proctor 021

Surface area and location covered during shift lift 12, see lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Perry Woods

CQA Engineer Signature Jelly M Reid

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MIL Core CQA Date 12/11/06 Time 1500  
Inspected by Corey Woods  
Borrow Area Just off CAMU Max Dry Density (pcf) 115.9  
Weather Clear, Cool Optimum Moisture (%) 12.2

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Minus Screened Subgrade

Volume and location of soil placed during shift 220 cy, Lift 12, see Lift Map, Proctor 022

Surface area and location covered during shift Lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature Corey Woods

CQA Engineer Signature Kelly M Paul

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL Cover CQA  
 Inspected by Percy Woods  
 Borrow Area West of CAMU  
 Weather Clear, warm

Date 12/14/06 Time 1000  
 Max Dry Density (pcf) 115.9 / 117.9  
 Optimum Moisture (%) 12.2 / 12.1

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Manns screened subgrade

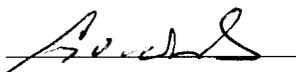
Volume and location of soil placed during shift 440 cy, lift 12, see lift Map (280 cy Proctor 022, 160 cy Proctor 023)

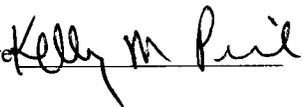
Surface area and location covered during shift lift 12, see lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Cover C&A Date 12/15/06 Time 1000  
Inspected by Percy Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 117.9 / 116.5  
Weather Clear, warm Optimum Moisture (%) 12.1 / 12.0

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Minus screened subgrade

Volume and location of soil placed during shift 512 cy, lift 12, see lift Map, (340 cy  
proctor 023, 172 cy proctor 024)

Surface area and location covered during shift Lift 12, see lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

NOTES:

CQA Inspector Signature Percy Woods

CQA Engineer Signature Kelly M. Pail

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Lower C&A Date 12/18/06 Time 1000  
Inspected by Cory Woods  
Borrow Area West of CAMU Max Dry Density (pcf) 116.5  
Weather overcast, cold, windy Optimum Moisture (%) 12.0

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Minus screened subgrade

Volume and location of soil placed during shift 788 cu, lift 12, see Lift Map

Surface area and location covered during shift Lift 12, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

NOTES:

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M Peil

CI-02  
CONSTRUCTION INSPECTION FORM  
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name MWL Cover C&A Date 12/19/06 Time 1030  
Inspected by Cory Woods  
Borrow Area West of CAMU Max Dry Density (pcf) \_\_\_\_\_  
Weather Cold, Windy, Intermittent snow Optimum Moisture (%) \_\_\_\_\_

Compaction Equipment Smooth Drum Vibratory Roller

Fill Description 2" Minus subgrade stockpile

Volume and location of soil placed during shift Completed final grade on lift 12 (Final subgrade lift) ~~lift 12, see lift map~~ <sup>ⓐ</sup>

Surface area and location covered during shift lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	<u>YES</u>	_____
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	<u>YES</u>	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	<u>YES</u>	_____
Has approved fill been used during subgrade construction?	<u>YES</u>	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>YES</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>NO</u>	_____

NOTES: Completed subgrade installation.

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelley M. Pencil

CI-02  
**CONSTRUCTION INSPECTION FORM**  
**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

Project Name MWL

Date 11 Apr 07 Time 10 AM

Inspected by KMP

Borrow Area \_\_\_\_\_

Max Dry Density (pcf) \_\_\_\_\_

Weather clear / sunny - breezy

Optimum Moisture (%) \_\_\_\_\_

Compaction Equipment NA

Fill Description NA

Volume and location of soil placed during shift NA

Surface area and location covered during shift south 1/3 of subgrade layer

covered with straw blanket

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?	_____	_____ <u>NA</u>
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?	_____	_____
Have TA-3 borrow soils been determined to be suitable for subgrade fill?	_____	_____
Has approved fill been used during subgrade construction?	_____	_____
Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	_____	_____
Has the number of passes and the coverage of the compaction equipment been documented?	_____	_____

**NOTES:** ① Erosion control blanket installation; shallow trench excavated along toe of subgrade layer to anchor the edge of the straw blanket. Blankets are laid in an east-west direction across the site to minimize the prevailing wind effect. Blankets are installed in accordance with manufacturer's instructions, i.e., six inch overlap, staples 18 inches apart along overlap and intermittently down the middle of the blankets,

CQA Inspector Signature \_\_\_\_\_

CQA Engineer Signature \_\_\_\_\_

(over)

② Drainage swale: The partial ~~drain~~ swale was excavated on the eastern side of the MWL in the footprint of the design drawing location for the final swale. The swale is next to the subgrade layer toe of slope. The final swale could not be excavated because of the interference with the side-slopes of the final cover layers. The swale's ~~to~~ NE and SW corners direct any water around the MWL and to the west. No rock armorment is installed at this time.

PEA Engineer  
Signature

Kelly M. Pail



## **2009 Construction Inspection Forms**



CI-01  
**CONSTRUCTION INSPECTION FORM**  
**EXISTING LANDFILL SURFACE AND PERIMETER CLEAR AND GRUB FIELD FORM**

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name Sanderson Mixed Waste LF Date 5/21/09 Time 7:00am  
 Weather Cloudy Inspected by Paul Adams  
 Compaction Equipment Loader (See attached)

Surface area and location covered during shift Top surface of existing sub grade was cleared and grubbed of material. (See diary report)

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have all shrubs, grass, roots, and other vegetation been completely cleared and grubbed from the landfill surface and perimeter?	<u>yes</u>	<u>Existing Surface</u>
Has the landfill surface and perimeter been inspected to ensure that all loose or soft zones have been properly compacted?	<u>yes</u>	_____
Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>yes</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>yes</u>	_____

**NOTES:**

~~PA~~

Meets Specification Requirements.

Bondal T. PE  
CQA Engineer.  
May 22, 2009.

CI-01  
**CONSTRUCTION INSPECTION FORM**  
**EXISTING LANDFILL SURFACE AND PERIMETER CLEAR AND GRUB FIELD FORM**

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name Sandier Mixed Waste LF Date 5/20/09 Time 9:00am  
 Weather Cloudy Inspected by David Melner  
 Compaction Equipment loader (see attached)  
 Surface area and location covered during shift Perimeter slope area  
clear and grubbed. (see daily report)

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have all shrubs, grass, roots, and other vegetation been completely cleared and grubbed from the landfill surface and perimeter?	<u>yes</u>	<u>around slope.</u>
Has the landfill surface and perimeter been inspected to ensure that all loose or soft zones have been properly compacted?	<u>yes</u>	_____
Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?	<u>yes</u>	_____
Has the number of passes and the coverage of the compaction equipment been documented?	<u>yes</u>	_____

**NOTES:**

EA

Meets Specification Requirements

David T. Lopez PE  
 CQA Engineer.

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 05/27/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 900 CY (60 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 - feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Paul T. Lopez PE*

5/27/09

**CONSTRUCTION INSPECTION FORM**  
**BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 05/28/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 630 CY (42 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Barbara T. Lopez PE, 5/28/09*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 05/29/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 810 CY (54 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Paul T. Lopez*

5/29/2009

**CONSTRUCTION INSPECTION FORM**  
**BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/01/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 840 CY (56 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Paul T. Lopez PE, 6/01/2009*

**CONSTRUCTION INSPECTION FORM**  
**BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/02/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 780 CY (52 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Paul T. Lopez PE*

*6/02/2009*

**CONSTRUCTION INSPECTION FORM**  
**BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/03/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: **Approx. 1035 CY (69 loads @ 15 CY/load)**

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Donald T. Lopez PE, 6/03/2009*

**CONSTRUCTION INSPECTION FORM**  
**BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/04/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 1020 CY (68 loads @ 15 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Barndt T. PE, 6/04/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/05/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 435 CY (29 loads @ 15 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Donald T. Lopez PE, 6/05/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/08/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 479CY (312.94 tons delivered)

Approximate surface area of Loose Soil in voids installed: Approx. 612 CY (34 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil to fill Biointrusion Voids has been approved for South Portion of MWL. Water has not been approved.

*Donald T. Lopez PE, 6/08/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/09/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 307 CY (429.57 tons delivered)

Approximate surface area of Loose Soil in voids installed: Approx. 864 CY (48 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. Water has not been approved to fill rock voids at this time.

*Barbara D. Lopez PE, 6/09/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/10/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 0 CY (XX loads @ 15 CY/load)

Approximate surface area of Loose Soil in voids installed: Approx. 0 CY (XX loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

NO

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

NO

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

NO

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. No construction today.

*Cancel to Log PE, 6/10/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/11/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 558 CY (781.88 tons delivered)

Approximate surface area of Loose Soil in voids installed: Approx. 1044 CY (58 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. Water has not been approved to fill rock voids at this time.

*Donald T. Lopez PE, 6/11/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/12/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 197 CY (275.88 tons delivered)

Approximate surface area of Loose Soil in voids installed: Approx. 936 CY (52 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. Water has not been approved to fill rock voids at this time.

*Bernard T. Lopez PE, 6/12/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/15/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 0 CY

Approximate surface area of Loose Soil in voids installed: Approx. 522 CY (29 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 - feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. Water has not been approved to fill rock voids at this time.

*Paul Molina PE, 6/15/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 06/16/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 0 CY

Approximate surface area of Loose Soil in voids installed: Approx. 108CY (6 loads @ 18 CY/load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

YES

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. Water has not been approved to fill rock voids at this time.

*Paul Molina PE 1 6/16/2009*

**CONSTRUCTION INSPECTION FORM  
BIOINTRUSION BARRIER CONSTRUCTION**

Project Name: Sandia Mixed Waste Landfill

Date: 05/26/2009

Inspected By: Paul Molina (URS)

Approximate surface area of Biointrusion Rock installed: Approx. 300 CY (20 loads @ 15 CY/Load)

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

The

Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?

YES

After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?

YES

Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?

YES

Was dry, loose soil placed over the Biointrusion Barrier and worked into the voids with a minimum of four passes with the vibratory, smooth drum roller.

NO

Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?

NO

---

**NOTES:**

1. The placement of dry, loose soil and water is not permitted until the Biointrusion Layer is completed and approved.

*Donald T. Lopez PE, 5/26/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/16/2009

Lift Number: 6:1 Slopes Lift 1& 2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 3:00 PM (86 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 504 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Donald T. Lopez PE, 6/16/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/17/2009

Lift Number: 6:1 Slopes Lift 1, 2, 3, & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 3:20 PM (86 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 792 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Revised to PE, 6/17/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/18/2009

Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 10:09 am PM (76 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1170 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Bonded to [Signature] PE, 6/18/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/19/2009

Lift Number: Wedge Lifts #1 & #2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 2:10 PM (85 deg); Clear Sky

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1080 CY) Northeast Wedge Lifts 1 & 2

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Paul T. Lopez, PE, 6/19/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/22/2009

Lift Number: NA

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 7:38 AM (72 deg); Partly Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 810 CY) MWL Berm To Borrow Area

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Paul Molina PE, 6/22/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/23/2009

Lift Number: Native Soil Lift #3

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 1:21 PM (72 deg); Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1206 CY) MWL Cover Native Soil Lift #3

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Bandel to PE, 6/23/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/24/2009

Lift Number: Native Soil Lift #3 & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:30 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1116 CY) MWL Cover Native Soil Lift #3 & 4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*David T. Lopez, PE, 6/24/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/25/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 12:45 PM (82 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Bandel T. Lopez PE, 6/25/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/26/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 432 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Paul Molina PE, 6/26/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/29/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:34 (61 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

NO

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

NO

Has approved fill been used during lift construction?

NO

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

NO

Has the number of passes and the coverage of compaction equipment been documented?

NO

---

**NOTES:**

No soil has been placed today

*Paul T. Lopez PE, 6/29/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 06/30/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Paul Molina, PE, 6/30/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/01/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:33 PM (88 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 792 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Revised to PE, 7/01/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/02/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 9:38 AM (74 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 630 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Paul Molina PE, 7/02/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/03/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: NA

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*David T. [Signature] PE, 7/03/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/06/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:34 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Brenda T. Lopez PE, 7/06/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/07/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:30 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Checked by [Signature] PE, 7/07/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/08/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:00 PM (92 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 720 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Donald T. Lopez PE, 7/08/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

**ONE PER SHIFT WHEN WORK IS BEING DONE**

Project Name: Sandia Mixed Waste Landfill

Date: 07/09/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 522 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Bonded to [Signature] PE, 7/09/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/10/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (90 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Donald T. PE, 7/10/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/13/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:58 PM (96 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 738 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*David T. [Signature] PE, 7/13/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/14/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:13 AM (74 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #6

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Compl'd To PE, 7/14/2009*

CI-03  
**CONSTRUCTION INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

**ONE PER SHIFT WHEN WORK IS BEING DONE**

Project Name: Sandia Mixed Waste Landfill

Date: 07/15/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:45 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 954 CY) MWL Cover Native Soil Lift #6

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Donald T. [Signature] PE, 7/15/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/16/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 864 CY) MWL Cover Native Soil Lift #6

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Sander T. Lopez PE, 7/16/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/17/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 828 CY) MWL Cover Native Soil Lift #7

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Combed to PE 7/17/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/20/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:05 PM (78 deg): Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1630 CY) MWL Cover Native Soil Lift #7

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Donald T. Lopez PE, 7/20/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/21/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:28 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1606 CY) MWL Cover Native Soil Lift #7

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Barndt T. SP PE, 7/21/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/22/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:02 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Donald T. Lopez PE, 7/22/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/23/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1458 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Donald T. Lopez, PE, 7/23/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/24/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 8:39 AM (69 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 1410 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

**NOTES:**

*Bonded To PE, 7/24/2009*

CI-03  
CONSTRUCTION INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 07/27/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:00 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface area and location covered during shift: (Approx. 962 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Have TA-3 Borrow soils been determined to be suitable for Native Soil Lifts?

YES

Has approved fill been used during lift construction?

YES

Has the lift been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

Has the number of passes and the coverage of compaction equipment been documented?

YES

---

NOTES:

*Donald T. Lopez PE, 7/27/2009*

CI-04  
CONSTRUCTION INSPECTION FORM  
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 08/03/2009  
Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:06 PM (88 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2132 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Has the topsoil been admixed with 25% by volume 3/8-inch crushed gravel?

YES

Has approved topsoil been used for the topsoil layer?

YES

Has the topsoil been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

---

NOTES:

*David T. Lopez PE, 08/03/2009*

CI-04  
CONSTRUCTION INSPECTION FORM  
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 08/04/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:45 PM (91 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 1950 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Has the topsoil been admixed with 25% by volume 3/8-inch crushed gravel?

YES

Has approved topsoil been used for the topsoil layer?

YES

Has the topsoil been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

---

NOTES:

*Barrett T. J. PE, 08/04/2009*

CI-04  
CONSTRUCTION INSPECTION FORM  
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 08/05/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 2:18 PM (94 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2028 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Has the topsoil been admixed with 25% by volume 3/8-inch crushed gravel?

YES

Has approved topsoil been used for the topsoil layer?

YES

Has the topsoil been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

---

NOTES:

*Barcel T. Lopez PE, 08/05/2009*

CI-04  
CONSTRUCTION INSPECTION FORM  
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 08/06/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:54 PM (94 deg); Heavy Rain @ 2:30 PM

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2106 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that in conforms to the construction specifications?

YES

Has the topsoil been admixed with 25% by volume 3/8-inch crushed gravel?

YES

Has approved topsoil been used for the topsoil layer?

YES

Has the topsoil been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

---

NOTES:

*David T. Lopez PE, 08/06/2009*

CI-04  
CONSTRUCTION INSPECTION FORM  
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

Date: 08/07/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 11:47 AM (79 deg)

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 962 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

YES/NO (If no, see notes below)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

YES

Has the topsoil been admixed with 25% by volume 3/8-inch crushed gravel?

YES

Has approved topsoil been used for the topsoil layer?

YES

Has the topsoil been inspected to ensure that it is free of all rocks greater than 2-inches in dimension?

YES

---

NOTES:

*Paul Molina PE, 08/07/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 08/25/2009 Time: 8:00 am

Weather: 7:01 am (57 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 3/4 acre (60lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>NO</u>	<u>1</u>
Did application rate of seed mix meet the construction specifications?	<u>YES</u>	<u>2</u>

\*\* (If no, see notes below)

**NOTES:**

1. No mulch was placed on seed today.
2. Application rate of seed mix is 80 lb/acre per revised CMIP.

*Paul Molina PE, 08/25/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 08/26/2009 Time: 8:00 am

Weather: 7:01 am (57 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 3/4 acre (60lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>NO</u>	<u>1</u>
Did application rate of seed mix meet the construction specifications?	<u>YES</u>	<u>2</u>

\*\* (If no, see notes below)

**NOTES:**

1. No mulch was placed on seed today.
2. Application rate of seed mix is 80 lb/acre per revised CMIP.

*Paul Molina, PE, 08/26/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 08/27/2009 Time: 8:00 am

Weather: 7:10 am (58 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 1.0 acre (80 lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	<u>      </u>
Has approved seed been used for seeding?	<u>YES</u>	<u>      </u>
Has the cover surface been mulched and crimped after seeding?	<u>NO</u>	<u>  1  </u>
Did application rate of seed mix meet the construction specifications?	<u>YES</u>	<u>  2  </u>

\*\* (If no, see notes below)

**NOTES:**

1. No mulch was placed on seed today.
2. Application rate of seed mix is 80 lb/acre per revised CMIP.

*Paul T. Molina PE, 08/27/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 08/28/2009 Time: 8:00 am

Weather: 7:10 am (58 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 0 acre (0 lb. of seed); Straw only.

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>YES</u>	_____
Did application rate of seed mix meet the construction specifications?	<u>NO</u>	<u>1</u>

\*\* (If no, see notes below)

**NOTES:**

1. No seed was placed on seed today. Mulch only

*Paul T. J. PE, 08/28/09*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 08/31/2009 Time: 8:00 am

Weather: 7:10 am (56 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 0 acre (0 lb. of seed); Straw only.

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>YES</u>	_____
Did application rate of seed mix meet the construction specifications?	<u>NO</u>	<u>1</u>

\*\* (If no, see notes below)

**NOTES:**

1. No seed was placed on seed today. Mulch only

*David T. [Signature] PE, 08/31/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
**(Complete One Form Per Shift When This Work Is Being Done)**

Project Name: Sandia Mixed Waste Landfill

Date: 09/01/2009 Time: 8:00 am

Weather: 7:00 am (57 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 1.0 acre (80 lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>YES</u>	_____
Did application rate of seed mix meet the construction specifications?	<u>YES</u>	<u>1</u>

\*\* (If no, see notes below)

**NOTES:**

1. Application rate of seed mix is 80 lb/acre per revised CMIP.

*Donald T. [Signature] PE, 09/01/2009*

**CI-05**  
**CONSTRUCTION INSPECTION FORM**  
**RECLAMATION SEEDING AND MULCHING FIELD FORM**  
 (Complete One Form Per Shift When This Work Is Being Done)

Project Name: Sandia Mixed Waste Landfill

Date: 09/02/2009 Time: 8:00 am

Weather: 7:00 am (57 deg); cloudy

Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. 1.0 acre (80 lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the cover surface been surveyed for final grade prior to placement of seed?	<u>YES</u>	_____
Has approved seed been used for seeding?	<u>YES</u>	_____
Has the cover surface been mulched and crimped after seeding?	<u>YES</u>	_____
Did application rate of seed mix meet the construction specifications?	<u>YES</u>	<u>1</u>

\*\* (If no, see notes below)

**NOTES:**

1. Application rate of seed mix is 80 lb/acre per revised CMIP.

*Paul T. PE, 09/02/2009*

## **ATTACHMENT 6**

### **Testing Inspection Forms**



## **2006 Testing Inspection Forms**



**TI-01  
TESTING INSPECTION FORM  
EXISTING LANDFILL SURFACE AND PERIMETER FIELD TEST FORM**

Project Name MWL Cover C&A Date 10/27/06 Time 1015

Inspected by Cory Woods Weather Clear, Cool

Compaction Equipment Smooth Drum Roller

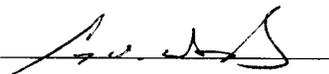
Surface area and location covered during shift Existing surface and perimeter

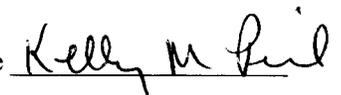
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has soil been moistened to approximate optimum moisture content?	<u>NO</u>	<u>1</u>
Has surface been compacted/proof-rolled utilizing 10 passes of a roller?	<u>NO</u>	<u>2</u>
Have depressions been filled with moistened, clean fill, and recompactd with ten passes of a roller?	<u>NO</u>	<u>2</u>
Did roller have a minimum ballasted weight of 25 tons?	<u>NO</u>	<u>2</u>
Did roller have a minimum pneumatic tire pressure of 90 psi?	<u>NO</u>	<u>2</u>
Was any proof rolling conducted within a 2-ft radius of any groundwater monitoring well?	<u>NO</u>	<u>      </u>

**NOTES:**

- ① Out of 15 tests performed, only 3 met  $\pm 2\%$  of optimum. Optimum moisture of proctor was unusually high, however (13.4%). Three additional proctors were collected to be analyzed by AMEC. Decision was made to proceed with subgrade installation, density measurements met spec. for all locations.
- ② Compaction testing was conducted in lieu of requirements regarding 10 passes and type of compaction equipment.

CQA Inspector Signature 

CQA Engineer Signature 

TI-02  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL FIELD TEST FORM**

Project Name MWC Cover CQA Date 10/21/06 Time 0800-1500

Lift Number 1 through 4 Inspected by Corey Woods

Borrow Area West of CAMU Weather Clear, Cool

Compaction Equipment Smooth drum roller

Soil Description 2" Muns screened subgrade

Volume and location of soil placed during shift Northern half of unclassified Area, 240 cy

Surface area and location covered during shift Low-lying areas of Northern half of unclassified areas, Trenches B and C

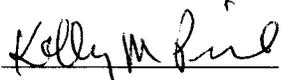
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	<u>        </u>
Have field density test locations and elevations been plotted and checked?	<u>NO</u>	<u>1</u>
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form"?	<u>YES</u>	<u>        </u>
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>n/A</u>	<u>2</u>

**NOTES:**

- ① Survey grid not yet in place, locations approximated, see Lift Maps
- ② Backscatter Method used to avoid contact with potentially contaminated material

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Power CQA Date 11/1/06 Time 1130

Lift Number 4 and 5 Inspected by Cory Woods

Borrow Area West of CAMU Weather Clear, Warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 364 cy, low-lying areas at northern half of unclassified area, lifts 4 and 5

Surface area and location covered during shift Low-lying areas, northern half of unclassified area, see lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form"?	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWC Cover CQA Date 11/2/06 Time 1400

Lift Number 6 Inspected by Corey Woods

Borrow Area West of CAMU Weather Clear, Warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus screened subgrade stockpile

Volume and location of soil placed during shift 412 cy, low-lying areas of unclassified area, Lift 6

Surface area and location covered during shift low-lying areas of unclassified area, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M Paul

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover CQA Date 11/6/06 Time 1100

Lift Number 7 and 8 Inspected by Larry Woods

Borrow Area West of CAMU Weather Clear, warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 476 cy total, 100 cy lift 7, 376 cy lift 8, see lift maps

Surface area and location covered during shift lifts 7 and 8, see lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelley M Paul

**TI-02**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL FIELD TEST FORM**

Project Name Mull Cave CQA Date 11/7/06 Time 0930

Lift Number 9 Inspected by Corey Woods

Borrow Area west of CAMU Weather Clear, warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" Minus subgrade stockpile

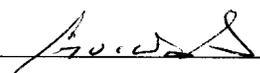
Volume and location of soil placed during shift 344 cy, Lift 9, see lift map

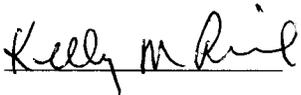
Surface area and location covered during shift Lift 9, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWC Cover CQA Date 11/8/06 Time 1030

Lift Number 9 Inspected by Cory Woods

Borrow Area west of CAMU Weather Clear, Warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 576 cy total, 316 lift 9, 260 lift 10,  
see lift map for location

Surface area and location covered during shift Completed lift 9, started lift 10, see  
lift maps

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature Cory Woods

CQA Engineer Signature Kelly M Paul

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover CQA Date 11/9/06 Time 1500

Lift Number 9 and 10 Inspected by Cory Woods

Borrow Area West of CAMU Weather Clear, Warm

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 496 cy, lift 10, see lift map

Surface area and location covered during shift lift 10, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature *[Signature]*

CQA Engineer Signature *Kelly M Riel*

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MUL Cox CQA Date 11/14/06 Time 0830

Lift Number 10 Inspected by Fory Wards

Borrow Area West of CAMU Weather overcast, high winds

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 280 cu, completed lift 10, see Lift Map

Surface area and location covered during shift Lift 10, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature Fory Wards

CQA Engineer Signature Kelly M Price

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MW Cover C&A Date 11/15/06 Time 1430

Lift Number 11 Inspected by Cory Woods

Borrow Area West of CAMU Weather Clear, cool

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 520 cy, Lift 11, see Lift Map

Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover CQA Date 11/16/06 Time 1500

Lift Number 11 Inspected by Percy Woods

Borrow Area West of CAMU Weather overcast, cool

Compaction Equipment Smooth Drum Roller

Soil Description 2" Minus subgrade

Volume and location of soil placed during shift 464 cy total - 200 cy Proctor MWL-SG-008, 264 cy proctor MWL-SG-009, Lift 11, see Lift Map

Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature Percy Woods

CQA Engineer Signature Kelly M. Hill

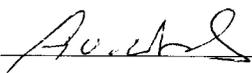
**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

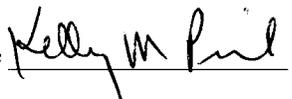
Project Name MWL Cover CQA Date 11/20/06 Time 1400  
 Lift Number 11 Inspected by Cory Woods  
 Borrow Area West of CAMU Weather Clear, warm  
 Compaction Equipment Smooth Drum Roller  
 Soil Description 2" minus subgrade stockpile  
 Volume and location of soil placed during shift 624 cy total / 236 cy Proctor MWL-SG-009, 388 proctor MWL-SG-010, lift 11, see lift Map  
 Surface area and location covered during shift Lift 11, see lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form"?	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover C&A Date 11/21/06 Time 1400

Lift Number 11 Inspected by Percy Woods

Borrow Area West of CAMU Weather Clear, Warm

Compaction Equipment Sweet Dim Roller

Soil Description 2" minus subgrade stockpile

Volume and location of soil placed during shift 856 cy total (112 proctor 010, 500 cy Proctor 013, and 244 cy Proctor 014), Lift 11, see Map

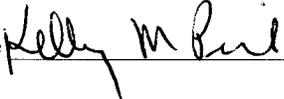
Surface area and location covered during shift Lift 11, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL FIELD TEST FORM**

---

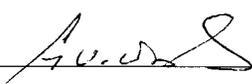
Project Name MWL Cover C&A Date 11/22/06 Time 1000  
Lift Number 11 Inspected by Betsy Woods  
Borrow Area West of CAMU Weather Clear, Warm  
Compaction Equipment Smooth Drum Roller  
Soil Description 2" Minus Subgrade Stockpile  
Volume and location of soil placed during shift 56 cy (Proctor 014), completed lift 11  
Surface area and location covered during shift Completed lift 11, see lift Map.

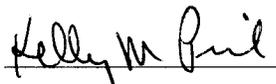
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

---

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL FIELD TEST FORM**

Project Name MWI Cover CQA Date 11/30/06 Time 0930

Lift Number 12 Inspected by Percy Woods

Borrow Area West of CAMU Weather Clear, Cold

Compaction Equipment Smooth Drum Roller

Soil Description 2" minus subgrade stockpile

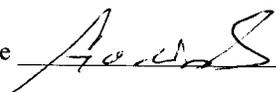
Volume and location of soil placed during shift None on this date

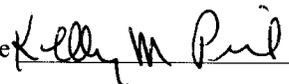
Surface area and location covered during shift None on this date, tests taken on soils placed 11/28 and 11/29

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form"?	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover C&A Date 12/5/06 Time 1430  
 Lift Number 12 Inspected by Percy Woods  
 Borrow Area west of CAMU Weather Clear, Cool  
 Compaction Equipment Smooth Drum Vibratory Roller  
 Soil Description 2" Minus Screened Subgrade

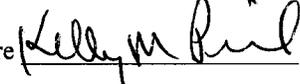
Volume and location of soil placed during shift 340 cy, lift 12, see lift map  
 Surface area and location covered during shift Lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form"?	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

TI-02  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover CQA Date 12/7/06 Time 1400  
Lift Number 12 Inspected by Perry Woods  
Borrow Area West of CAMU Weather Clear, Cool  
Compaction Equipment Smooth Drum Vibratory Roller  
Soil Description 2" Minus screened subgrade  
Volume and location of soil placed during shift 492 cy, Lift 12, see Lift Map  
Surface area and location covered during shift Lift 12, see Lift Map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature Perry Woods

CQA Engineer Signature Kelly M. Fine

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover C&A Date 12/13/06 Time 1000

Lift Number 12 Inspected by Corey Woods checked

Borrow Area West of CAMU Weather Clear, Warm

Compaction Equipment Smooth Down Vibratory Roller

Soil Description 2" minus screened subgrade

Volume and location of soil placed during shift N/A (No soil placed during this shift, testing conducted on material placed 12/11)

Surface area and location covered during shift N/A

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature Corey Woods

CQA Engineer Signature Kelly M Brice

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cove CQA Date 12/15/06 Time 1000

Lift Number 12 Inspected by Cory Woods

Borrow Area West of CAMU Weather Clear, warm

Compaction Equipment Smooth Drum Vibratory Roller

Soil Description 2" Minus screened subgrade

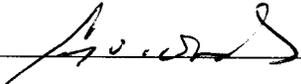
Volume and location of soil placed during shift 512 cy, lift 12, see lift map

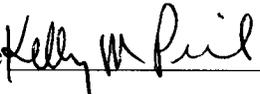
Surface area and location covered during shift lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature 

CQA Engineer Signature 

**TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM**

Project Name MWL Cover CQA Date 12/18/06 Time 1000  
 Lift Number 12 Inspected by Cory Woods  
 Borrow Area west of CAMU Weather overcast, cold, windy  
 Compaction Equipment Smooth Drum Vibratory Roller  
 Soil Description 2" minus screened subgrade

Volume and location of soil placed during shift cy, lift 12, see lift map  
 Surface area and location covered during shift lift 12, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D 2922 and ASTM D 3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>N/A</u>	_____

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL CQA Date 10/2/06 Time 1330  
Inspected by Carey Woods  
Weather Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	<u>        </u>
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	<u>        </u>
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	<u>        </u>
Do laboratory tests meet the construction specification?	<u>YES</u>	<u>  1  </u>

**NOTES:**

Collected the following proctors on this date:

MWL-ES-001 - Existing surface, approx. 30' NW of monitor well MWL-4

MWL-SG-001 - subgrade stockpile, west end

Results received Oct. 19

Ⓢ No specification for existing surface

CQA Inspector Signature Carey Woods

CQA Engineer Signature Kelly M. Pail

TI-04  
**TESTING INSPECTION FORM**  
~~SUBGRADE FILL~~ **LABORATORY TEST VERIFICATION FORM**  
*Existing Surface*

Project Name MWC Cover C&A Date 10/27/06 Time 1100  
 Inspected by Larry Woods  
 Weather Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>N/A</u>	<u>1</u>

**NOTES:**

samples collected 10/27, MWC-ES-002, -003, and -004  
 Ⓢ No specification for existing surface  
 Results received 11/2/06

CQA Inspector Signature *Larry Woods*

CQA Engineer Signature *Kelly M. Rind*

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL Cover CQA Date 10/31/06 Time 1430  
Inspected by Carey Woods  
Weather Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

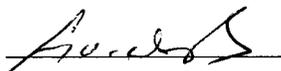
	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

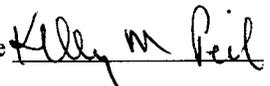
**NOTES:**

Samples collected 10/31/06:

MWL-S6-002 - Southwest corner of stockpile  
MWL-S6-003 - Middle west end of stockpile  
MWL-S6-001 - Northwest corner of stockpile

Results received 11/6/06

CQA Inspector Signature 

CQA Engineer Signature 

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL Cover CQA Date 11/2/06 Time 1430  
Inspected by Leroy Woods  
Weather Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

collected proctors MWL-SG-005, -006, and -007 on 11/2  
Results received 11/6 for MWL-SG-005 and -006  
Results received 11/13 for MWL-SG-007

CQA Inspector Signature Leroy Woods

CQA Engineer Signature Kelly M. Paul

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL Cover CQA Date 11/8/06 Time 1030  
Inspected by Cory Woods  
Weather Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

Collected the following proctor samples on 11/8/06:

- MWL-SG-008 - Northwest corner of subgrade stockpile
- MWL-SG-009 - Middle west of stockpile
- MWL-SG-010 - Southwest corner of stockpile

Results for MWL-SG-008 received 11/14/06

Results for MWL-SG-009 and -010 received 11/15/06

CQA Inspector Signature Cory Woods

CQA Engineer Signature Kelly M. Paul

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL Cover CQA Date 11/14/06 Time 0900

Inspected by Fory Woods

Weather Overcast, High winds

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>NO</u>	<u>1</u>

**NOTES:**

The following samples were collected for proctor analysis on 11/14:

MWL-SG-011

- East end of Southern Stockpile

MWL-SG-012

- West end of Southern Stockpile

MWL-SG-013

- South-central area of subgrade stockpile.

> Material from a pile that was existing on-site prior to present field operations, screened to 2" minus

① Results received 11/20/06. Sample MWL-SG-011 #200 sieve at 15% vs. 20-40% in spec. This sample was from the soil pile that was existing at the MWL prior to field operations, this soil will be used for perimeter grading only, not for subgrade placement.

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M. Pirel

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

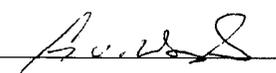
Project Name MWL Cover CQA Date 11/16/06 Time 1530  
Inspected by Percy Woods  
Weather overcast, cool

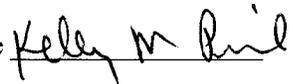
(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

collected the following samples for proctor analysis on 11/16:  
MWC-SG-014 northwest corner of subgrade stockpile  
MWC-SG-015 southwest corner of subgrade stockpile  
Received Results 11/28

CQA Inspector Signature 

CQA Engineer Signature 

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWL Cove CQA Date 11/20/06 Time 1430  
Inspected by Fancy Woods  
Weather Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>NO</u>	<u>1</u>
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

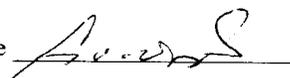
collected the following samples for proctor analysis on 11/20

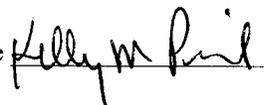
MWL-SG-016 Southwest corner of subgrade stockpile  
MWL-SG-017 Middle west side " "  
MWL-SG-018 Northwest corner of " "

Results for MWL-SG-016 and -017 received 11/28

Results for MWL-SG-018 received 12/4

① Proctor MWL-SG-018 analyzed by ASTM 1557 (Modified proctor). This proctor was not used for comparison testing.

CQA Inspector Signature 

CQA Engineer Signature 

**TI-04**  
**TESTING INSPECTION FORM**  
**SUBGRADE FILL LABORATORY TEST VERIFICATION FORM**

Project Name MWC Cove CQA Date 11/27/06 Time 1100  
Inspected by Cory Woods  
Weather overcast, Breezy, Cold

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

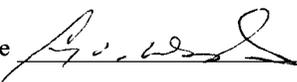
**NOTES:**

Collected the following samples for proctor analysis on 11/27 =

MWC-SG-019 North End of stockpile  
MWC-SG-020 West side of stockpile  
MWC-SG-021 East side of stockpile

Samples collected from stockpile at CAMU Barrage Area

Received Results for MWC-SG-020 on 12/5  
Received Results for MWC-SG-019 and -021 on 12/7

CQA Inspector Signature 

CQA Engineer Signature 

TI-04  
TESTING INSPECTION FORM  
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

---

Project Name MWL Core CQA Date 12/5/06 Time 1500  
Inspected by Percy Woods  
Weather Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

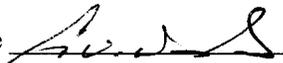
	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

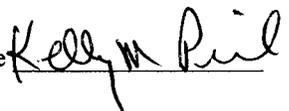
---

**NOTES:**

Collected sample MWL-SG-022 for proctor analysis, newly screened material.

Results received 12/13

CQA Inspector Signature 

CQA Engineer Signature 

TI-04  
TESTING INSPECTION FORM  
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name MWL Cover C&A Date 12/12/06 Time 1100  
Inspected by Pete Woods  
Weather Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

Collected two samples for proctor analysis from stockpile at borrow area:  
MWL-SG-023 - North side of stockpile  
MWL-SG-024 - South side of stockpile  
Received results for MWL-SG-023 on 12/15  
Received results for MWL-SG-024 on 12/18

CQA Inspector Signature Pete Woods

CQA Engineer Signature Kelly M. Paul

TI-04  
TESTING INSPECTION FORM  
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name MWL Cove CQA Date 12/14/06 Time 1000  
Inspected by Cory Woods  
Weather clear, warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C 136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D 2487 and D 4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	_____	_____

**NOTES:**

Collected the following samples for Proctor analysis from the newly screened material stockpile at the MWL:

- MWL-SG-025 - south side of stockpile
- MWL-SG-026 - north side of stockpile

Results for MWL-SG-025 received 12/20

CQA Inspector Signature Cory Woods

CQA Engineer Signature Kellym Peil

**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 10/27/06 Time: 1000 Weather: Clear, Cool  
 Stockpile Area: Existing surface  
 Borrow Area: n/a  
 Type of Construction: Existing surface  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 115.5 Proctor ~~MWL-ES-001~~  
 Optimum Moisture: 13.4% MWL-ES-001

See Attached

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-ES1-001	See Attached			104.1	90.1	13.8	+0.4	Existing surface
MWL-ES1-002				111.8	96.8	7.5	-3.9	
MWL-ES1-003				110.2	95.4	7.8	-5.6	
MWL-ES1-004				106.0	91.8	10.2	-3.2	
MWL-ES1-005				106.8	92.5	7.1	-6.3	
MWL-ES1-006				107.8	93.3	7.4	-6.0	
MWL-ES1-007				111.0	96.1	9.5	-3.9	
MWL-ES1-008				108.2	93.7	10.6	-2.8	
MWL-ES1-009				108.7	94.1	8.0	-5.4	
MWL-ES1-010				103.5	89.6	11.9	-1.5	
MWL-ES1-011				107.7	93.2	8.4	-5.0	
MWL-ES1-012				117.3	>100	8.1	-5.3	
MWL-ES1-013				114.2	98.9	8.8	-4.6	
MWL-ES1-014				110.2	95.4	8.8	-4.6	
MWL-ES1-015				109.8	95.1	11.9	-1.5	

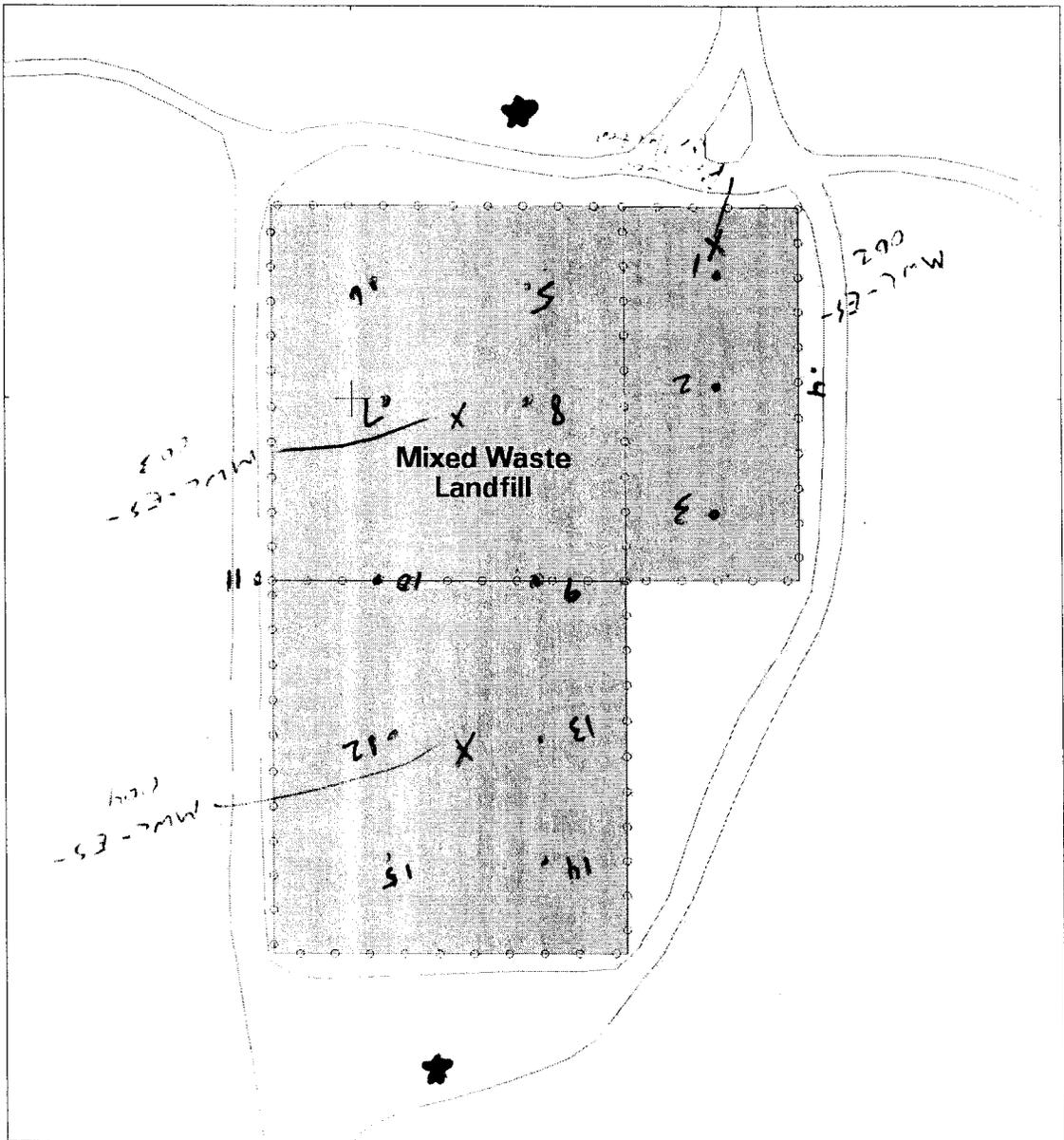
**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]

EXISTING Surface Compaction Test Locations

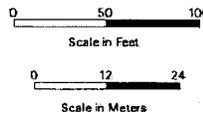
Mapid=050316 04/20/05 SNL EGIS ORG. 6146 DHelfrich dh050316.aml  
411500



Legend

-  Muster Point
-  Unpaved Road
-  Fence
-  Mixed Waste Landfill

Figure 3  
Mixed Waste Landfill  
Muster Points



**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 10/31/06 Time: 0800 Weather: Clear, Cool  
 Stockpile Area: 2" minus subgrade stockpile  
 Borrow Area: west of CAMU  
 Type of Construction: Subgrade  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 113.2  
 Optimum Moisture: 10.9      TROCTOR MNL-SG-001

See Cit+ Maps

Time

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
0800 MNL-SG1-001	Middle of Trench C, approx. 100' south of Northern Boundary		113.2	100	9.1	-1.8	2" Minus Subgrade	
MNL-SG1-002	Middle of Trench B, approx. 110' south of Northern Boundary		112.8	94.6	9.8	-1.1		
1030 MNL-SG2-001	Middle of Trench C, approx. 75' south of Northern Boundary		110.6	97.7	11.1	+0.2		
MNL-SG2-002	Middle of Trench B, approx. 80' south of Northern Boundary		113.0	99.8	10.6	-0.3		
1400 MNL-SG3-001	Middle of Trench B, 100' south		106.7	94.3	10.0	-0.9		
MNL-SG3-002	Middle of Trench B, 150' south		105.3	93.0	10.6	-0.3		
MNL-SG3-003	Middle of Trench A, 100' south		113.0	99.8	10.0	-0.9		
MNL-SG3-004	Middle of Trench C, 100' south		109.6	46.8	10.7	-0.2		
MNL-SG3-005	Middle of Trench C, 100' south		113.2	100	9.0	-1.9		
MNL-SG4-001	Middle of Trench B, 75' south		106.2	43.8	10.7	-0.2		
MNL-SG4-002	Middle of Trench B, 150' south		106.8	94.3	10.5	-0.4		

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M Paul

TI-07  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 11/1/06 Time: 1130 Weather: clear, warm  
 Stockpile Area: 2' minus subgrade stockpile  
 Borrow Area: west of CAMU  
 Type of Construction: subgrade  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 113.2  
 Optimum Moisture: 10.9 Proctor: MWL-SG-001

See Lift Maps

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-SGS-001	Trench B,	70' from	North	108.8	96.1	10.2	-0.7	2' Minus subgrade
MWL-SG4-003	Trench C,	100' from	North	103.0	91.0	11.1	+0.2	↓
MWL-SG4-004	Trench C,	200' from	North	111.5	98.2	9.6	-1.3	↓

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]





TI-07  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:

Date: 11/7/06 Time: 0930 Weather: Clear/Warm

Stockpile Area: 2" minus subgrade

Borrow Area: west of CAMU

Type of Construction: subgrade

(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

Maximum Dry Density (pcf): 113.3 (Proctor MWL-SG-002), 117.4 (Proctor MWL-SG-003)

Optimum Moisture: 13.2 (Proctor MWL-SG-002), 12.4 (Proctor MWL-SG-003)

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
<i>Time/Proctor #</i> 0930/002 MWL-SG8-001	10' SW of	NE of	4009	111.5	98.4 <del>107.4</del>	11.5 <del>104.3</del>	-1.7	2" minus subgrade
MWL-SG8-002	5' SW of	NE of	4019	107.4	94.8	11.5	-1.7	↓
MWL-SG8-003	10' East of		4008	104.3	92.1	12.5	-0.7	
MWL-SG9-001	12' SSW of		4022	107.9	91.6	14.2	+1.3	
MWL-SG9-002	15' SW of		4020	114.1	96.9	11.0	-1.9	
MWL-SG9-003	25' SW of		4008	110.4	93.8	11.0	-1.9	

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M. Pirel



**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:

Date: 11/9/06 Time: 1500 Weather: Clear, Warm

Stockpile Area: 2" minus subgrade stockpile

Borrow Area: West of C4MU

Type of Construction: Subgrade

(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

Maximum Dry Density (pcf): 118.3 (Proctor MWL-SG-004), 118.7 (Proctor MWL-SG-005)

Optimum Moisture: 12.7 (Proctor MWL-SG-004), 12.4 (Proctor MWL-SG-005)

Proctor  
 MWL-SG-001  
 ↓  
 MWL-SG-005  
 ↓

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-SG-005	20' SSW of 4004			113.2	95.7	11.7	-1.0	2" Minus Subgrade
MWL-SG-001	5' SSE of 4022			111.2	94.0	13.8	+1.1	
MWL-SG-002	5' NNE of 4019			110.8	93.3	11.3	-1.1	
MWL-SG-003	10' N of 4008			108.3	91.2	11.7	-0.7	

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]





**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 11/16/06 Time: 1500 Weather: Overcast, Cool  
 Stockpile Area: 2" Minus Subgrade  
 Borrow Area: West of CAMU  
 Type of Construction: subgrade  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 116.5 (Proctor MWL-56-008) 113.5 (Proctor MWL-56-001)  
 Optimum Moisture: 13.0 (Both Proctors)

*See Left Map*

Proctor  
 008  
 ↓  
 009  
 ↓

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-5611-003	15' W of	4038		108.9	93.5	14.1	+1.1	2" Minus subgrade
MWL-5611-004	20' W of	4050		114.6	98.4	11.5	-1.5	
MWL-5611-005	10' W of	4051		114.4	98.2	12.7	-0.3	
MWL-5611-006	15' S of	4039		106.6	93.9	11.8	-1.2	
MWL-5611-007	15' W of	4055		113.0	99.6	14.1	+1.1	
MWL-5611-008	5' E of	4042		113.5	100	12.6	-0.4	↓

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature Kelly M Paul



**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 11/21/06 Time: 1400 Weather: Clear, Warm  
 Stockpile Area: 2' Minus subgrade  
 Borrow Area: West of CAMU  
 Type of Construction: Subgrade  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 113.6 (Proctor MWC-SG-010) 116.0 (Proctor MWC-SG-013)  
 Optimum Moisture: 12.6 (Proctor -010) 12.3 (Proctor -013)

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-SG11-011	10' E of	4025		110.0	96.8	14.3	+1.7	
MWL-SG11-012	15' SW of	4010		114.2	100	11.8	-0.8	
MWL-SG11-013	17' W of	4011		105.5	92.9	13.7	+1.1	
MWL-SG11-014	17' W of	4023		106.4	93.7	12.3	-0.3	
MWL-SG11-015	5' SE of	4010		113.4	97.8	10.7	-1.6	
MWL-SG11-016	15' SE of	4009		114.2	98.4	11.6	-0.7	
MWL-SG11-017	7' NE of	4032		112.7	97.2	13.9	+1.6	

**NOTES:**

CQA Inspector Signature [Signature]

CQA Engineer Signature [Signature]







**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
 Date: 12/7/06 Time: 1400 Weather: Clear, Cool  
 Stockpile Area: West @ 2" Minus subgrade  
 Borrow Area: West of CAMU  
 Type of Construction: Subgrade  
 (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
 Maximum Dry Density (pcf): 112.4 (Proctor 019), 119.0 (Proctor 021)  
 Optimum Moisture: 13.6 (Proctor 019), 12.0 (Proctor 021)

*See L&T Map*

Proctor  
019  
 ↓  
021  
 ↓

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
MWL-SG12-007	25' SE of	4053		112.4	100	13.1	-0.5	2" Minus subgrade
MWL-SG12-008	25' NE of	4042		112.4	100	14.1	+0.5	
MWL-SG12-009	25' SSE of	4027		112.4	94.4	13.6	+1.6	
MWL-SG12-010	20' E of	4014		110.4	92.8	11.9	-0.1	

**NOTES:**

CQA Inspector Signature *[Signature]*

CQA Engineer Signature *Kelly M. Paul*









## **2009 Testing Inspection Forms**



TI-02  
 TESTING INSPECTION FORM  
 SUBGRADE FILL FIELD TEST FORM

Project Name Secondary Mixed Waste LF Date 5/22/09 Time 8:30 AM  
 Lift Number NA Inspected by Paul Malin / Don Lopez  
 Borrow Area NA Weather Cloudy  
 Compaction Equipment Vibrating Roller  
 Soil Description Existing Subgrade w/ native soil  
 \_\_\_\_\_  
 Volume and location of soil placed during shift NA  
 \_\_\_\_\_  
 Surface area and location covered during shift NA  
 \_\_\_\_\_

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>yes</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>yes</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>No</u> <u>yes</u>	- will be included when data received from HMMZ.
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>yes</u>	_____

**NOTES:**

- Additional test data and survey data will be included when received.

All Tests, Density and Moisture content meet Specification Requirements

Approved: Donald T. Lopez PE, CQA Engineer, May 22, 2009

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/16/2009

Lift Number: 6:1 Slopes Lift 1 & 2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 3:00 PM (86 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Volume and location covered during shift: (Approx. 504 CY) North, East and West 6:1 Slopes:

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Bonded To [Signature] PE, 06/16/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/17/2009

Lift Number: 6:1 Slopes Lift 1, 2, 3, & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 3:20 PM (86 deg): Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller.

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 792 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*David T. Lopez PE, 06/17/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/18/2009

Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 10:09 am PM (76 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) North, East and West 6:1 Slopes

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Paul Molina PE, 06/18/2009*

**TI-03**  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/19/2009

Lift Number: Wedge Lifts #1 & #2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 2:10 PM (85 deg); Clear Sky

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1080 CY) Northeast Wedge Lifts 1 & 2

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Donald T. [Signature] PE, 06/19/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/22/2009

Lift Number: NA

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 7:38 AM (72 deg); Partly Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 810 CY) MWL Berm To Borrow Area

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Concluded to PE, 06/22/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/23/2009

Lift Number: Native Soil Lift #3

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 1:21 PM (72 deg); Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1206 CY) MWL Cover Native Soil Lift #3

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Donald T. Lopez PE, 06/23/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/24/2009

Lift Number: Native Soil Lift #3 & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:30 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1116 CY) MWL Cover Native Soil Lift #3 & 4

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Paul Molina PE 06/24/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/25/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 12:45 PM (82 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*David T. [Signature] PEI 06/25/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/26/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 432 CY) MWL Cover Native Soil Lift #4

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Bonded To PE, 06/26/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/29/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:34 (61 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

No soil has been placed today

*Donald T. [Signature] PE, 06/29/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/30/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Consolidated to PE, 06/30/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/01/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:33 PM (88 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 792 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Checked TI of PE, 07/01/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/02/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 9:38 AM (74 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 630 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Conrad T. [Signature] PE, 07/02/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/03/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: NA

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Ronald T. [Signature] PE, 07/03/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/06/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:34 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*David T. Lopez, PE, 07/06/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/07/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:30 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*David T. Lopez PE, 07/07/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/08/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:00 PM (92 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 720 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Conduct TI, LPEI, 07/08/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/09/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 522 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Paul T. Lopez PE, 07/09/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/10/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (90 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Donald T. Lopez PE, 07/10/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/13/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:58 PM (96 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 738 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Conrad T. Lopez, 07/13/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/14/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:13 AM (74 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller.

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #6

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Burdett, PE, 07/14/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/15/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:45 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 954 CY) MWL Cover Native Soil Lift #6

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Bond T. Lopez PE, 07/15/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/16/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 864 CY) MWL Cover Native Soil Lift #6

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Sandel T. [Signature] PE, 07/16/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/17/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 828 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Revised to LP PE, 07/17/2009*

**TI-03  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/20/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:05 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1630 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Conduct T. by PE, 07/20/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/21/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:28 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1606 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

**NOTES:**

*Conrad T. Lopez PEI July 21, 2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/22/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:02 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Conrad T. Lopez PE, July 22, 2009*

**TI-03**  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/23/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1458 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*David T. Lopez PE, 07/23/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/24/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 8:39 AM (69 deg): Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1410 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Donald T. [Signature] PE, 07/24/2009*

TI-03  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/27/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:00 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller.

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 962 CY) MWL Cover Native Soil Lift #8

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Have in situ soil nuclear density and moisture content tests been performed at the frequency required?	<u>YES</u>	_____
Have field density test locations and elevations been plotted and checked?	<u>YES</u>	_____
Have the results of the in situ density and moisture content tests been performed in accordance with ASTM D2922 and ASTM D3017, and recorded on Form TI-07 "Moisture/Density Field Test Results Form?"	<u>YES</u>	_____
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?	<u>YES</u>	_____
Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?	<u>YES</u>	_____

---

**NOTES:**

*Donald T. [Signature] PE, 07/27/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 06/16/2009

Lift Number: 6:1 Slopes Lift 1& 2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Time/Weather: 3:00 PM (86 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Volume and location covered during shift: (Approx. 504 CY) North, East and West 6:1 Slopes:

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*David T. Lopez, PE, 06/16/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 06/17/2009

Lift Number: 6:1 Slopes Lift 1, 2, 3, & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 3:20 PM (86 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 792 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Paul Molina PE 06/17/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/18/2009

Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 120.1

Weather: 10:09 am PM (76 deg); Clear Sky

Optimum Moisture (%) 11.6

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) North, East and West 6:1 Slopes

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Carroll T. PEI 06/18/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/19/2009

Lift Number: Wedge Lifts #1 & #2

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 2:10 PM (85 deg); Clear Sky

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1080 CY) Northeast Wedge Lifts 1 & 2

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Conducted by PE, 06/19/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/22/2009

Lift Number: NA

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 7:38 AM (72 deg); Partly Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 810 CY) MWL Berm To Borrow Area

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Bonded To [Signature] PE, 06/22/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 06/23/2009

Lift Number: Native Soil Lift #3

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 115.8

Weather: 1:21 PM (72 deg); Cloudy

Optimum Moisture (%) 12.3

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1206 CY) MWL Cover Native Soil Lift #3

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Donald T. [Signature] PE, 06/23/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/24/2009

Lift Number: Native Soil Lift #3 & 4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:30 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller.

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1116 CY) MWL Cover Native Soil Lift #3 & 4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Donald T. Lopez PE, 06/24/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandía Mixed Waste Landfill

Date: 06/25/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 12:45 PM (82 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Baudel T. Lopez, 06/25/2009*

**TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 06/26/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 432 CY) MWL Cover Native Soil Lift #4

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*David T. Lopez PE, 06/26/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 06/29/2009

Lift Number: Native Soil Lift #4

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:34 (61 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: NA

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #4

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

No soil has been placed today

*Carroll T. PE, 06/29/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 06/30/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Bondel T. [Signature] PE, 06/30/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/01/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:33 PM (88 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 792 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Concluded by PE, 07/01/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/02/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 9:38 AM (74 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 630 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Conrad T. Lopez PE, 07/02/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/03/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: NA

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Consolidated by PE, 07/03/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/06/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:34 PM (86 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

NOTES:

*Conrad T. [Signature] PE, 07/06/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/07/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:30 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Conduct to PE, 07/07/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/08/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:00 PM (92 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 720 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*David T. Lopez PE, 07/08/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/09/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (91 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 522 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Paul Molina, PE, 07/09/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/10/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (90 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 756 CY) MWL Cover Native Soil Lift #5

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*David T. Lopez PE, 07/10/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/13/2009

Lift Number: Native Soil Lift #5

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:58 PM (96 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 738 CY) MWL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

NOTES:

*Bonald T. [Signature] PE, 07/13/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/14/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 7:13 AM (74 deg): Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1170 CY) MWL Cover Native Soil Lift #6

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Donald T. Lopez PE, 07/14/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/15/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:45 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 954 CY) MWL Cover Native Soil Lift #6

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Paul Molina PE, 07/15/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/16/2009

Lift Number: Native Soil Lift #6

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 864 CY) MWL Cover Native Soil Lift #6

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

---

**NOTES:**

*Barclay T. [Signature] PE, 07/16/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/17/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 2:29 PM (93 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 828 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Paul Molina PE, 07/17/2009*

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/20/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:05 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1630 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

NOTES:

*Bonded To Log PEI 07/20/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/21/2009

Lift Number: Native Soil Lift #7

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:28 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1606 CY) MWL Cover Native Soil Lift #7

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Carroll T. Lopez PE, 07/21/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/22/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 4:02 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 0 CY) MWL Cover Native Soil Lift #8

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Paul Molina PE, 07/22/2009*

**TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/23/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 3:00 PM (78 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller,

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1458 CY) MWL Cover Native Soil Lift #8

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

Daniel T. [Signature] PE, 07/23/2009

TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill

Date: 07/24/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 8:39 AM (69 deg); Clear Sky

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 1410 CY) MWL Cover Native Soil Lift #8

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

NOTES:

*Paul Molina PE 07/24/2009*

TI-05  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 07/27/2009

Lift Number: Native Soil Lift #8

Inspected By: Paul Molina

Borrow Area: Native Soil Borrow Area

Max Dry Density (pcf) 117.0

Weather: 1:00 PM (87 deg); Partly Cloudy

Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller

Fill Description: Native Soil Located in TA-3 Borrow Area

Surface volume and location covered during shift: (Approx. 962 CY) MWL Cover Native Soil Lift #8

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?	<u>YES</u>	_____
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?	<u>YES</u>	_____
Do laboratory tests meet the construction specification?	<u>YES</u>	_____

**NOTES:**

*Donald T. [Signature] PE, 07/27/2009*

**TI-06**  
**TESTING INSPECTION FORM**  
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 08/03/2009  
Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:06 PM (88 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2132 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specifications?	<u>YES</u>	_____

---

**NOTES:**

*Barold T. PEI 08/03/2009*

**TI-06**  
**TESTING INSPECTION FORM**  
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 08/04/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:45 PM (91 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 1950 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specifications?	<u>YES</u>	_____

---

**NOTES:**

*Bondel T. PEI 08/04/2009*

**TI-06**  
**TESTING INSPECTION FORM**  
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 08/05/2009  
Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 2:18 PM (94 deg); Partly Cloudy

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2028 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specifications?	<u>YES</u>	_____

---

**NOTES:**

*Paul T. [Signature] PE, 08/05/2009*

**TI-06**  
**TESTING INSPECTION FORM**  
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 08/06/2009

Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area

Weather: 1:54 PM (94 deg); Heavy Rain @ 2:30 PM

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 2106 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specifications?	<u>YES</u>	_____

---

**NOTES:**

*Paul T. Molina PE 08/06/2009*

**TI-06**  
**TESTING INSPECTION FORM**  
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill

Date: 08/07/2009  
Inspected By: Paul Molina

Borrow Area: Topsoil Borrow Area  
Weather: 11:47 AM (79 deg)

Topsoil Description: Topsoil Located in TA-3 Borrow Area

Volume and location of soil placed during shift: (Approx. 962 CY) MWL Cover Topsoil

---

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

	YES/NO	NOTE NO.
Has gradation been performed in accordance with ASTM C136?	<u>YES</u>	_____
Has classification been performed in accordance with ASTM D2487 and D4318?	<u>YES</u>	_____
Do laboratory tests meet the construction specifications?	<u>YES</u>	_____

---

**NOTES:**

*David T. L. PE, 08/07/2009*

TI-07  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

Project Name: SANDIA MIXED WASTE LANDFILL  
 Stockpile Area: BORROW AREA TA-3  
 Borrow Area: TA-3  
 Type of Construction: Moisture/Density Test Locations 2009 Subgrade Surface  
 Maximum Dry Density (pcf): 120.1  
 Optimum Moisture: 11.6  
 Date: 5/22/2009  
 Approximate Time: 8:00 AM  
 Weather: 58 (F)

**LOCATION SKETCH:**  
 Figure 21

Test Number (Description/Location)	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
URS Subgrade Surface (Subgrade Surface/Grid Block 5)	1453083.9	411683.3	5381.0	117.3	98	10.6	+/- 2	Light Red Sandy
URS Subgrade Surface (Subgrade Surface/Grid Block 12)	1453008.0	411859.2	5385.8	116.1	97	11.0	+/- 2	Light Red Sandy
URS Subgrade Surface (Subgrade Surface/Grid Block 8)	1452939.2	411755.4	5384.1	118.9	99	10.0	+/- 2	Light Red Sandy
URS Subgrade Surface (Subgrade Surface/Grid Block 1)	1452723.0	411680.2	5381.7	117.9	98	10.0	+/- 2	Light Red Sandy

NOTES:



**TI-07  
TESTING INSPECTION FORM  
MOISTURE/DENSITY FIELD TEST RESULTS FORM**

Project Name: SANDIA MIXED WASTE LANDFILL  
 Stockpile Area: BORROW AREA TA-3  
 Borrow Area: TA-3

**LOCATION SKETCH:**  
 Figures 22 & 23

Type of Construction: Moisture/Density Test Locations Side Slope Lifts and Native Soil Wedge Lifts 1&2  
 Maximum Dry Density (pcf): 120.1 & 115.8  
 Optimum Moisture: 11.6 & 12.3  
 Date: 6/19/2009  
 Approximate Time: 11:00 AM  
 Weather: 79 (F)

Test Number (Description/Location)	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
URS Wedge Lift 1 (Native Soil Lift 1/Grid Block 8)	1452939.09	411789.54	5386.80	105.7	91	10.7	+/- 2	Clayey Silty Sand
URS Wedge Lift 1 (Native Soil Lift 1/Grid Block 11)	1452934.55	411879.23	5388.33	107.1	92	11.0	+/- 2	Clayey Silty Sand
URS East Slope Lift 6 (East Slope Lift 6/East Slope)	1453115.79	411912.88	5384.57	117.4	98	10.1	+/- 2	Light Red Sandy
URS East Slope Lift 5 (East Slope Lift 5/East Slope)	1453115.79	411912.88	5384.07	112.3	94	10.3	+/- 2	Light Red Sandy
URS West Slope Lift 6 (West Slope Lift 6/West Slope)	1452721.94	411574.36	5379.92	117.9	98	11.1	+/- 2	Light Red Sandy
URS West Slope Lift 5 (West Slope Lift 5/West Slope)	1452721.94	411574.36	5379.42	115.4	96	10.6	+/- 2	Light Red Sandy
URS Wedge Lift 2 (Native Soil Lift 2/Grid Block 11)	1452928.83	411861.93	5388.23	108.5	94	11.0	+/- 2	Clayey Silty Sand
URS North Slope Lift 8 (North Slope Lift 8/North Slope)	1453129.33	411778.76	5382.30	102.5	89	15.2	+/- 2	Clayey Silty Sand
URS North Slope Lift 7 (North Slope Lift 7/North Slope)	1453129.33	411778.76	5381.80	106.7	92	14.0	+/- 2	Clayey Silty Sand

**NOTES:**















TI-07  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

Project Name: SANDIA MIXED WASTE LANDFILL  
 Stockpile Area: BORROW AREA TA-3  
 Borrow Area: TA-3  
 Type of Construction: Moisture/Density Test Locations Native Soil Layer Lift 3 & 4  
 Maximum Dry Density (pcf): 117.0  
 Optimum Moisture: 12.0  
 Date: 6/26/2009  
 Approximate Time: 3:15  
 Weather: 78 (F)

**LOCATION SKETCH**  
 Figures 24 & 25

Test Number	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
URS NS Lift 3 (Native Soil Lift 3/Grid Block 11)	1452901.18	411889.1	5388.37	114.4	98	13.7	+/- 2	Silty Sand
URS NS Lift 4 (Native Soil Lift 4/Grid Block 1)	1452711.86	411629.3	5383.83	117.7	100+	14.0	+/- 2	Silty Sand
URS NS Lift 4 (Native Soil Lift 4/Grid Block 3)	1452947.35	411639.1	5383.88	110.9	95	13.5	+/- 2	Silty Sand
URS NS Lift 4 (Native Soil Lift 4/Grid Block 5)	1453124.35	411629.6	5380.70	111.6	95	12.8	+/- 2	Silty Sand
URS NS Lift 4 (Native Soil Lift 4/Grid Block 9)	1453056.44	411736.3	5384.69	115.0	98	11.5	+/- 2	Silty Sand
URS NS Lift 4 (Native Soil Lift 4/Grid Block 7)	1452841.98	411745.1	5385.81	111.9	96	11.6	+/- 2	Silty Sand

NOTES:



































TI-07  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

Project Name: SANDIA MIXED WASTE LANDFILL  
 Stockpile Area: BORROW AREA TA-3  
 Borrow Area: TA-3  
 Type of Construction: Moisture/Density Test Locations Native Soil Layer Lift 8  
 Maximum Dry Density (pcf): 117.0  
 Optimum Moisture: 12.0  
 Date: 7/28/2009  
 Approximate Time: 1:00 pm  
 Weather: 93 (F)

**LOCATION SKETCH**  
 Figure 29

Test Number (Description/Location)	Approximate Location			In Situ Dry Density (pcf)	Percent Compaction	In Situ Water Content (WC %)	Percent Water Content Variation	Soil Description
	North	East	Elevation					
URS NS Lift 8 (Native Soil lift 8/Grid Block 12)	1453005.689	411858.7063	5389.71	117.0	100	10.0	+/- 2	Silty Sand
URS NS Lift 8 (Native Soil lift 8/Grid Block 6)	1452688.962	411757.9778	5387.23	115.5	99	10.0	+/- 2	Silty Sand
URS NS Lift 8 (Native Soil lift 8/Grid Block 2)	1452809.726	411637.4463	5385.65	116.1	99	10.8	+/- 2	Silty Sand
URS NS Lift 8 (Native Soil lift 8/Grid Block 4)	1453019.746	411603.3982	5384.78	113.3	97	12.1	+/- 2	Silty Sand
URS NS Lift 8 (Native Soil lift 8/Grid Block 8)	1452950.355	411770.4436	5388.56	117.0	100	10.3	+/- 2	Silty Sand
URS NS Lift 8 (Native Soil lift 8/Grid Block 10)	1453105.035	411770.1856	5386.42	116.4	99	11.0	+/- 2	Silty Sand

NOTES:



## **ATTACHMENT 7**

### **Laboratory and Field Test Results and Supporting Data**



## **2006 Standard Proctor, Gradation, and Classification Tests**





Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: October 10, 2006

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Project #: 6-519-004081  
Work Order #: 4  
Lab #: 6-1444-01  
Sampled By: Client  
Date Sampled: 10/06/2006

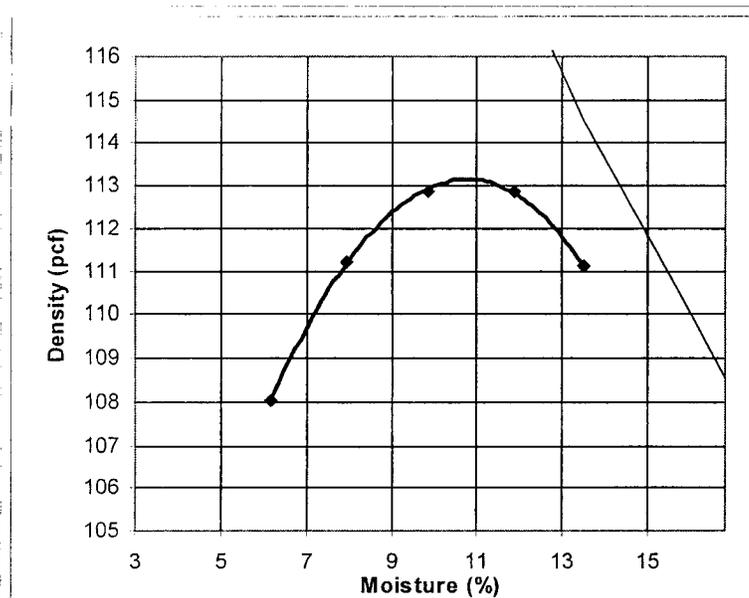
Visual Description of Material:  
Sample Source: MWL-SG-001

Project Manager: Robert Romero SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

<u>Sieve Size</u>	<u>Passing</u>	<u>Min</u>	<u>Max</u>
3/4in.	100%		
1/2in.	99%		
3/8in.	99%		
#4	98%		
#8	97%		
#10	97%		
#16	96%		
#30	95%		
#40	94%		
#50	92%		
#100	52%		
#200	24%		



Moisture Density Relationship: (ASTM D698) Method: A  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.451 Assumed  
Maximum Density: 113.2  
Optimum Moisture: 10.9  
Remarks: Sample source revised on 1-30-07

Plasticity Index (ASTM D4318)

Liquid Limit: NV  
Plastic Limit: NV  
Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: [Signature]  
HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 03, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

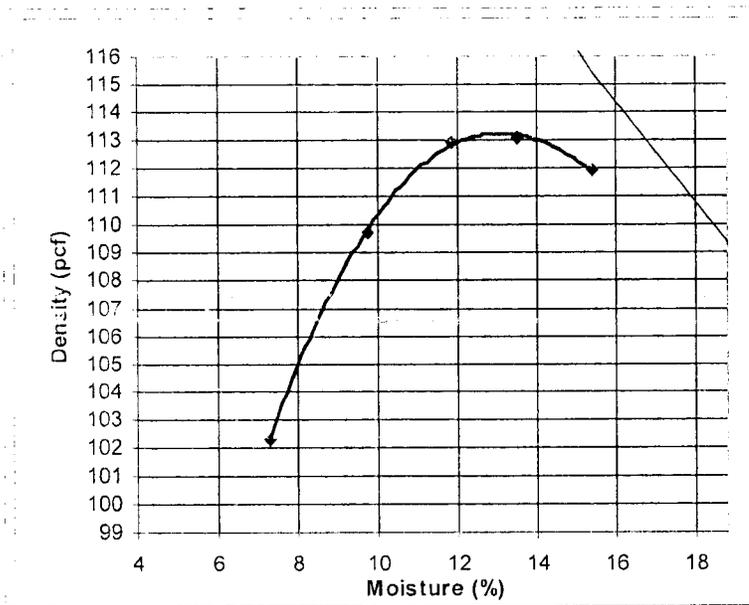
Project #: 6-519-004081  
 Work Order #: 8  
 Lab #: 6-1624  
 Sampled By: Robert Carr  
 Date Sampled: 10/31/2006  
 Visual Description of Material: Light Brown  
 Sample Source: SW Corner of stockpile, MWL-SG-002

Project Manager: Robert Romero SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	99%		
#4	98%		
#8	96%		
#10	95%		
#16	93%		
#30	91%		
#40	89%		
#50	87%		
#100	69%		
#200	32%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.601 Assumed  
 Maximum Density: 113.3  
 Optimum Moisture: 13.2

Plasticity Index (ASTM D4318)

Liquid Limit: 24  
 Plastic Limit: 19  
 Plasticity Index: 5

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 ah

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 03, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 9  
 Lab #: 6-1625  
 Sampled By: Robert Carr  
 Date Sampled: 10/31/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: Middle of West End of Pile.MWL-SG-003

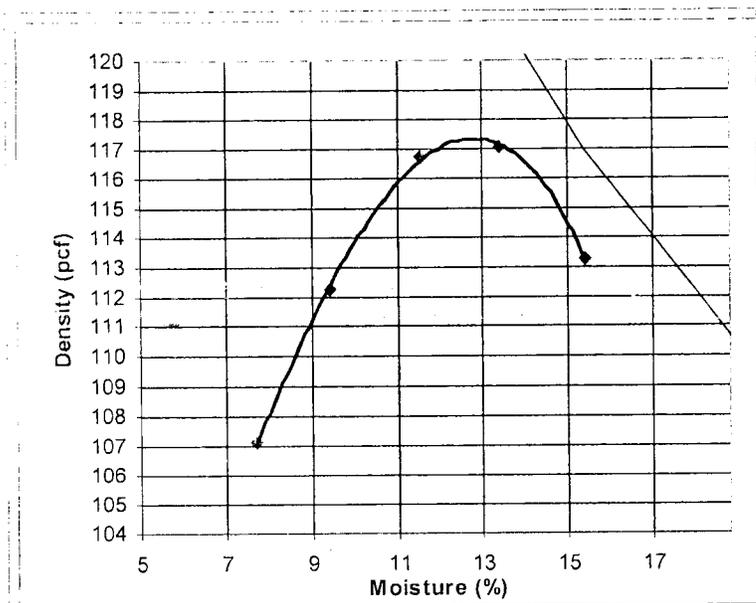
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	100%		
#4	98%		
#8	96%		
#10	96%		
#16	93%		
#30	91%		
#40	89%		
#50	87%		
#100	65%		
#200	32%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.4  
 Optimum Moisture: 12.9

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 19  
 Plasticity Index: 6

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 sna

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: November 03, 2006

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Project #: 6-519-004081  
Work Order #: 10  
Lab #: 6-1626  
Sampled By: Robert Carr  
Date Sampled: 10/13/2006  
Visual Description of Material: Light Brown

Sample Source: North West Corner of Stockpile .MWL-SG-004

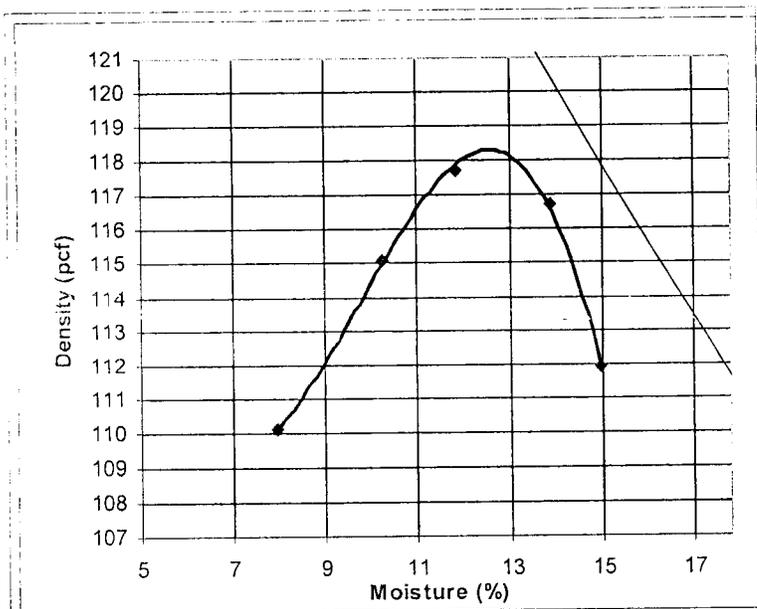
Project Manager: Robert Romero

## SOILS / AGGREGATES

### Sieve Analysis (ASTM C117/C136)

### Specifications

Sieve Size	Passing	Min	Max
3/4in.	100%		
1/2in.	100%		
3/8in.	99%		
#4	98%		
#8	96%		
#10	95%		
#16	93%		
#30	91%		
#40	89%		
#50	88%		
#100	68%		
#200	32%		



Moisture Density Relationship: (ASTM D698) Method: A  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.651 Assumed  
Maximum Density: 118.3  
Optimum Moisture: 12.7

### Plasticity Index (ASTM D4318)

Liquid Limit: 25  
Plastic Limit: 19  
Plasticity Index: 6

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: *Robert Romero*  
ah

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 22, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081

Work Order #: 21

Lab #: 6-1780

Sampled By: Miguel Chavez

Date Sampled: 11/16/2006

Visual Description of Light Red & Rocky

Material:

Sample Source: MWL-SG-08005

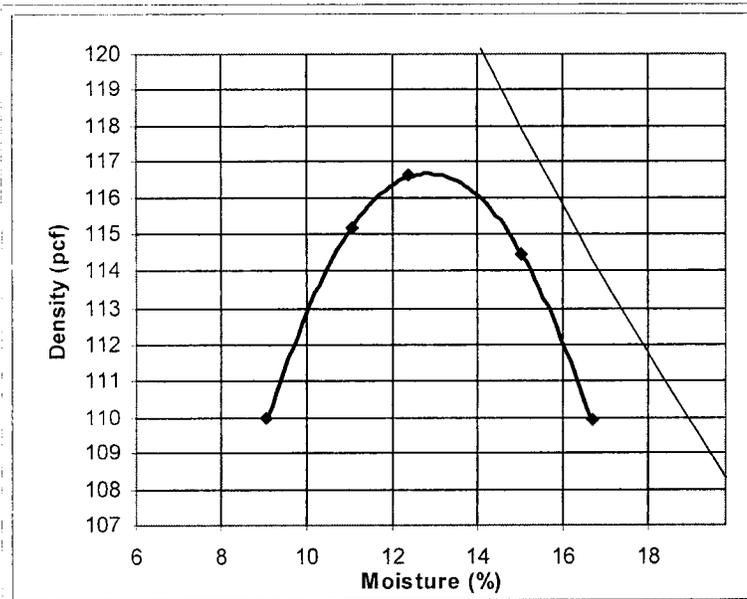
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
3/8in.	100%		
#4	98%		
#8	96%		
#10	95%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	65%		
#200	23%		



Moisture Density Relationship: (ASTM D698) Method: B  
 Preparation Method: Moist Rammer Type: Manual  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 116.7  
 Optimum Moisture: 12.9  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 17  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC

Reviewed By: [Signature]  
 HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 06, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 12  
 Lab #: 6-1646  
 Sampled By: Robert Carr  
 Date Sampled: 11/02/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-006

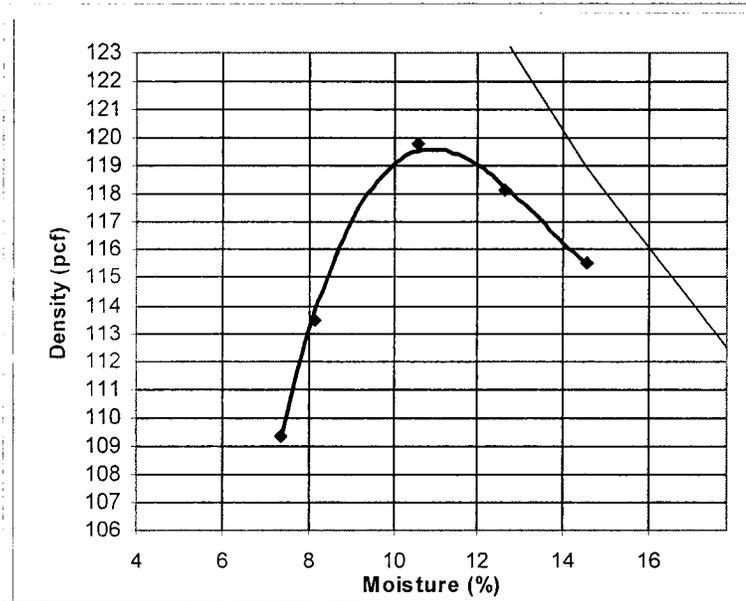
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	100%		
#4	98%		
#8	97%		
#10	96%		
#16	94%		
#30	92%		
#40	90%		
#50	88%		
#100	71%		
#200	32%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 119.6  
 Optimum Moisture: 11.0  
 Remarks: Sample source revised on 1-30-07

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 17  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC

Reviewed By: *[Signature]*  
 ah

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 08, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

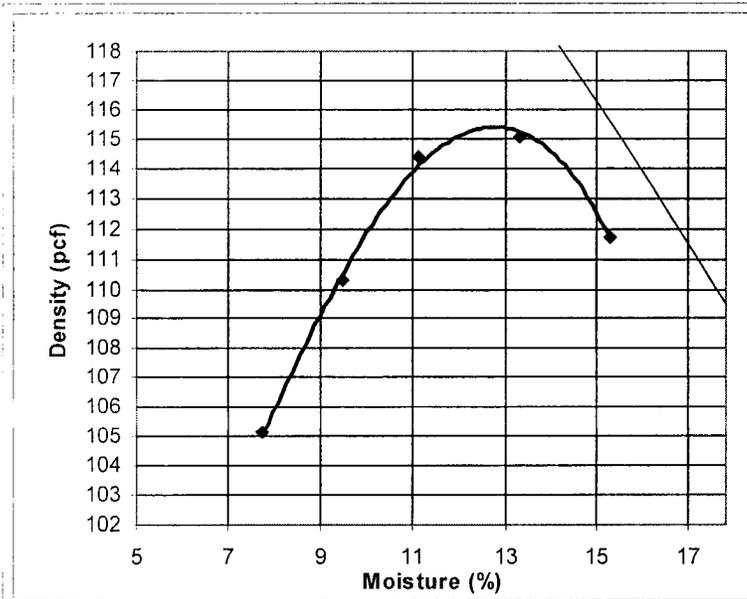
Project #: 6-519-004081  
 Work Order #: 13  
 Lab #: 6-1647  
 Sampled By: Robert Carr  
 Date Sampled: 11/02/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-007

Project Manager: Robert Romero SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	99%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	73%		
#200	33%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.601 Assumed  
 Maximum Density: 115.4  
 Optimum Moisture: 12.9  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 18  
 Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By:   
 ah

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 14, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081

Work Order #: 14

Lab #: 6-1690

Sampled By: Robert Carr

Date Sampled: 11/08/2006

Visual Description of Light Brown  
 Material:

Sample Source: MWL-SG-008

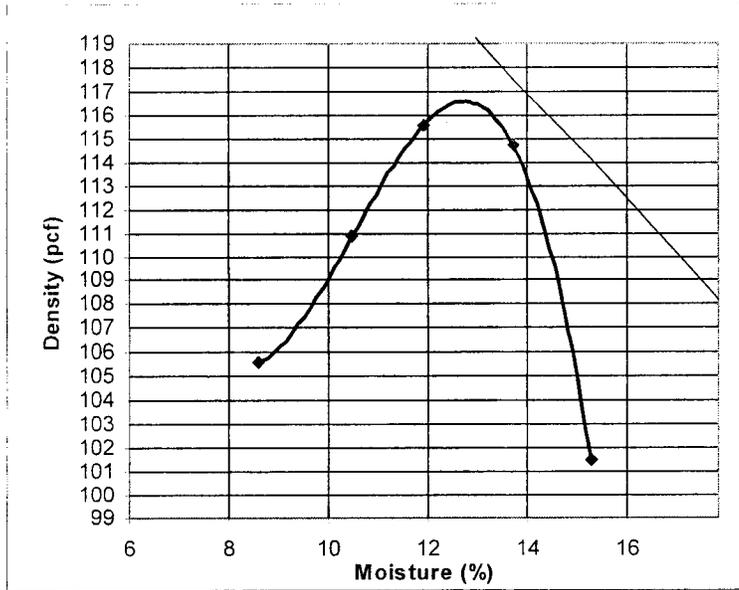
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Specifications	
		Min	Max
1/2in.	100%		
3/8in.	100%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	66%		
#200	33%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 116.6  
 Optimum Moisture: 12.8  
 Remarks: Revised 12/8/06 to show correct proctor method used.

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 19  
 Plasticity Index: 6

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 13, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 15  
 Lab #: 6-1691  
 Sampled By: Robert Carr  
 Date Sampled: 11/08/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-009

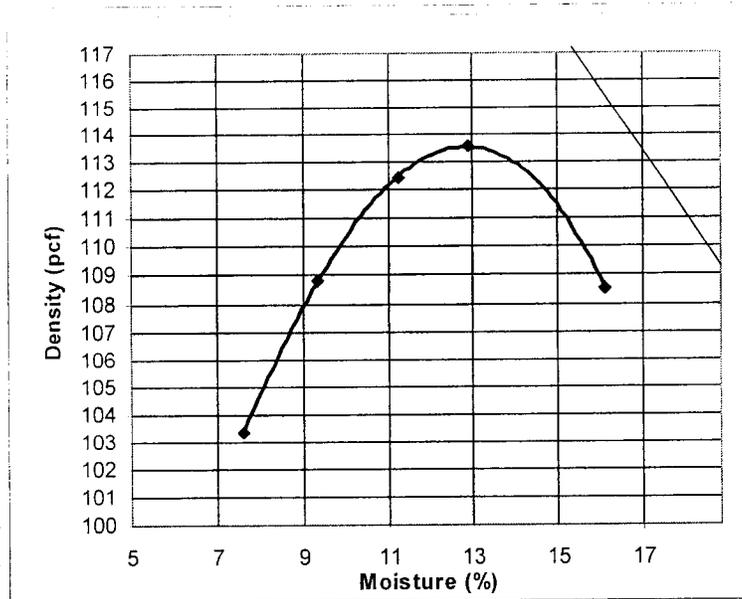
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1 1/2in.	100%		
1in.	96%		
3/4in.	100%		
1/2in.	96%		
3/8in.	95%		
#4	94%		
#8	92%		
#10	91%		
#16	90%		
#30	87%		
#40	86%		
#50	84%		
#100	61%		
#200	31%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 113.6  
 Optimum Moisture: 12.9  
 Remarks: Revised 12/8/06 to show correct proctor method used.

Plasticity Index (ASTM D4318)

Liquid Limit: 24  
 Plastic Limit: 19  
 Plasticity Index: 5

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 Jr

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



**Client:** URS  
6501 Americas Pkwy, NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 13, 2006

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

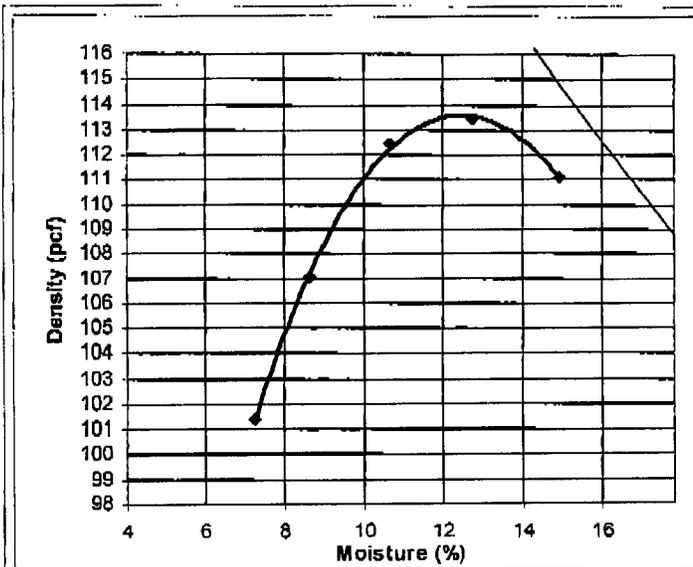
**Project #:** 6-519-004081  
**Work Order #:** 16  
**Lab #:** 6-1692  
**Sampled By:** Robert Carr  
**Date Sampled:** 11/08/2006

**Visual Description of light Brown Material:**

**Sample Source:** MWL-SG-010

**Project Manager:** Robert Romero

**SOILS / AGGREGATES**



**Moisture Density Relationship:** (ASTM D698) **Method:** A  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.551  
**Maximum Density:** 113.6  
**Optimum Moisture:** 12.6

**Sieve Analysis (ASTM C117/C136)**

Sieve Size	Passing	Specifications	
		Min	Max
3/4in.	100%		
1/2in.	99%		
3/8in.	99%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	67%		
#200	33%		

**Plasticity Index (ASTM D4318)**

**Liquid Limit:** 25  
**Plastic Limit:** 19  
**Plasticity Index:** 6

**Preparation Method:** Dry **Liquid Limit Method:** A

**Soil Classification (ASTM D2487)** SC-SM

Reviewed By:   
jr

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 21, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

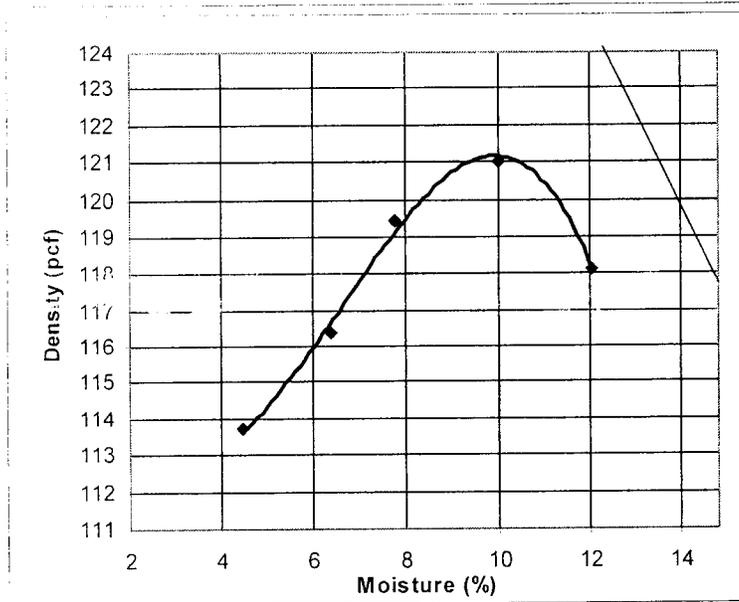
Project #: 6-519-004081  
 Work Order #: 19  
 Lab #: 6-1743  
 Sampled By: Miguel Chavez  
 Date Sampled: 11/14/2006  
 Visual Description of Light Brown Rocky  
 Material:  
 Sample Source: MWL-SG-011

Project Manager: Robert Romero SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Specifications	
		Min	Max
1 1/4in.	100%		
1in.	100%		
3/4in.	96%		
1/2in.	93%		
3/8in.	92%		
#4	88%		
#8	84%		
#10	83%		
#16	79%		
#30	75%		
#40	72%		
#50	69%		
#100	50%		
#200	15%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 121.2  
 Optimum Moisture: 10.0

Plasticity Index (ASTM D4318)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By:   
 HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email: Cory Woods / MKM Engineering (1)



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: November 21, 2006

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Project #: 6-519-004081  
Work Order #: 18  
Lab #: 6-1742  
Sampled By: Miguel Chavez  
Date Sampled: 11/14/2006  
Visual Description of Light Brown Rocky  
Material:  
Sample Source: MWL-SG-012

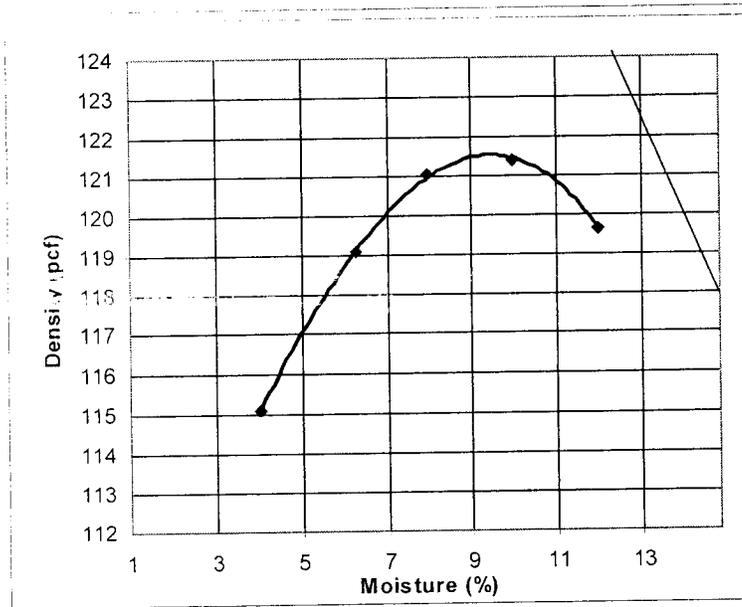
Project Manager: Robert Romero

**SOILS / AGGREGATES**

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Specifications	
		Min	Max
1 1/4in.	100%		
1in.	94%		
3/4in.	94%		
1/2in.	91%		
3/8in.	90%		
#4	86%		
#8	82%		
#10	81%		
#16	77%		
#30	74%		
#40	72%		
#50	70%		
#100	54%		
#200	24%		



Moisture Density Relationship: (ASTM D698) Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 121.5

Optimum Moisture: 9.6

Plasticity Index (ASTM D4318)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By:   
HG

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: November 21, 2006

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Project #: 6-519-004081  
Work Order #: 17  
Lab #: 6-1740

Sampled By: Miguel Chavez  
Date Sampled: 11/14/2006  
Visual Description of Light Brown  
Material:

Sample Source: East Side of South Pul MWL-SG-013

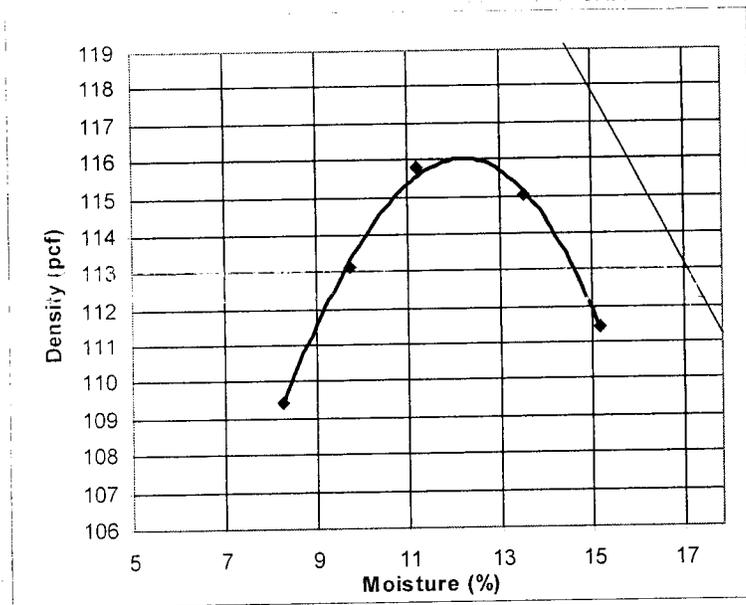
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Specifications	
		Min	Max
3/8in.	100%		
#4	99%		
#8	97%		
#10	97%		
#16	95%		
#30	93%		
#40	91%		
#50	90%		
#100	77%		
#200	36%		



Moisture Density Relationship: (ASTM D698) Method: A  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.651 Assumed  
Maximum Density: 116.0  
Optimum Moisture: 12.3

Plasticity Index (ASTM D4318)

Liquid Limit: NV  
Plastic Limit: NV  
Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By:   
HG

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email: \_\_\_\_\_ Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 28, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

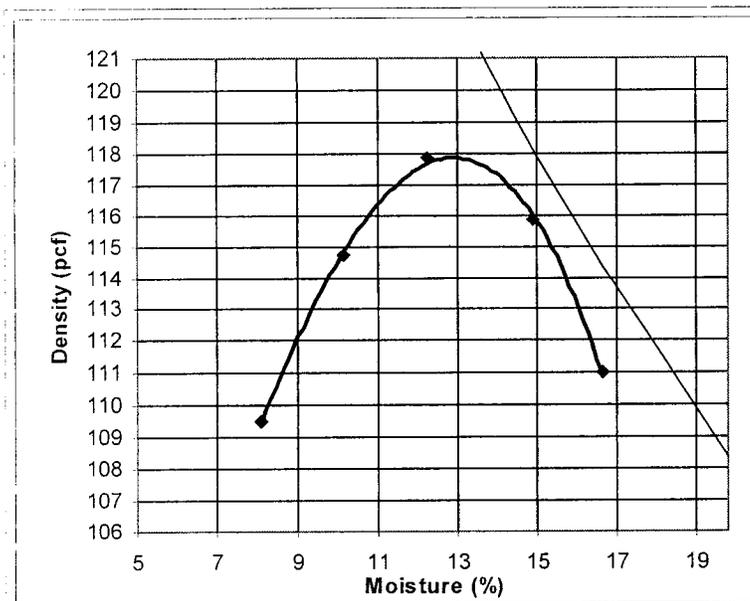
Project #: 6-519-004081  
 Work Order #: 20  
 Lab #: 6-1779  
 Sampled By: Miguel Chavez  
 Date Sampled: 11/16/2006  
 Visual Description of Material: Light Red & Rocky  
 Sample Source: MWL-SG-014

Project Manager: Robert Romero

**SOILS / AGGREGATES**

Sieve Analysis (ASTM C117/C136)

Sieve Size	Passing	Specifications	
		Min	Max
3/8in.	100%		
#4	98%		
#8	96%		
#10	95%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	73%		
#200	30%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.9  
 Optimum Moisture: 13.0  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 23  
 Plastic Limit: 18  
 Plasticity Index: 5

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 22, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 21  
 Lab #: 6-1780  
 Sampled By: Miguel Chavez  
 Date Sampled: 11/16/2006  
 Visual Description of Light Red & Rocky  
 Material: *C-36-05*  
 Sample Source: South Side of Stock Pile / MWL-015

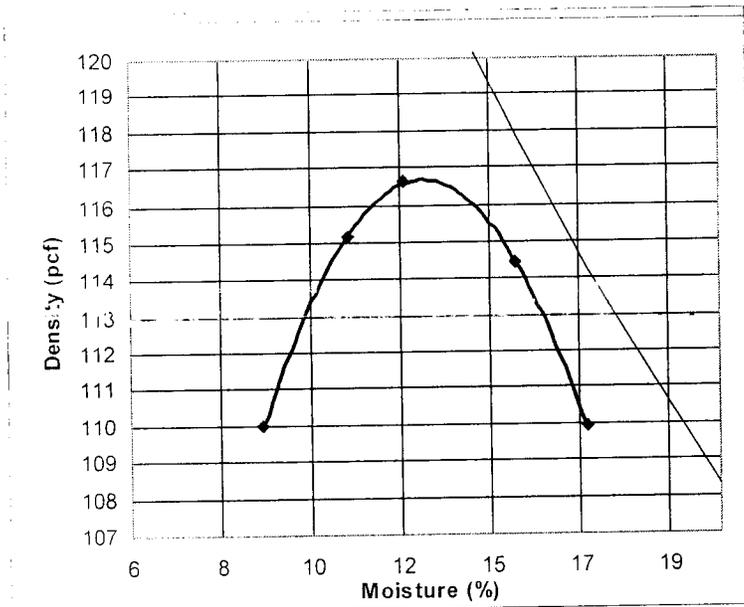
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
3/8in.	100%		
#4	98%		
#8	96%		
#10	95%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	65%		
#200	23%		



Moisture Density Relationship: (ASTM D698) Method: B  
 Preparation Method: Moist Rammer Type: Manual  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 116.7  
 Optimum Moisture: 12.9

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 17  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC

Reviewed By: *[Signature]*  
 HG

Distribution: Client: ✓ File: ✓ Supplier: ✓ Other: Addressee (2)  
 Email: Cory Woods / MKM Engineering (1)





Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 28, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

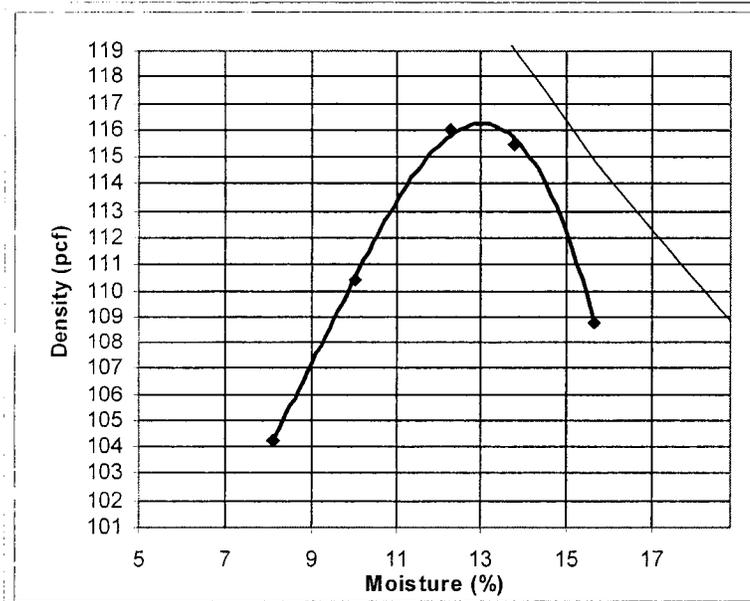
Project #: 6-519-004081  
 Work Order #: 23  
 Lab #: 6-1810

Sampled By: Miguel Chavez  
 Date Sampled: 11/20/2006  
 Visual Description of Light red Sandy  
 Material:  
 Sample Source: MW-SG-017

Project Manager: Robert Romero SOILS / AGGREGATES

**Sieve Analysis (ASTM C117/C136)**

Sieve Size	Passing	Specifications	
		Min	Max
3/4in.	100%		
3/8in.	99%		
#4	97%		
#8	96%		
#10	95%		
#16	93%		
#30	91%		
#40	89%		
#50	87%		
#100	73%		
#200	31%		



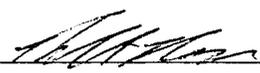
**Moisture Density Relationship: (ASTM D698) Method: A**  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.6 Assumed  
 Maximum Density: 116.2  
 Optimum Moisture: 13.1  
 Remarks: Sample source revised on 1/30/07

**Plasticity Index (ASTM D4318)**

Liquid Limit: 24  
 Plastic Limit: 19  
 Plasticity Index: 5

Preparation Method: Dry Liquid Limit Method: A

**Soil Classification (ASTM D2487) SC-SM**

Reviewed By:   
 HG

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 29, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081

Work Order #: 24

Lab #: 6-1811

Sampled By: Miguel Chavez

Date Sampled: 11/20/2006

Visual Description of Light Red Sandy

Material:

Sample Source: MWL-SG-018

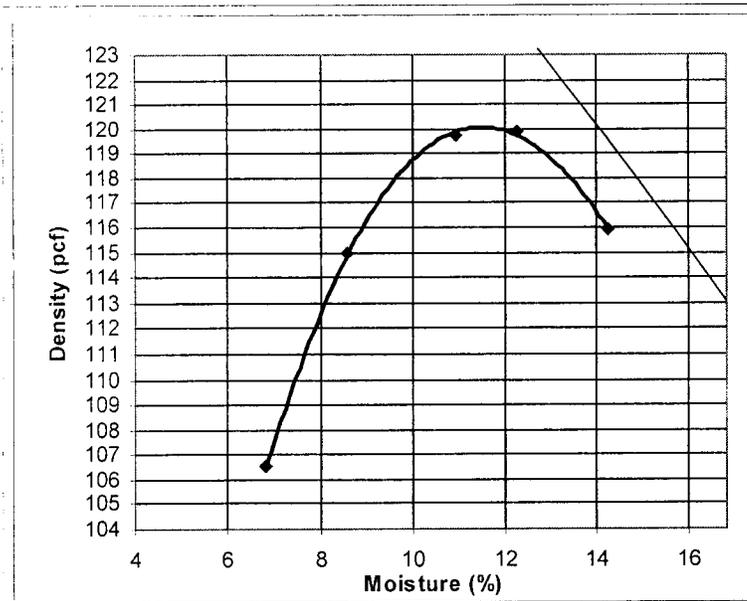
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	100%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	90%		
#50	88%		
#100	74%		
#200	32%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 120.1  
 Optimum Moisture: 11.6

Remarks: Revised 12/8/06 to show correct proctor method used.  
 \*\*Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 26  
 Plastic Limit: 19  
 Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 vs

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 07, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 25  
 Lab #: 6-1833

Sampled By: Miguel Chavez  
 Date Sampled: 11/27/2006  
 Visual Description of Light Red & Rocky  
 Material:  
 Sample Source: MWL SG-019 North Side of Pile

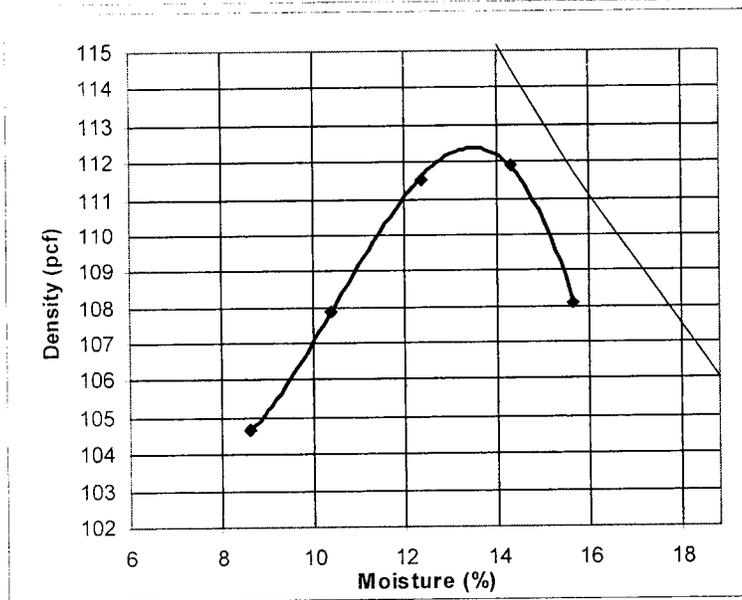
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
3/4in.	100%		
1/2in.	100%		
3/8in.	100%		
#4	99%		
#8	98%		
#10	98%		
#16	97%		
#30	94%		
#40	93%		
#50	91%		
#100	78%		
#200	37%		



Moisture Density Relationship: (ASTM D698) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.501 Assumed  
 Maximum Density: 112.4  
 Optimum Moisture: 13.6

Plasticity Index (ASTM D4318)

Liquid Limit: 27  
 Plastic Limit: 19  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC

Reviewed By: [Signature]  
 Jr

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 05, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 26  
 Lab #: 6-1834

Sampled By: Miguel Chavez  
 Date Sampled: 11/27/2006  
 Visual Description of Light Red  
 Material:  
 Sample Source: MWL-SG-020

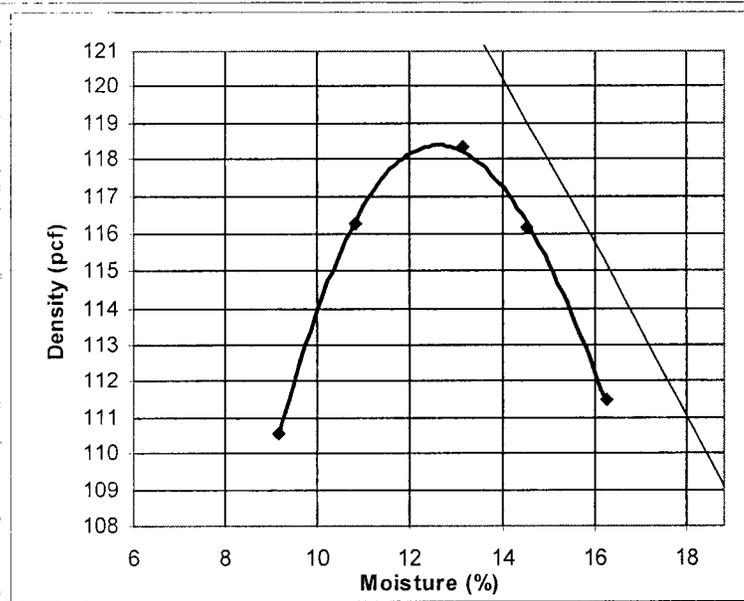
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Specifications	
		Min	Max
3/8in.	100%		
#4	99%		
#8	97%		
#10	96%		
#16	95%		
#30	93%		
#40	91%		
#50	90%		
#100	77%		
#200	33%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 118.4  
 Optimum Moisture: 12.7  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 24  
 Plastic Limit: 21  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: [Signature]  
 Jr

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 05, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 27  
 Lab #: 6-1835

Sampled By: Miguel Chavez  
 Date Sampled: 11/27/2006  
 Visual Description of Light Red  
 Material:  
 Sample Source: MWL-SG-021

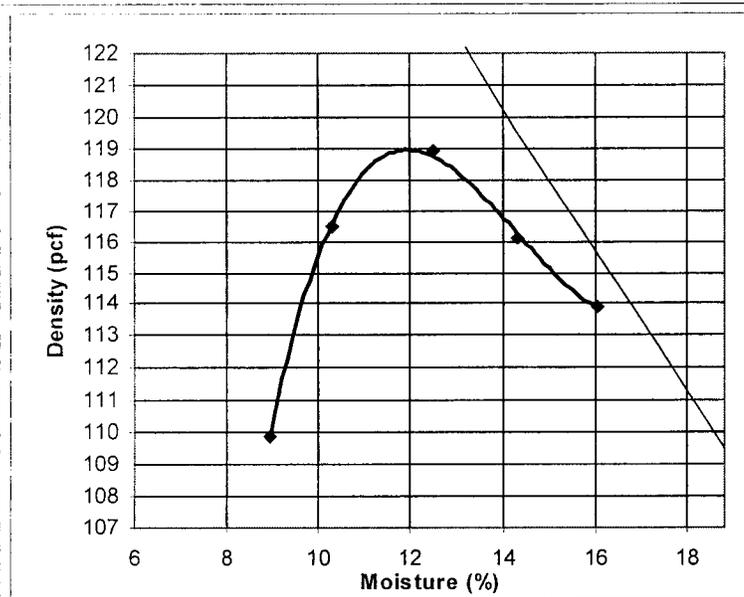
Project Manager: Robert Romero

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117/C136)**

**Specifications**

Sieve Size	Passing	Specifications	
		Min	Max
3/8in.	100%		
#4	99%		
#8	97%		
#10	96%		
#16	94%		
#30	92%		
#40	90%		
#50	88%		
#100	73%		
#200	31%		



**Moisture Density Relationship: (ASTM D698) Method: A**  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 119.0  
 Optimum Moisture: 12.0  
 Remarks: Sample source revised on 1/30/07

**Plasticity Index (ASTM D4318)**

Liquid Limit: 25  
 Plastic Limit: 21  
 Plasticity Index: 4

Preparation Method: Dry Liquid Limit Method: A

**Soil Classification (ASTM D2487) SC-SM**

Reviewed By: *[Signature]*  
 Jr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 12, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081

Work Order #: 28

Lab #: 6-1895

Sampled By: Miguel Chavez

Date Sampled: 12/05/2006

Visual Description of Light Brown

Material:

Sample Source: MWL-SG-022

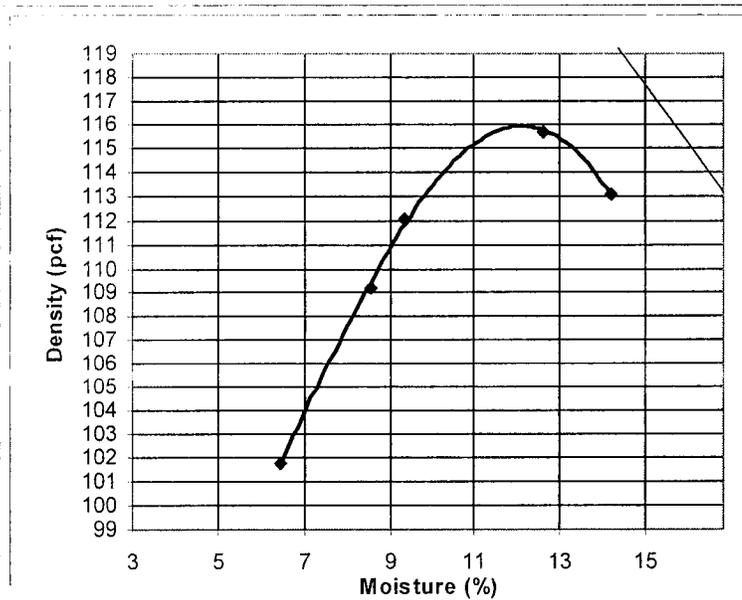
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1 1/2in.	100%		
1in.	99%		
3/4in.	98%		
3/8in.	98%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	87%		
#50	86%		
#100	77%		
#200	30%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 115.9  
 Optimum Moisture: 12.2  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 28  
 Plastic Limit: 16  
 Plasticity Index: 12

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC

Reviewed By: [Signature]  
 sna

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 14, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 29  
 Lab #: 6-1951  
 Sampled By: Michael Olson  
 Date Sampled: 12/12/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-023

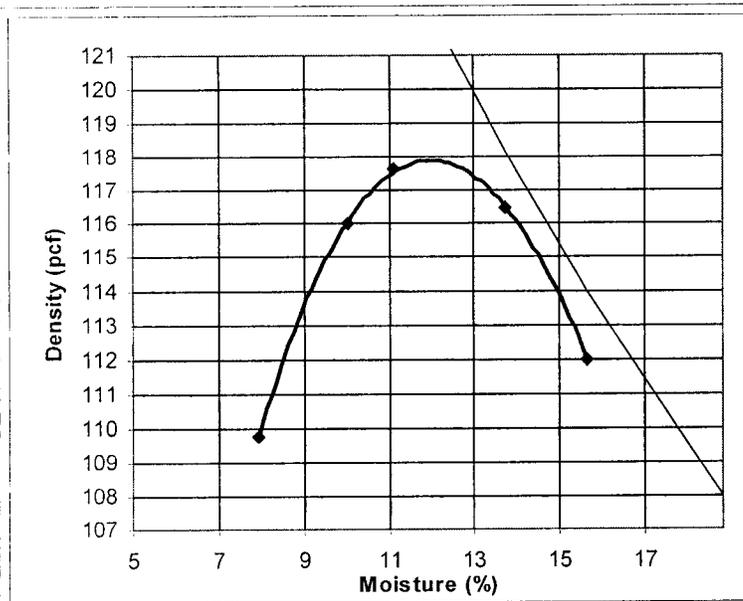
Project Manager: Robert Romero

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117/C136)**

**Specifications**

Sieve Size	Passing	Specifications	
		Min	Max
1/2in.	100%		
3/8in.	92%		
#4	90%		
#8	88%		
#10	87%		
#16	85%		
#30	83%		
#50	80%		
#100	63%		
#200	28%		



**Moisture Density Relationship: (ASTM D698) Method: A**  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.571 Assumed  
 Maximum Density: 117.9  
 Optimum Moisture: 12.1  
 Remarks: Sample source revised on 1/30/07

**Plasticity Index (ASTM D4318)**

Liquid Limit: 23  
 Plastic Limit: 20  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A

**Soil Classification (ASTM D2487) SM**

Reviewed By: [Signature]  
 HG

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 15, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 30  
 Lab #: 6-1952  
 Sampled By: Miguel Chavez  
 Date Sampled: 12/12/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-024

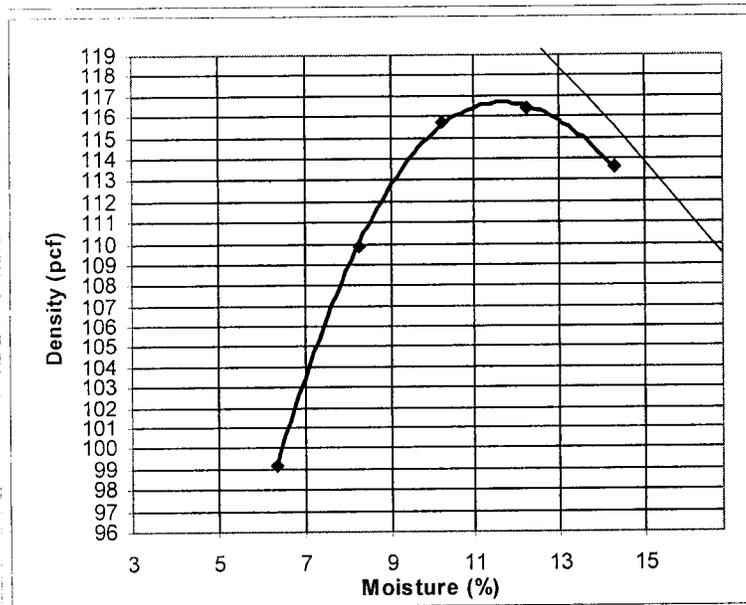
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1/2in.	100%		
3/8in.	99%		
#4	96%		
#8	92%		
#10	92%		
#30	87%		
#40	85%		
#50	84%		
#100	68%		
#200	28%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.531 Assumed  
 Maximum Density: 116.7  
 Optimum Moisture: 11.8  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 23  
 Plastic Limit: 20  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: [Signature]  
 HG

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 20, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 32  
 Lab #: 6-1967  
 Sampled By: Miguel Chavez  
 Date Sampled: 12/14/2006  
 Visual Description of Light Brown  
 Material:  
 Sample Source: MWL-SG-025

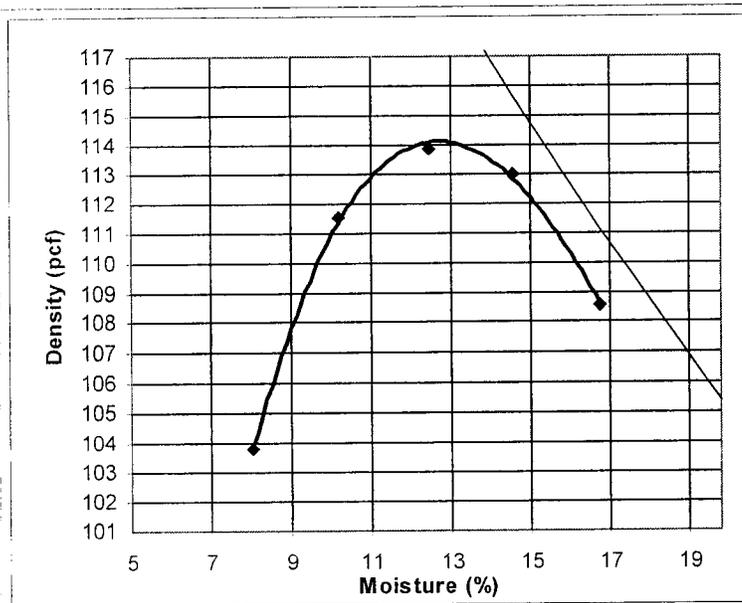
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
3/8in.	100%		
#4	97%		
#8	95%		
#10	94%		
#16	92%		
#30	89%		
#40	87%		
#50	85%		
#100	67%		
#200	30%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 114.1  
 Optimum Moisture: 12.8  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 25  
 Plastic Limit: 18  
 Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 AH

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: December 20, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 31  
 Lab #: 6-1966  
 Sampled By: Miguel Chavez  
 Date Sampled: 12/14/2006  
 Visual Description of Material: Light Brown Silty  
 Sample Source: MWL-SG-026

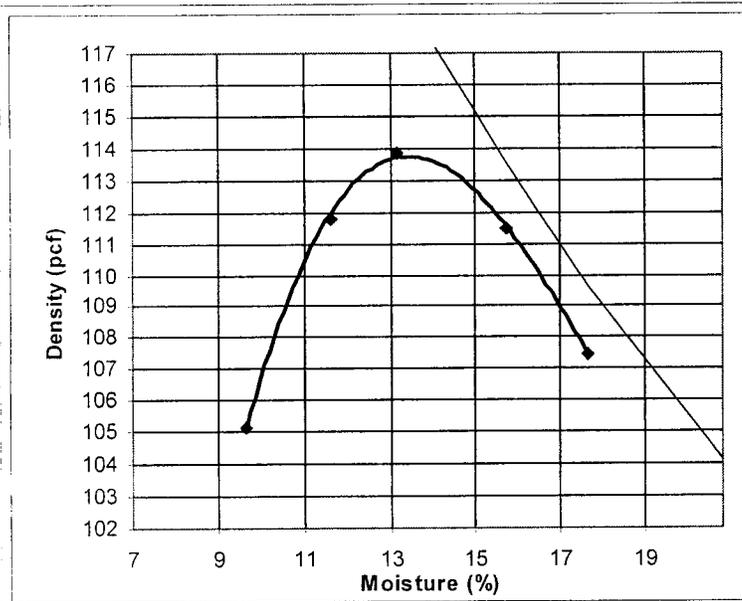
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
3/8in.	100%		
#4	98%		
#8	96%		
#10	96%		
#16	94%		
#30	91%		
#40	89%		
#50	87%		
#100	71%		
#200	35%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.561 Assumed  
 Maximum Density: 113.8  
 Optimum Moisture: 13.5  
 Remarks: Sample source revised on 1/30/07

Plasticity Index (ASTM D4318)

Liquid Limit: 27  
 Plastic Limit: 21  
 Plasticity Index: 6

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: [Signature]  
 AH

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: October 10, 2006

Attn : Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 4  
 Lab #: 6-1444-02

Sampled By: Client  
 Date Sampled: 10/06/2006  
 Visual Description of  
 Material:

Sample Source: MWL-ES-001

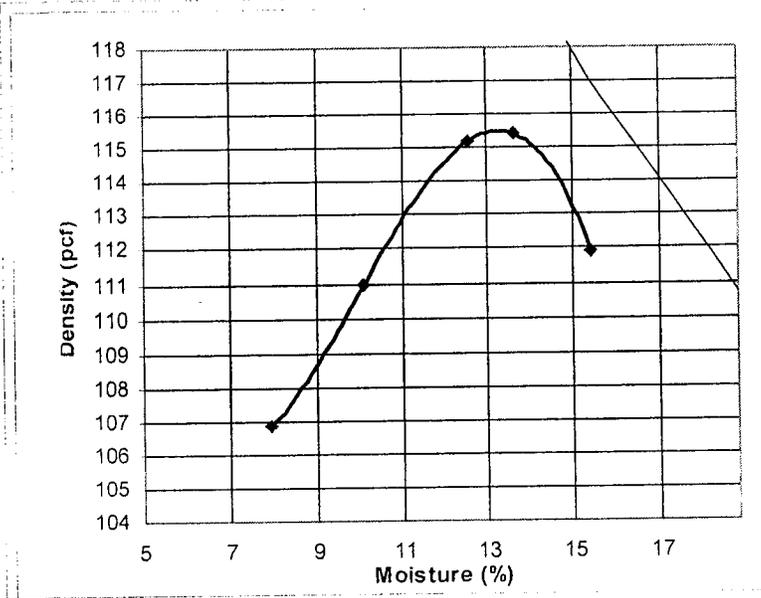
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

<u>Sieve Size</u>	<u>Passing</u>	<u>Min</u>	<u>Max</u>
-------------------	----------------	------------	------------



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 115.5  
 Optimum Moisture: 13.4

Reviewed By: [Signature]  
 HG

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email: \_\_\_\_\_ Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com

Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: November 02, 2006

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Project #: 6-519-004081  
Work Order #: 6  
Lab #: 6-1588  
Sampled By: Wesley Newman  
Date Sampled: 10/27/2006  
Visual Description of Material: Light Brown Clay  
Sample Source: MWL-ES-003 002

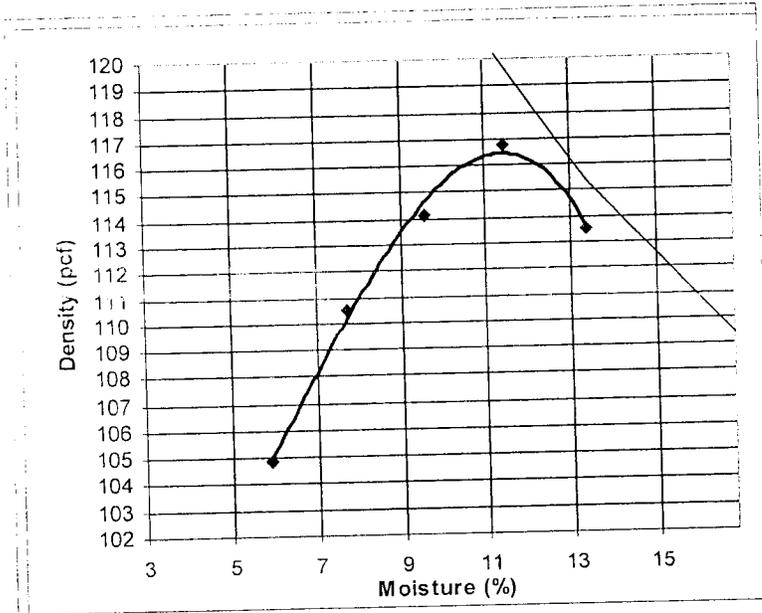
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1in.	100%		
3/4in.	98%		
1/2in.	97%		
3/8in.	96%		
#4	94%		
#8	91%		
#10	90%		
#16	88%		
#30	85%		
#40	83%		
#50	81%		
#100	35%		
#200	21%		



Moisture Density Relationship: (ASTM D1557) Method:

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.471 Assumed

Maximum Density: 116.5

Optimum Moisture: 11.5

Plasticity Index (ASTM D4318)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: *[Signature]*

SNA

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 02, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 5  
 Lab #: 6-1589  
 Sampled By: Wesley Newman  
 Date Sampled: 10/27/2006  
 Visual Description of Light Brown Clay  
 Material:  
 Sample Source: MWL-ES-003

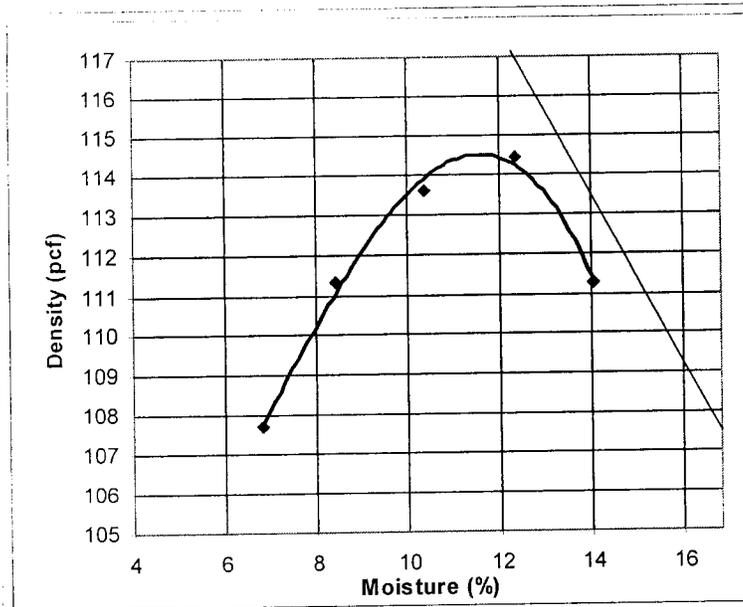
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1 1/2in.	100%		
1in.	99%		
3/4in.	98%		
1/2in.	97%		
3/8in.	96%		
#4	94%		
#8	91%		
#10	91%		
#16	88%		
#30	85%		
#40	84%		
#50	81%		
#100	25%		
#200	17%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.451 Assumed  
 Maximum Density: 114.5  
 Optimum Moisture: 11.7  
 Remarks: Revised 12/8/06 to show correct proctor method used.

Plasticity Index (ASTM D4318)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: [Signature]  
 SNA

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email: Cory Woods / MKM Engineering (1)



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: November 02, 2006

Attn: Don Lopez  
 Project Name: Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

Project #: 6-519-004081  
 Work Order #: 7  
 Lab #: 6-1590  
 Sampled By: Wesley Newman  
 Date Sampled: 10/27/2006  
 Visual Description of Light Brown Clay  
 Material:  
 Sample Source: MWL-ES-004

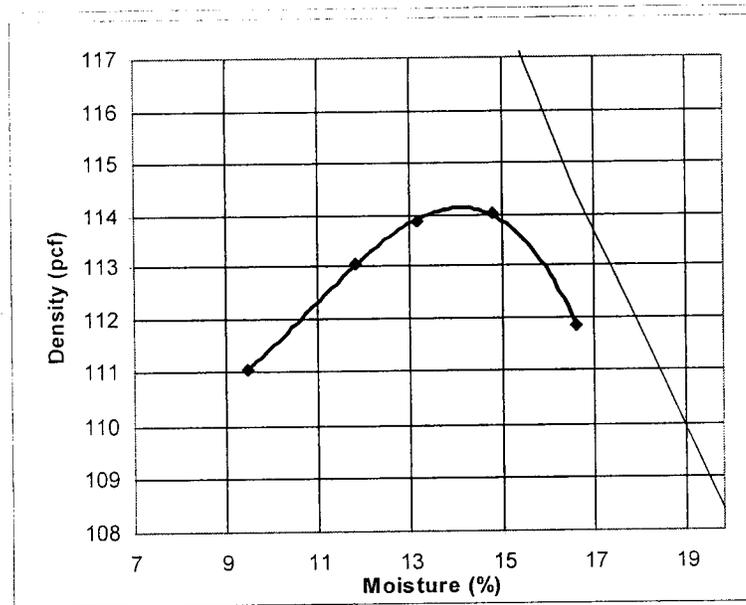
Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

Specifications

Sieve Size	Passing	Min	Max
1in.	100%		
3/4in.	98%		
1/2in.	97%		
3/8in.	96%		
#4	94%		
#8	91%		
#10	90%		
#16	88%		
#30	85%		
#40	83%		
#50	81%		
#100	31%		
#200	19%		



Moisture Density Relationship: (ASTM D698) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 114.1  
 Optimum Moisture: 14.2  
 Remarks: Revised 12/8/06 to show correct proctor method used.

Plasticity Index (ASTM D4318)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM

Reviewed By: [Signature]  
 SNA

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email: Cory Woods / MKM Engineering (1)

## **2006 Density and Moisture Tests**





Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: October 31, 2006  
Amended Date: December 22, 2009  
Project #: 6-519-004081  
Report #: 13034

Attn: Don Lopez  
Project Name: Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

Tested By: Wesley Newman  
Date Tested: 10/27/2006  
Visual Description of Land Fill Field Backfill  
Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1444-02	115.5	13.4	ASTM D698-07 / A	

**Nuclear Density Gauge**

Make: Troxler  
Model #: 3440  
Serial #: 30282

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	NE Classified Area, 30' S From NE Corner (MWL-ES1-001)	FSG	B		13.8	2	2	118.5	104.1	115.5	90	90	
02-1	Center of Classified Area (MWL-ES1-002)	FSG	B		7.5	2	2	120.2	111.8	115.5	97	90	*
03-1	South End of Classified Area (MWL-ES1-003)	FSG	B		7.8	2	2	118.7	110.2	115.5	95	90	*
04-1	East Perimeter of Classified Area (MWL-ES1-004)	FSG	B		10.2	2	2	116.8	106.0	115.5	92	90	*
05-1	NE Cornrer of Unclassified Area (MWL-ES1-005)	FSG	B		7.1	2	2	114.4	106.8	115.5	92	90	*
06-1	NW Corner of Unclassified Area (MWL-ES1-006)	FSG	B		7.4	2	2	115.8	107.8	115.5	93	90	*
07-1	100' S & 30' E of NW Corner of Unclassified Area (MWL-ES1-007)	FSG	B		9.5	2	2	121.5	111.0	115.5	96	90	*
08-1	100' S & 40' W From NE Corner of Unclassified Area (MWL-ES1-008)	FSG	B		10.6	2	2	119.7	108.2	115.5	94	90	*
09-1	200' N & 30' W From SE Corner of Unclassified Area (MWL-ES1-009)	FSG	B		8.0	2	2	117.4	108.7	115.5	94	90	*
10-1	200' N & 40' E From SW Corner of Unclassified Area (MWL-ES1-010)	FSG	B		11.9	2	2	115.8	103.5	115.5	90	90	
11-1	200' N & 5' E From SW Corner W Perimeter of Unclassified Area (MWL-ES1-011)	FSG	B		8.4	2	2	116.8	107.7	115.5	93	90	*

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com- paction	% Com- paction Required	
					Actual	(-)	(+)					Min	Max
12-1	130' N & 25' E From SW Corner of Unclassified Area (MWL-ES1-012)	FSG	B		8.1	2	2	126.8	117.3	115.5	100+	90	*
13-1	130' N & 50' W From SE Corner of Unclassified Area (MWL-ES1-013)	FSG	B		8.8	2	2	124.3	114.2	115.5	99	90	*
14-1	75' N & 40' W From SE Corner of Unclassified Area (MWL-ES1-014)	FSG	B		8.8	2	2	119.8	110.2	115.5	95	90	*
15-1	75' N & 40' E From SW Corner of Unclassified Area (MWL-ES1-015)	FSG	B		11.9	2	2	122.8	109.8	115.5	95	90	

Reviewed By:   
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**

**Test Mode = D for Direct Transmission and B for Backscatter Modes**

**\* Material did not fall within specified tolerances.**

2 of 2



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 03, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13062

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Robert Carr

**Date Tested:** 10/31/2006

**Visual Description of Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1444-01	113.2	10.9	ASTM D698-07 / A	

**Nuclear Density Gauge**

**Make:** Troxler

**Model #:** 3430

**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	Trench C, 100' S of N Edge (MWL-SG1-001)	1ST LIFT	B	0	9.1	2	2	123.5	113.2	113.2	100	90	
02-1	Trench B, 110' S of N Edge(MWL-SG1-002)	1ST LIFT	B	0	9.8	2	2	123.9	112.8	113.2	100	90	
03-1	Trench C, N End (MWL-SG2-001)	2ND LIFT	B	0	11.1	2	2	122.9	110.6	113.2	98	90	
04-1	Trench C, S End (MWL-SG2-002)	2ND LIFT	B	0	10.6	2	2	125.0	113.0	113.2	100	90	
05-1	Trench B, N End (MWL-SG4-001)	2ND LIFT	B	0	10.7	2	2	117.6	106.2	113.2	94	90	
06-1	Trench B, S End (MWL-SG4-002)	2ND LIFT	B	0	10.5	2	2	118.0	106.8	113.2	94	90	
07-1	Trench B, S End (MWL-SG3-001)	3RD LIFT	B	0	10.0	2	2	117.0	106.4	113.2	94	90	
08-1	Trench B, N End (MWL-SG3-002)	3RD LIFT	B	0	10.6	2	2	116.5	105.3	113.2	93	90	
09-1	Trench A, N End (MWL-SG3-003)	1ST LIFT	B	0	10.0	2	2	124.3	113.0	113.2	100	90	
10-1	Trench C, N End (MWL-SG3-004)	3RD LIFT	B	0	10.7	2	2	121.3	109.6	113.2	97	90	
11-1	Trench C, S End (MWL-SG3-005)	3RD LIFT	B	0	9.0	2	2	123.4	113.2	113.2	100	90	

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**

**Test Mode = D for Direct Transmission and B for Backscatter Modes**

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com- paction Required	% Com- paction Required	
					Actual	(-)	(+)					Min	Max

Reviewed By: *[Signature]*  
 SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 03, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13063

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Robert Carr

**Date Tested:** 11/01/2006

**Visual Description of Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1444-01	113.2	10.9	ASTM D698-07 / A	

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	% Compaction Required	
					Actual	(-)	(+)					Min	Max
01-1	Trench B, N End (MWL-SG5-001)	5TH LIFT	B	0	10.2	2	2	119.9	108.8	113.2	96	90	
02-1	Trench C, S End (MWL-SG4-003)	4TH LIFT	B	0	11.1	2	2	114.4	103.0	113.2	91	90	
03-1	Trench C, N End (MWL-SG4-004)	4TH LIFT	B	0	9.6	2	2	122.3	111.5	113.2	98	90	

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 03, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13064

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Robert Carr  
**Date Tested:** 11/02/2006  
**Visual Description of Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1444-01	113.2	10.9	ASTM D698-07 / A	

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Trench C, N End (MWL-SG4-005)	4TH LIFT	B	0	8.9	2	2	111.4	102.3	113.2	90	90
02-1	Trench C, S End (MWL-SG6-001)	6TH LIFT	B	0	9.2	2	2	123.6	113.2	113.2	100	90
03-1	Trench B, N End (MWL-SG6-002)	6TH LIFT	B	0	11.0	2	2	122.7	110.5	113.2	98	90
04-1	Trench B, S End (MWL-SG6-003)	6TH LIFT	B	0	12.1	2	2	120.5	107.5	113.2	95	90

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** November 10, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13107

**Tested By:** Robert Carr

**Date Tested:** 11/06/2006

**Visual Description of Backfill**

**Material:**

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1624	113.3	13.2	ASTM D698-07 / a	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler

**Model #:** 3430

**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	4008 15' Northeast (MWL-SG7-001)	7TH LIFT	B	0	11.2	2	2	122.1	109.8	113.3	97	90

Reviewed By: *[Signature]*  
 Jr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**





**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** November 10, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13109

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Tested By:** Robert Carr

**Date Tested:** 11/08/2006

**Visual Description of Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1625	117.4	12.9	ASTM D698-07 / a	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	4005 25' SW (MWL-SG9-004)	9TH LIFT	B	0	12.7	2	2	1217.0	108.7	117.4	93	90

Reviewed By: *[Signature]*  
 Jr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** November 10, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13110

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Tested By:** Robert Carr

**Date Tested:** 11/09/2006

**Visual Description of Backfill  
 Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1626	118.3	12.7	ASTM D698-07 / a	Light Brown
6-1645	118.7	12.4	ASTM D698-07 / a	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com- paction	% Com- paction Required	
					Actual	(-)	(+)					Min	Max
01-1	4004 20' SW (MWL-SG9-005)	9TH LIFT	B	0	11.7	2	2	126.4	113.2	118.3	96	90	
02-1	4022 4' S (MWL-SG10-001)	10TH LIFT	B	0	13.8	2	2	126.5	111.2	118.3	94	90	
03-1	4019 6' NE (MWL-SG10-002)	10TH LIFT	B	0	11.3	2	2	123.3	110.8	118.7	93	90	
04-1	4008 10' N (MWL-SG10-003)	10TH LIFT	B	0	11.7	2	2	120.9	108.3	118.7	91	90	

Reviewed By: *[Signature]*  
 Jr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 21, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13233

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez

**Date Tested:** 11/14/2006

**Visual Description of Land Fill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1646	119.6	11.0	ASTM D698-07 / a	Light Brown
6-1647	115.4	12.9	ASTM D698-07 / a	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	
					Actual	(-)	(+)				Com- paction	Required Min Max
01-1	15' W of 4018 10th Lift (MWL-SG10-004)	FSG -1.0'	B	0	9.6	2	2	123.7	112.9	119.6	94	90
02-1	5' NE of 4012 10th Lift (MWL-SG10-005)	FSG -1.0'	B	0	9.6	2	2	127.6	117.5	119.6	98	90
03-1	15' E of 4011 10th Lift (MWL-SG10-006)	FSG -1.0'	B	0	12.5	2	2	127.0	112.9	119.6	94	90
04-1	5' E of 4031 10th Lift (MWL-SG10-007)	FSG -1.0'	B	0	9.4	2	2	128.2	114.6	119.6	96	90
05-1	15' E of 4038 10th Lift, (MWL-SG10-008)	FSG -1.0'	B	0	10.9	2	2	130.9	118.1	119.6	99	90
06-1	8' NW of 4055 (MWL-SG10-009)	FSG -1.0'	B	0	13.9	2	2	121.3	106.5	115.4	92	90
07-1	20' NW of 4038 (MWL-SG10-10)	FSG -1.0'	B	0	12.4	2	2	128.7	114.4	115.4	99	90

Reviewed By:   
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 21, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13234

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez

**Date Tested:** 11/15/2006

**Visual Description of Land Fill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1647	115.4	12.9	ASTM D698-07 / a	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler

**Model #:** 3430

**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	34' NW of 4036 (MWL-SG11-01)	FSG -0.5'	B	0	11.8	2	2	128.2	114.6	115.4	99	90
02-1	25' W of 4049 (MWL-SG11-02)	FSG -0.5'	B	0	14.2	2	2	129.0	112.9	115.4	98	90

Reviewed By: [Signature]  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 21, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13235

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez

**Date Tested:** 11/16/2006

**Visual Description of Land Fill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1690	116.5	13.0	ASTM D698-07 / a	Light Brown
6-1691	113.5	13.0	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				% Com-paction	Min
01-1	15' W of 4038 (MWL-SG11-003)	FSG -0.5'	B	0	14.1	2	2	124.2	108.9	116.5	93	90
02-1	20' W of 4050 (MWL-SG11-004)	FSG -0.5'	B	0	11.5	2	2	127.8	114.6	116.5	98	90
03-1	10' W of 4051 (MWL-SG-005)	FSG -0.5'	B	0	12.7	2	2	128.9	114.4	116.5	98	90
04-1	15' S of 4039 (MWL-SG11-006)	FSG -0.5'	B	0	11.8	2	2	119.2	106.6	113.5	94	90
05-1	15' W of 4055 (MWL-SG11-007)	FSG -0.5'	B	0	14.1	2	2	128.9	113.0	113.5	100	90
06-1	5' E of 4042 (MWL-SG11-008)	FSG -0.5'	B	0	12.6	2	2	127.7	113.5	113.5	100	90

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** November 28, 2006

**Amended Date:** December 22, 2009

**Project #:** 6-519-004081

**Report #:** 13314

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Tested By:** Miguel Chavez

**Date Tested:** 11/20/2006

**Visual Description of Landfill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1692	113.6	12.6	ASTM D698-07 / a	light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	15' Northwest of 4026 (MWL-SG11-09)	FSG -0.5'	B		14.1	2	2	130.1	113.5	113.6	100	90
02-1	15' Northwest of 4013 (MWL-SG11-10)	FSG -0.5'	B		12.0	2	2	122.5	109.3	113.6	96	90

Reviewed By: *[Signature]*  
 sna

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** November 28, 2006

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Project #:** 6-519-004081  
**Report #:** 13315  
**Tested By:** Miguel Chavez  
**Date Tested:** 11/21/2006  
**Visual Description of Landfill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1692	113.6	12.6	ASTM D698-07 / a	light Brown
6-1740	116.0	12.3	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				% Com-paction	Min
01-1	10' East of 4025 (MWL-SG11-011)	FSG -0.5'	B		14.3	2	2	125.7	110.0	113.6	97	90
02-1	15' Southwest of 4010 (MWL-SG11-012)	FSG -0.5'	B		11.8	2	2	127.7	114.2	113.6	100+	90
03-1	17' West of 4011 (MWL-SG11-013)	FSG -0.5'	B		13.7	2	2	120.0	105.5	113.6	93	90
04-1	12' West of 4023 (MWL-SG11-014)	FSG -0.5'	B		12.3	2	2	119.4	106.4	113.6	94	90
05-1	5' Southeast of 4010 (MWL-SG11-015)	FSG -0.5'	B		10.7	2	2	125.5	113.4	116.0	98	90
06-1	13' Southeast of 4009 (MWL-SG11-016)	FSG -0.5'	B		11.6	2	2	127.5	114.2	116.0	98	90
07-1	7' Northeast of 4032 (MWL-SG11-017)	FSG -0.5'	B		13.9	2	2	128.3	112.7	116.0	97	90

Reviewed By: *[Signature]*  
sna

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** November 28, 2006  
**Amended Date:** December 22, 2009

**Project #:** 6-519-004081  
**Report #:** 13316

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 11/22/2006  
**Visual Description of Landfill Cover Backfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1740	116.0	12.3	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	6' West of 4021 (MWL-SG11-018)	FSG -0.5'	B		13.2	2	2	131.6	116.3	116.0	100	90

Reviewed By: *[Signature]*  
 sna

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

**Report Date:** December 04, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13361

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
 KAFB  
 Albuquerque, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 11/30/2006  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1779	117.9	13.0	ASTM D698-07 / A	Light Red & Rocky

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 28750

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	12' W of 4058 (MWL-SG12-001)	FSG	D	6	12.2	2	2	123.3	109.9	117.9	93	90	
02-1	20' NW of 4049 (MWL-SG12-002)	FSG	D	6	11.7	2	2	127.6	114.2	117.9	97	90	
03-1	20' NW of 4045 (MWL-SG12-003)	FSG	D	6	11.8	2	2	131.6	117.7	117.9	100	90	
04-1	25' SW of 4050 (MWL-SG12-004)	FSG	D	6	12.2	2	2	131.3	117.0	117.9	99	90	

Reviewed By: *[Signature]*  
 SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** December 07, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13425

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 12/05/2006  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1834	118.4	12.7	ASTM D698-07 / A	Light Red

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 28750

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	% Compaction Required	
					Actual	(-)	(+)					Min	Max
01-1	15' W of 4039 (MWL-SG12-005)	FSG	D	6	12.3	2	2	133.5	118.9	118.4	100	90	
02-1	15' E of 4052 (MWL-SG12-006)	FSG	D	6	12.4	2	2	125.8	112.0	118.4	95	90	

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** December 08, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13427

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Robert Carr  
**Date Tested:** 12/07/2006  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1833	112.4	13.6	ASTM D698-07 / B	Light Red & Rocky
6-1835	119.0	12.0	ASTM D698-07 / A	Light Red

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	4053, 25' SE (MWL-SG12-007)	FSG	B	0	13.1			127.1	112.4	112.4	100	90
02-1	4042, 25' NE (MWL-SG12-008)	FSG	B	0	14.1			128.2	112.4	112.4	100	90
03-1	4027, 25' SE (MWL-SG12-009)	FSG	B	0	13.6			127.7	112.4	119.0	94	90
04-1	4014, 20' E (MWL-SG12-010)	FSG	B	0	11.9			123.0	110.4	119.0	93	90

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** December 14, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13513

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 12/13/2006  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1895	115.9	12.2	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 28750

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com- paction	Min
01-1	Landfill 10' W of 4016 (MWL-SG12-011)	FSG	D	0	10.8	2	2	127.2	114.8	115.9	99	90
02-1	Landfill 25' SW of 4025 (MWL-SG12-012)	FSG	D		12.1	2	2	126.8	113.1	115.9	98	90

Reviewed By: *[Signature]*  
sc

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** December 18, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13522

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 12/15/2006  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1895	115.9	12.2	ASTM D698-07 / A	Light Brown
6-1951	117.9	12.1	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 28750

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	20' SW of 4010 (MWL-SG12-013)	FSG	B	0	12.3	2	2	126.2	112.3	115.9	97	90
02-1	15' SW of 4024 (MWL-SG12-14)	FSG	B	0	13.7	2	2	115.0	113.2	117.9	96	90

Reviewed By:   
sc

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Report Date:** December 19, 2006  
**Amended Date:** December 22, 2009  
**Project #:** 6-519-004081  
**Report #:** 13523

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Tested By:** Robert Carr  
**Date Tested:** 12/18/2006  
**Visual Description of Landfill Material:**

**Project Manager:** Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1951	117.9	12.1	ASTM D698-07 / A	Light Brown

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	4024, 15' Southeast (MWL-SG12-015)	FSG	D	6	14.0	2	2	123.9	108.7	117.9	92	90
02-1	4010, 20' Southeast (MWL-SG12-016)	FSG	D	6	13.1	2	2	125.6	111.1	117.9	94	90

Reviewed By: *[Signature]*  
SC

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:  Cory Woods / MKM Engineering (1)

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**

## **2009 Standard Proctor, Gradation, and Classification Tests**





Client: Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: May 27, 2009

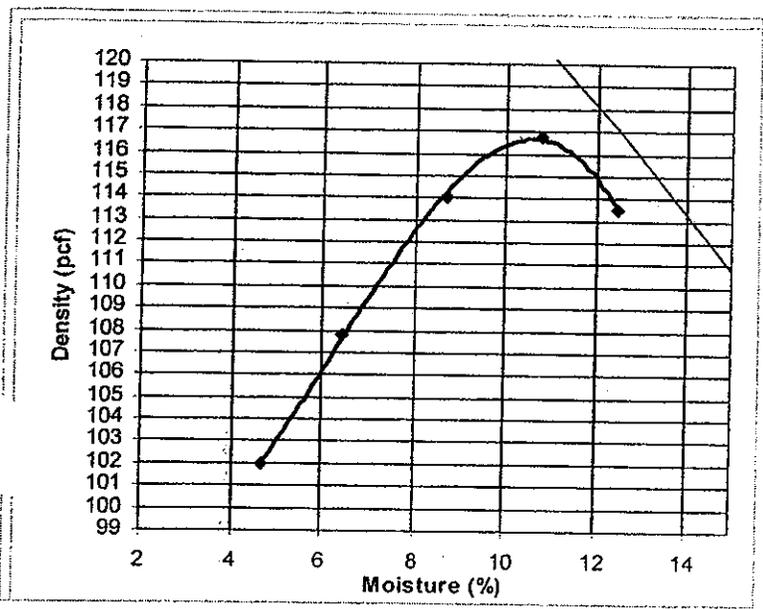
Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022a  
Work Order #: 3  
Lab #: 9-0589-01  
Sampled By: Client  
Date Sampled: 05/20/2009  
Visual Description of Silty Sand w/Rock  
Material:  
Sample Source: SNL MWL 05-2009-1

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)  
200 Wash Procedure: A  
Sieve Size Passing



Moisture Density Relationship: (ASTM D698-00) Method: B  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.451 Assumed  
Maximum Density: 116.7  
Optimum Moisture: 10.6

Reviewed By: [Signature]  
hg

Distribution: Client  File:  Supplier:  Other: Addressee (2)  
Email:

© Earth Environmental, Inc.  
Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 15, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 5  
Lab #: 9-0589a-01  
Sampled By: Client  
Date Sampled: 05/20/2009

Visual Description of Silty Sand w/Rock  
Material:

Sample Source: SNL MWL 05-2009-1

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	98%
#8	96%
#10	95%
#16	92%
#30	89%
#40	87%
#50	85%
#100	74%
#200	34%

(ASTM D2216-05)

Moisture Content (%): 5.7%

Plasticity Index (ASTM D4318-05)

Preparation Method: Dry

Liquid Limit: 27

Liquid Limit Method: A

Plastic Limit: 20

Soil Classification (ASTM D2487-06) SC-SM

Plasticity Index: 7

PI Sample Was Air Dried.

Reviewed By: [Signature]  
Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

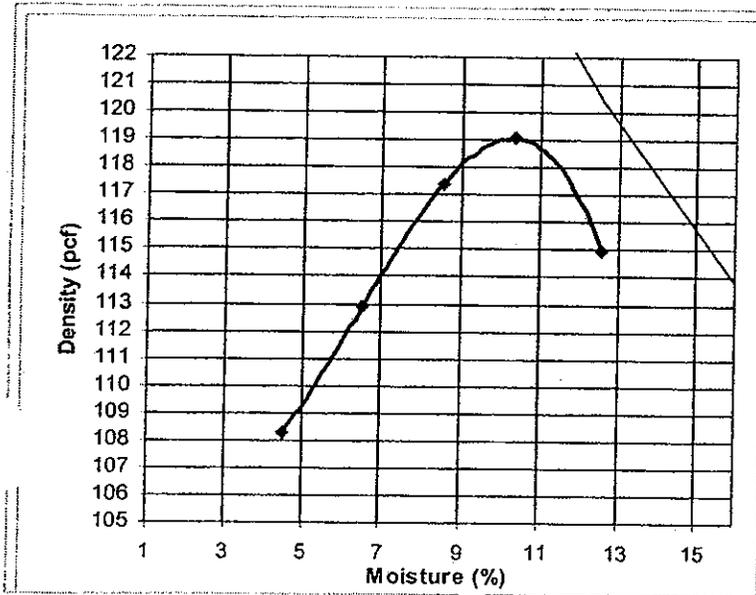
**Report Date:** May 27, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022a  
**Work Order #:** 3  
**Lab #:** 9-0589-02  
**Sampled By:** Client  
**Date Sampled:** 05/20/2009  
**Visual Description of Silty Sand w/Rock Material:**  
**Sample Source:** SNL MWL 05-2009-2

**Project Manager:** Vickie Maranville **SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**  
**200 Wash Procedure:** A  
**Sieve Size** **Passing**



**Moisture Density Relationship: (ASTM D698-00)** **Method: B**  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.551 Assumed  
**Maximum Density:** 119.1  
**Optimum Moisture:** 10.3

Reviewed By: [Signature]  
 hg

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 9 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 15, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 5  
Lab #: 9-0589a-02  
Sampled By: Client  
Date Sampled: 05/20/2009  
Visual Description of Silty Sand w/Rock  
Material:  
Sample Source: SNL MWL 05-2009-2

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<u>Sieve Size</u>	<u>Passing</u>
3/4in.	100%
1/2in.	98%
3/8in.	97%
#4	94%
#8	90%
#10	90%
#16	86%
#30	83%
#40	81%
#50	79%
#100	67%
#200	26%

(ASTM D2216-05)

Moisture Content (%): 4.2%

Plasticity Index (ASTM D4318-05)

Preperation Method: Dry

Liquid Limit: 24

Liquid Limit Method: A

Plastic Limit: 20

Soil Classification (ASTM D2487-06) SC-SM

Plasticity Index: 4

PI Sample Was Air Dried.

Reviewed By: [Signature]  
Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



**Client:** Environmental Dimintions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** May 27, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022a  
**Work Order #:** 3  
**Lab #:** 9-0589-03  
**Sampled By:** Client  
**Date Sampled:** 05/20/2009  
**Visual Description of Silty Sand w/Rock Material:**  
**Sample Source:** SNL MWL 05-2009-3

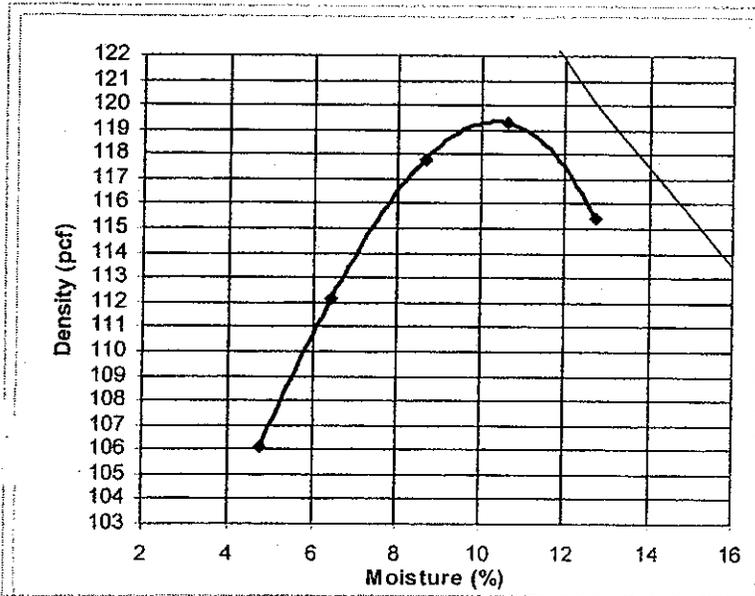
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size Passing



**Moisture Density Relationship:** (ASTM D698-00) **Method:** B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.551 Assumed  
**Maximum Density:** 119.3  
**Optimum Moisture:** 10.3

Reviewed By: [Signature]  
 hg

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 19 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 15, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 5  
Lab #: 9-0589a-03

Sampled By: Client  
Date Sampled: 05/20/2009

Visual Description of Silty Sand w/Rock  
Material:

Sample Source: SNL MWL 05-2009-3

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	98%
3/8in.	98%
#4	95%
#8	91%
#10	90%
#16	87%
#30	84%
#40	82%
#50	81%
#100	69%
#200	26%

(ASTM D2216-05)

Moisture Content (%): 4.7%

Plasticity Index (ASTM D4318-05)

Preperation Method: Dry

Liquid Limit: 24

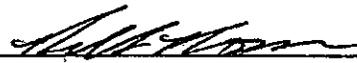
Liquid Limit Method: A

Plastic Limit: 20

Soil Classification (ASTM D2487-06) SC-SM

Plasticity Index: 4

PI Sample Was Air Dried.

Reviewed By:   
Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Attn: Chris Edgmon

Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Report Date: June 01, 2009

Project #: 9-517-00022D  
 Work Order #: 1  
 Lab #: 9-0629-01

Sampled By: Client  
 Date Sampled: 05/29/2009  
 Visual Description of Silty Sand  
 Material:  
 Sample Source: SNLMWL: 052909-4

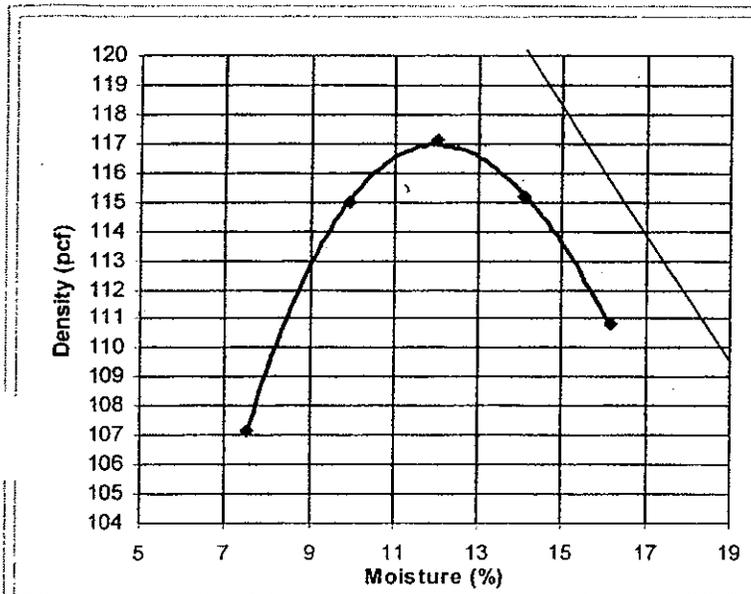
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	98%
3/8in.	98%
#4	95%
#8	92%
#10	90%
#16	87%
#30	83%
#40	81%
#50	79%
#100	67%
#200	31%



Moisture Density Relationship: (ASTM D698-00) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.0  
 Optimum Moisture: 12.0

Plasticity Index (ASTM D4318-05)

Liquid Limit: 23  
 Plastic Limit: 20  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 hg

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 02, 2009

**Attrn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 1  
**Lab #:** 9-0629-02

**Sampled By:** Client  
**Date Sampled:** 05/29/2009  
**Visual Description of Clayey Silty Sand Material:**

**Sample Source:** SNLMWL: 052909-5

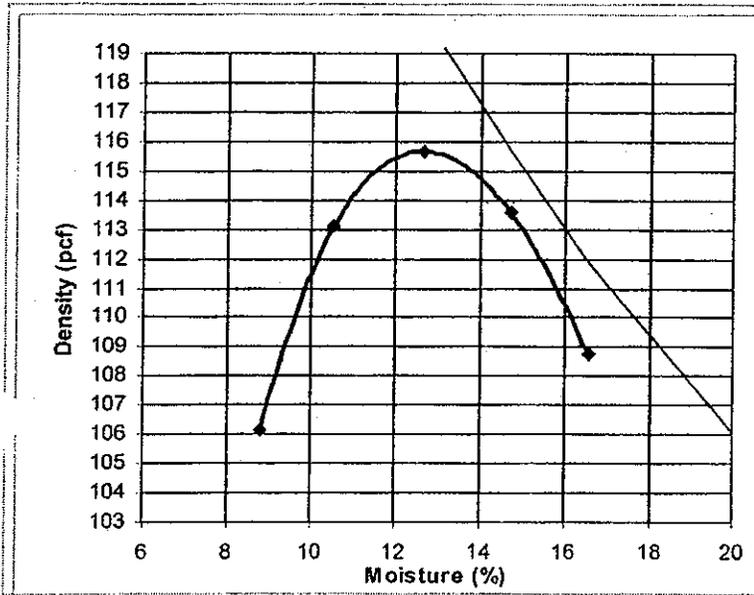
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure:** A

Sieve Size	Passing
1in.	100%
3/4in.	98%
1/2in.	98%
3/8in.	97%
#4	95%
#8	93%
#10	92%
#16	90%
#30	87%
#40	86%
#50	84%
#100	74%
#200	36%



**Moisture Density Relationship: (ASTM D698-00)** Method: B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.551 Assumed  
**Maximum Density:** 115.7  
**Optimum Moisture:** 12.6

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 26  
**Plastic Limit:** 20  
**Plasticity Index:** 6

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06)** SC-SM

Reviewed By: [Signature]  
 hg

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 02, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 1  
 Lab #: 9-0629-03  
 Sampled By: Client  
 Date Sampled: 05/29/2009  
 Visual Description of Clayey Sandy  
 Material:  
 Sample Source: SNLMWL: 052909-6

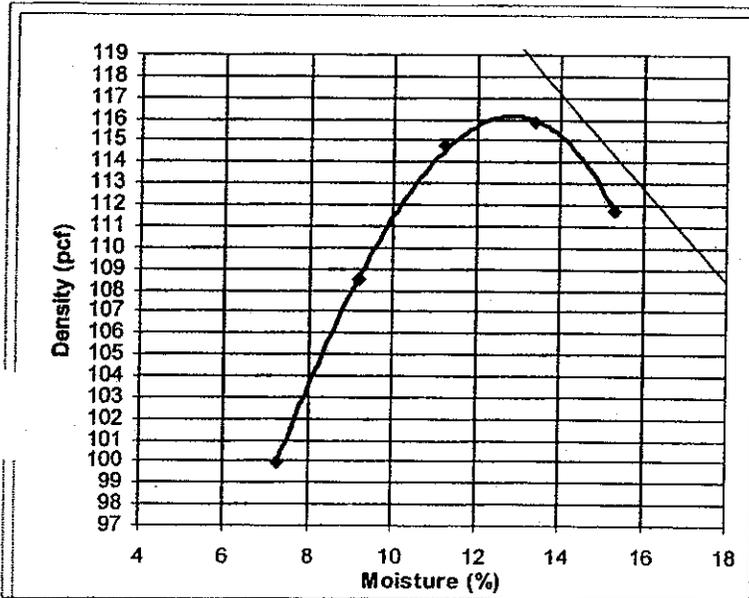
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	96%
#10	96%
#16	94%
#30	91%
#40	90%
#50	88%
#100	78%
#200	38%



Moisture Density Relationship: (ASTM D698-00) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 116.2  
 Optimum Moisture: 12.8

Plasticity Index (ASTM D4318-05)

Liquid Limit: 25  
 Plastic Limit: 17  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC

Reviewed By: [Signature]  
 hg

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:





Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 02, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 1  
 Lab #: 9-0629-05

Sampled By: Client  
 Date Sampled: 05/29/2009  
 Visual Description of Clayey Silty Sand  
 Material:

Sample Source: SNLMWL: 052909-8

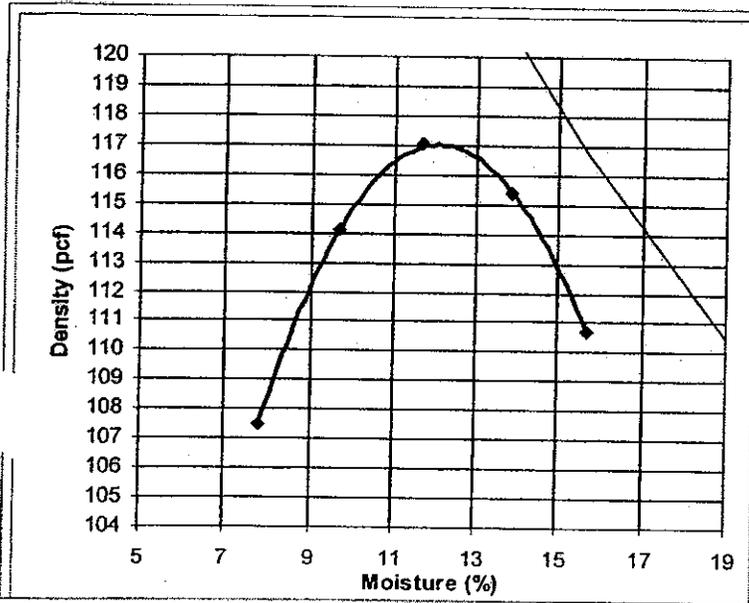
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	99%
3/8in.	98%
#4	97%
#8	94%
#10	94%
#16	91%
#30	88%
#40	87%
#50	85%
#100	73%
#200	32%



Moisture Density Relationship: (ASTM D1557-02)

Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 117.0

Optimum Moisture: 12.0

Plasticity Index (ASTM D4318-05)

Liquid Limit: 25

Plastic Limit: 20

Plasticity Index: 5

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
 MBR

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 12, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 6  
**Lab #:** 9-0671-01  
**Sampled By:** Jon Schermerhorn/Client  
**Date Sampled:** 06/09/2009

**Visual Description of Brown Silty Sand - From Native Soil Material:**

**Sample Source:** SNL MWL: 060909-009

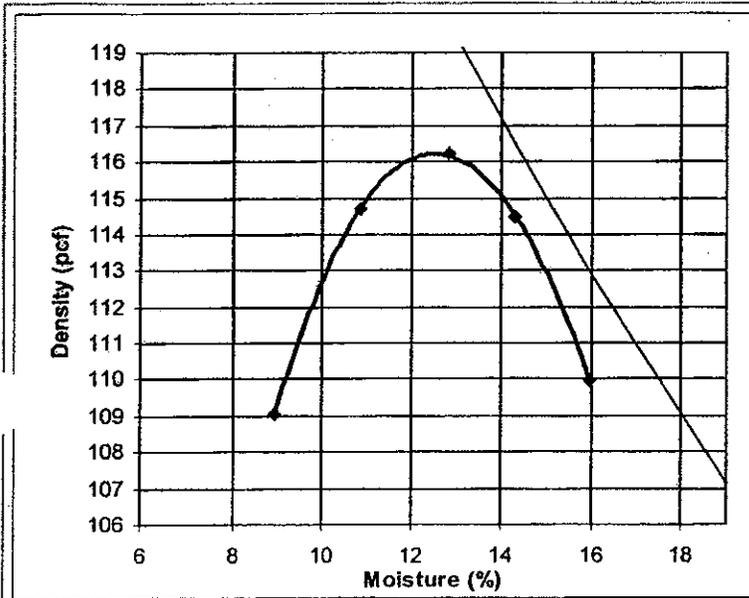
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	99%
3/8in.	98%
#4	96%
#8	94%
#10	93%
#16	92%
#30	89%
#40	87%
#50	85%
#100	73%
#200	36%



**Moisture Density Relationship: (ASTM D698-07)**

**Method: B**

**Preparation Method:** Dry **Rammer Type:** Mechanical

**Specific Gravity:** 2.551 Assumed

**Maximum Density:** 116.2

**Optimum Moisture:** 12.5

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 27

**Plastic Limit:** 19

**Plasticity Index:** 8

**Preparation Method:** Dry **Liquid Limit Method:** A  
**PI Air Dried.**

**Soil Classification (ASTM D2487-06) SC**

**Reviewed By:**   
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 12, 2009

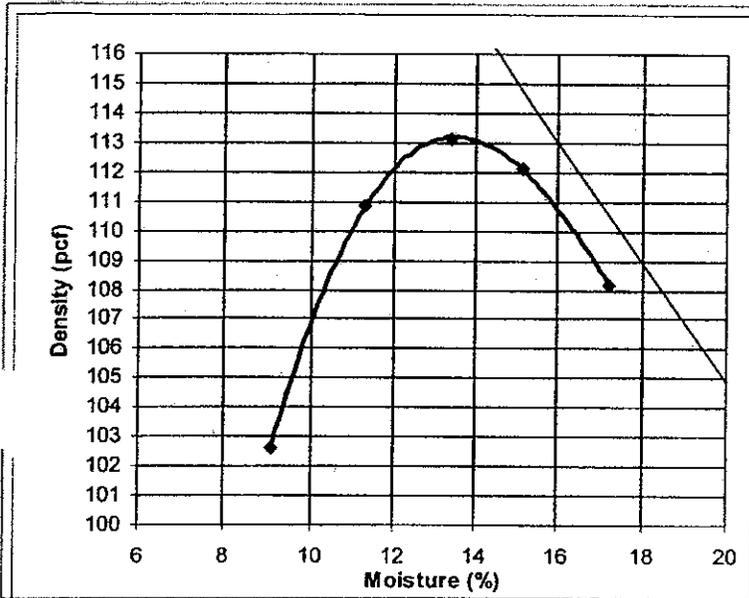
Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 6  
 Lab #: 9-0671-02  
 Sampled By: Jon Schermerhorn/Client  
 Date Sampled: 06/09/2009  
 Visual Description of Brown Silty Sand - From Native Soil  
 Material:  
 Sample Source: SNL MWL: 060909-010

Project Manager: Vickie Maranville **SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**  
 200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	99%
#4	98%
#8	96%
#10	95%
#16	93%
#30	90%
#40	88%
#50	87%
#100	74%
#200	38%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 113.2  
 Optimum Moisture: 13.5

**Plasticity Index (ASTM D4318-05)**  
 Liquid Limit: 26  
 Plastic Limit: 18  
 Plasticity Index: 8

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC**

Reviewed By: [Signature]  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 12, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

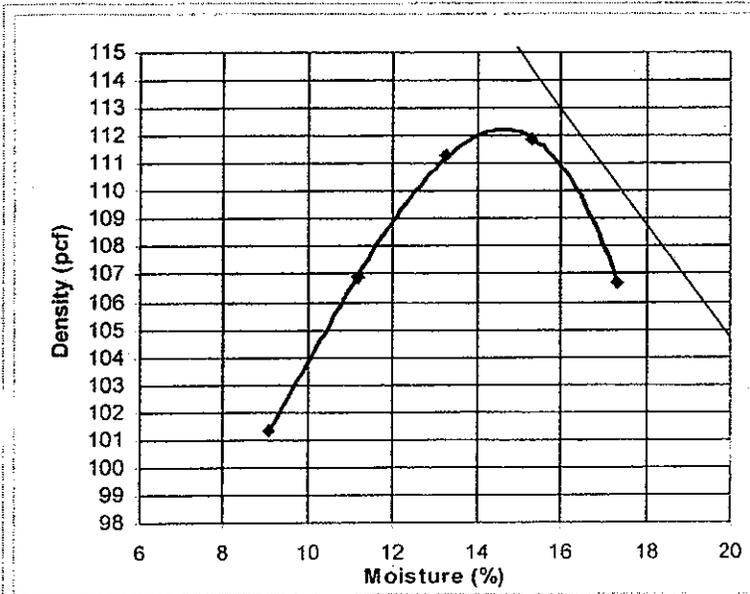
Project #: 9-517-00022D  
Work Order #: 6  
Lab #: 9-0671-03  
Sampled By: Jon Schermerhorn/Client  
Date Sampled: 6/9/2009  
Visual Description of Material: Brown Silty Sand - From Native Soil  
Sample Source: SNL MWL: 060909-011

Project Manager: Vickie Maranville SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	99%
3/8in.	98%
#4	97%
#8	94%
#10	94%
#16	92%
#30	90%
#40	88%
#50	85%
#100	76%
#200	29%



Moisture Density Relationship: (ASTM D698-07) Method: B  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.551 Assumed  
Maximum Density: 112.2  
Optimum Moisture: 14.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: 27  
Plastic Limit: 20  
Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A  
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By:   
Jan

Distribution: Client  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com





**Client:** Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 11, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 6  
**Lab #:** 9-0671-05

**Sampled By:** Jon Schermerhorn/Client  
**Date Sampled:** 06/09/2009  
**Visual Description of Material:** Brown Silty Sand - From Native Soil  
**Sample Source:** SNL MWL: 060909-013

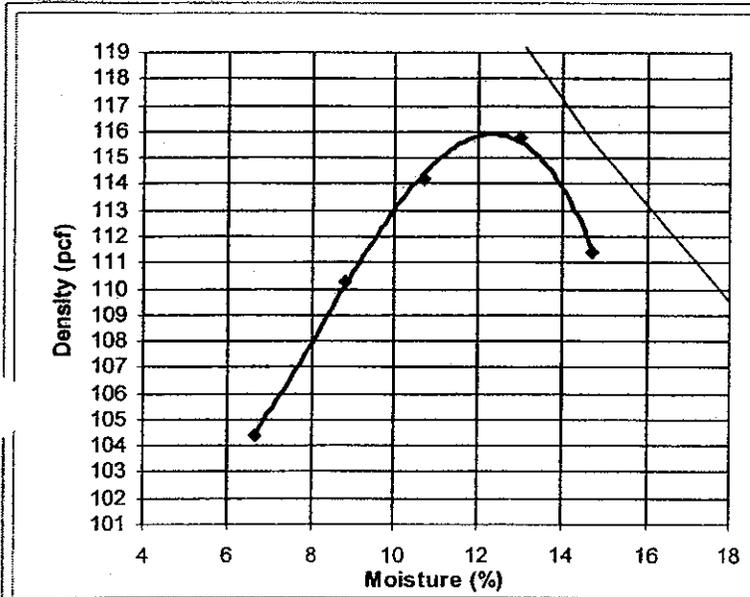
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	97%
#8	94%
#10	93%
#16	91%
#30	88%
#40	86%
#50	84%
#100	70%
#200	27%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.551 Assumed  
**Maximum Density:** 115.9  
**Optimum Moisture:** 12.3

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 24  
**Plastic Limit:** 20  
**Plasticity Index:** 4

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06)** SC-SM

**Reviewed By:** *[Signature]*  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



nt: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 29, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 10  
Lab #: 9-0720-01

Sampled By: David A. Luna  
Date Sampled: 06/24/2009  
Visual Description of Brown Silty Sand  
Material:

Sample Source: SNL MWL-062409-014

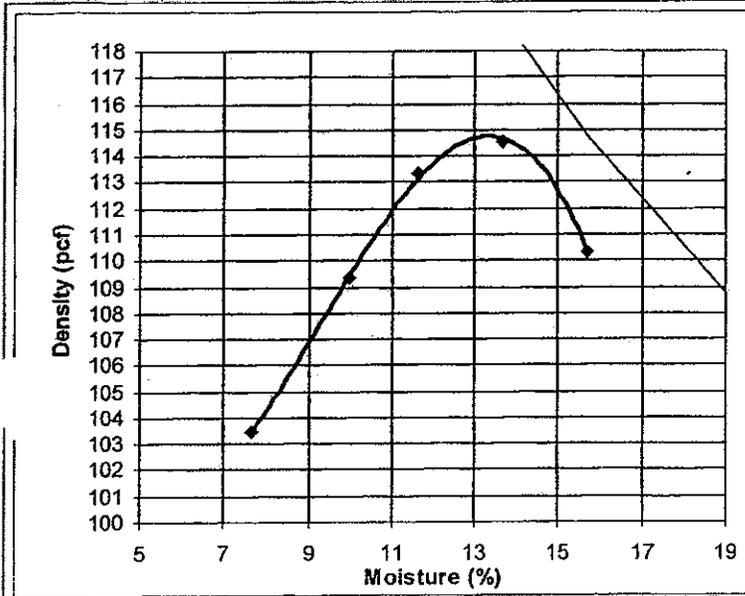
Project Manager: Vickie Maranhville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	98%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	77%
#200	38%



Moisture Density Relationship: (ASTM D698-07) Method: B  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.591 Assumed  
Maximum Density: 114.7  
Optimum Moisture: 13.3

Plasticity Index (ASTM D4318-05)

Liquid Limit: 25  
Plastic Limit: 18  
Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A  
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
jdr

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 30, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 10  
 Lab #: 9-0720-02  
 Sampled By: David A. Luna  
 Date Sampled: 06/24/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL-062409-015

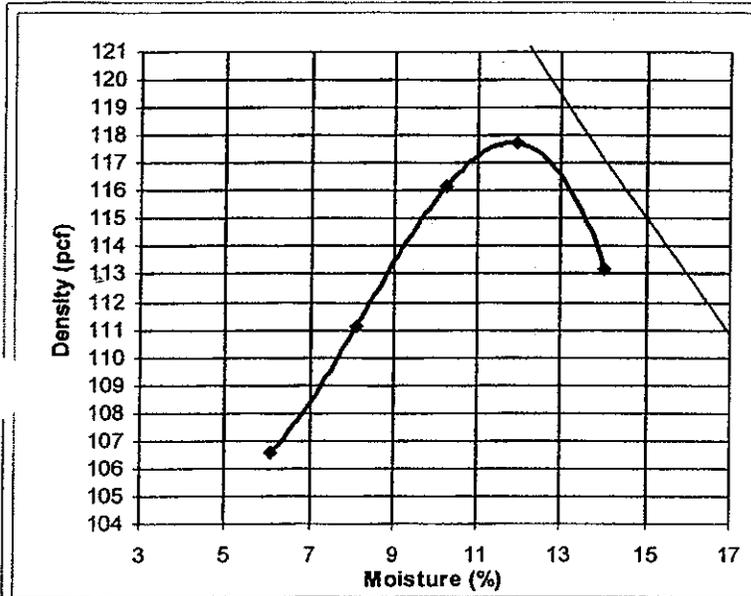
Project Manager: Vickie Maranhille

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	95%
#10	95%
#16	92%
#30	90%
#40	89%
#50	87%
#100	76%
#200	35%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 117.7  
 Optimum Moisture: 11.8

Plasticity Index (ASTM D4318-05)

Liquid Limit: 24  
 Plastic Limit: 18  
 Plasticity Index: 6

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
 hg

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 30, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

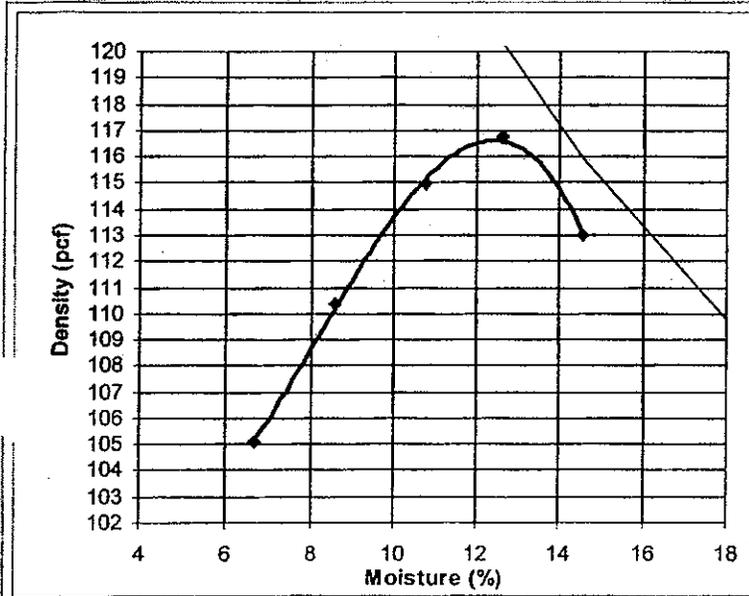
Project #: 9-517-00022D  
 Work Order #: 10  
 Lab #: 9-0720-03  
 Sampled By: David A. Luna  
 Date Sampled: 06/24/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL-062409-016

Project Manager: Vickie Maranville SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	97%
#8	94%
#10	93%
#16	91%
#30	88%
#40	86%
#50	85%
#100	73%
#200	33%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 116.6  
 Optimum Moisture: 12.4

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 22  
 Plastic Limit: 19  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

Reviewed By: [Signature]  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 30, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D

Work Order #: 10

Lab #: 9-0720-04

Sampled By: David A. Luna

Date Sampled: 06/24/2009

Visual Description of Brown Silty Sand  
 Material:

Sample Source: SNL MWL-062409-017

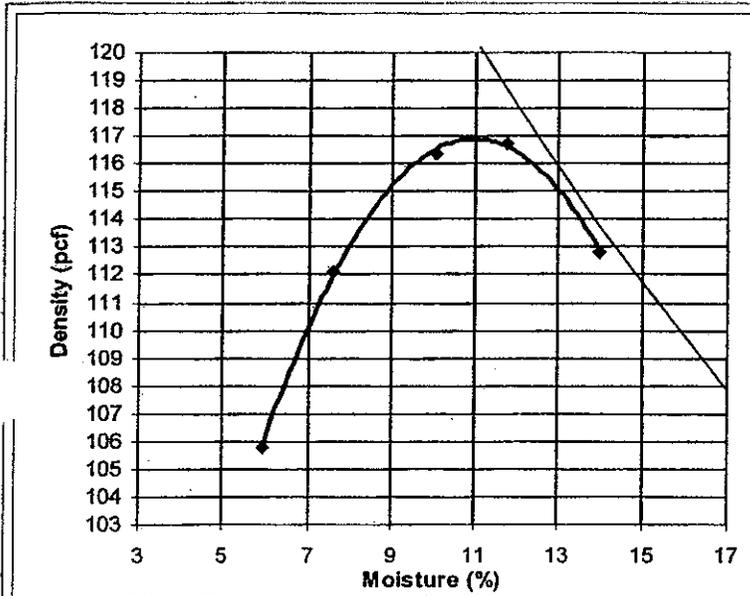
Project Manager: Vickie Maranhville

SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	98%
#8	96%
#10	95%
#16	92%
#30	90%
#40	88%
#50	86%
#100	74%
#200	33%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.451 Assumed  
 Maximum Density: 116.9  
 Optimum Moisture: 11.0

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 23  
 Plastic Limit: 20  
 Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

Reviewed By: [Signature]  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



ent: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 30, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 10  
 Lab #: 9-0720-05  
 Sampled By: David A. Luna  
 Date Sampled: 06/24/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL-062409-018

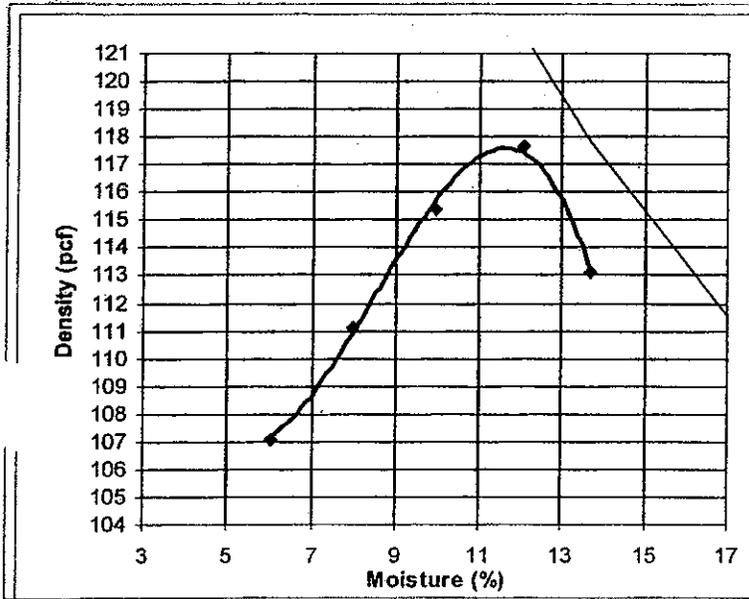
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	100%
#4	97%
#8	95%
#10	93%
#16	91%
#30	88%
#40	86%
#50	84%
#100	73%
#200	33%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 117.6  
 Optimum Moisture: 11.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

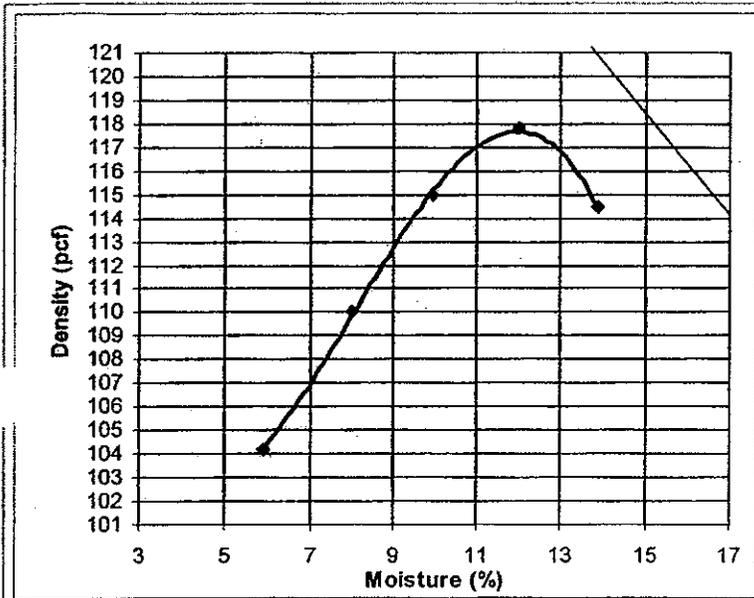
Project #: 9-517-00022D  
 Work Order #: 11  
 Lab #: 9-0733-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/29/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNI MWL 062909-19

Project Manager: Vickie Maranhille SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	98%
3/8in.	97%
#4	96%
#8	93%
#10	93%
#16	90%
#30	88%
#40	86%
#50	85%
#100	72%
#200	33%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.7  
 Optimum Moisture: 12.0

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 23  
 Plastic Limit: 16  
 Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 11  
 Lab #: 9-0733-02  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/29/2009

Visual Description of Brown Silty Sand  
 Material:

Sample Source: SNL MWL 062909-20

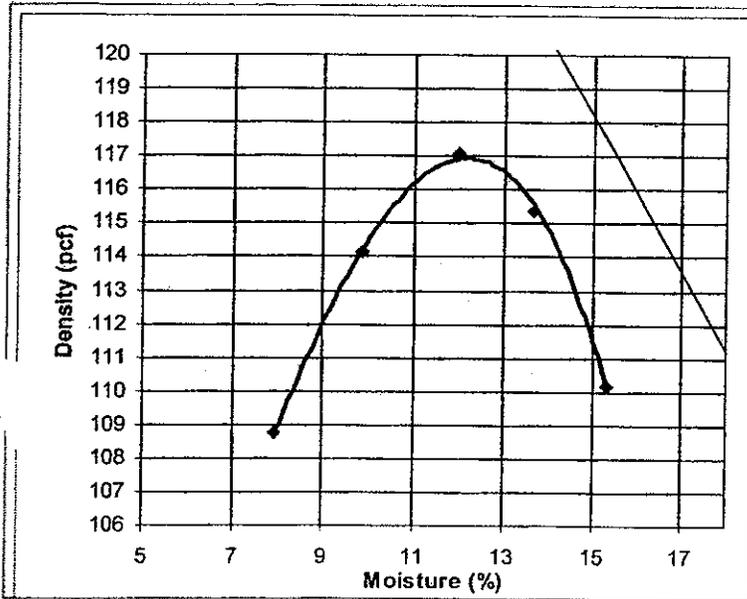
Project Manager: Vickie Maranville

SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	98%
#8	96%
#10	96%
#16	93%
#30	91%
#40	90%
#50	88%
#100	75%
#200	36%



**Moisture Density Relationship: (ASTM D698-07) Method: B**  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 116.9  
 Optimum Moisture: 12.2

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 24  
 Plastic Limit: 17  
 Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 11  
Lab #: 9-0733-03  
Sampled By: Jon Schermerhorn  
Date Sampled: 06/29/2009  
Visual Description of Brown Silty Sand  
Material:  
Sample Source: SNL MWL 062909-21

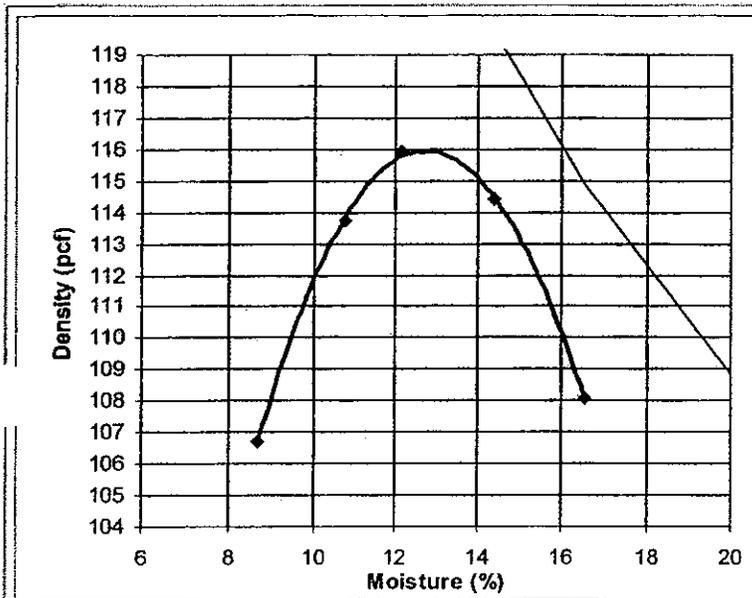
Project Manager: Vickie Maranhille

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	98%
#4	96%
#8	94%
#10	93%
#16	91%
#30	88%
#40	86%
#50	84%
#100	73%
#200	41%



Moisture Density Relationship: (ASTM D698-07) Method: A  
Preparation Method: Dry Rammer Type: Mechanical  
Specific Gravity: 2.651 Assumed  
Maximum Density: 115.9  
Optimum Moisture: 12.7

Plasticity Index (ASTM D4318-05)

Liquid Limit: 24  
Plastic Limit: 17  
Plasticity Index: 7

Preparation Method: Dry Liquid Limit Method: A  
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 11  
 Lab #: 9-0733-04  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/29/2009

Visual Description of Brown Silty Sand  
 Material:

Sample Source: SNL MWL 062909-22

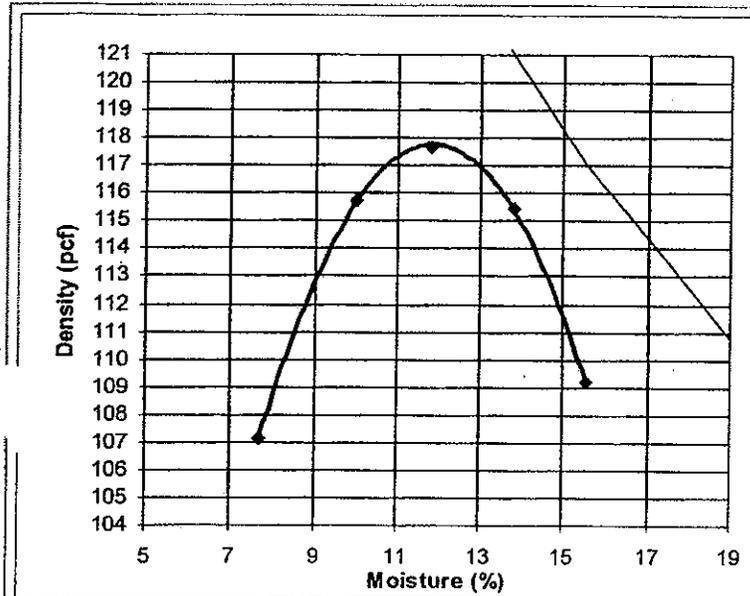
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	99%
#8	97%
#10	96%
#16	94%
#30	92%
#40	90%
#50	89%
#100	75%
#200	36%



Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.8  
 Optimum Moisture: 11.8

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Attn: Chris Edgmon

Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project Manager: Vickie Maranhille

Report Date: July 09, 2009

Project #: 9-517-00022D  
 Work Order #: 11  
 Lab #: 9-0733-05

Sampled By: Jon Schermerhorn  
 Date Sampled: 06/29/2009

Visual Description of Brown Silty Sand  
 Material:

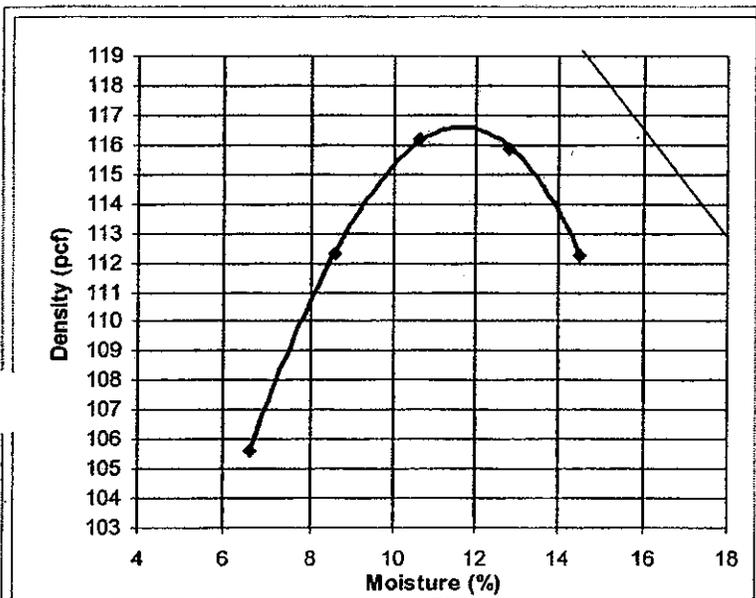
Sample Source: SNL MWL 062909-23

**SOILS / AGGREGATES**

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	97%
#8	94%
#10	93%
#16	91%
#30	89%
#40	88%
#50	86%
#100	74%
#200	36%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 116.6  
 Optimum Moisture: 11.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 10, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D

**Work Order #:** 11

**Lab #:** 9-0733-06

**Sampled By:** Jon Schermerhorn

**Date Sampled:** 06/29/2009

**Visual Description of Brown Silty Sand Material:**

**Sample Source:** SNL MWL 062909-24

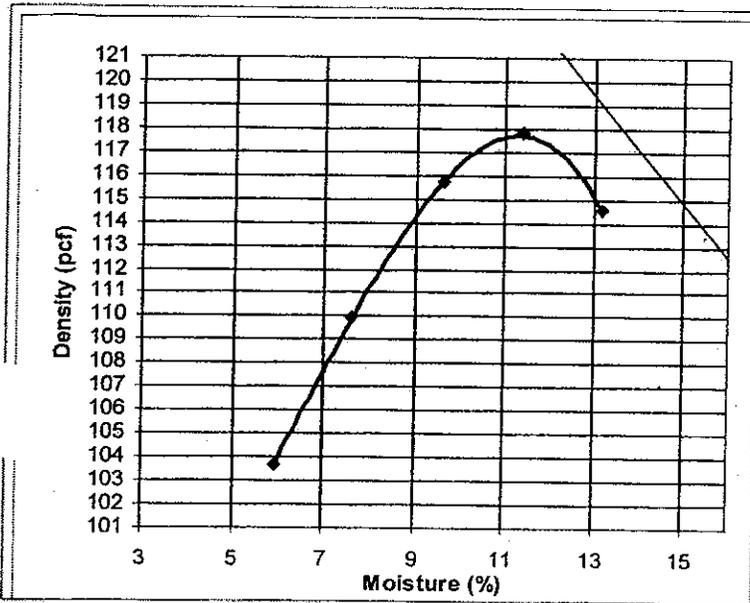
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure:** A

Sieve Size	Passing
1/2in.	100%
3/8in.	99%
#4	97%
#8	95%
#10	94%
#16	92%
#30	90%
#40	88%
#50	86%
#100	74%
#200	34%



**Moisture Density Relationship: (ASTM D698-07)**

**Method:** B

**Preparation Method:** Dry **Rammer Type:** Mechanical

**Specific Gravity:** 2.551 Assumed

**Maximum Density:** 117.7

**Optimum Moisture:** 11.3

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 22

**Plastic Limit:** 15

**Plasticity Index:** 7

**Preparation Method:** Dry **Liquid Limit Method:** A  
**PI Air Dried.**

**Soil Classification (ASTM D2487-06) SC-SM**

**Reviewed By:** *[Signature]*  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimintions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 09, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 13  
**Lab #:** 9-0737-01  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009

**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL 063009-25

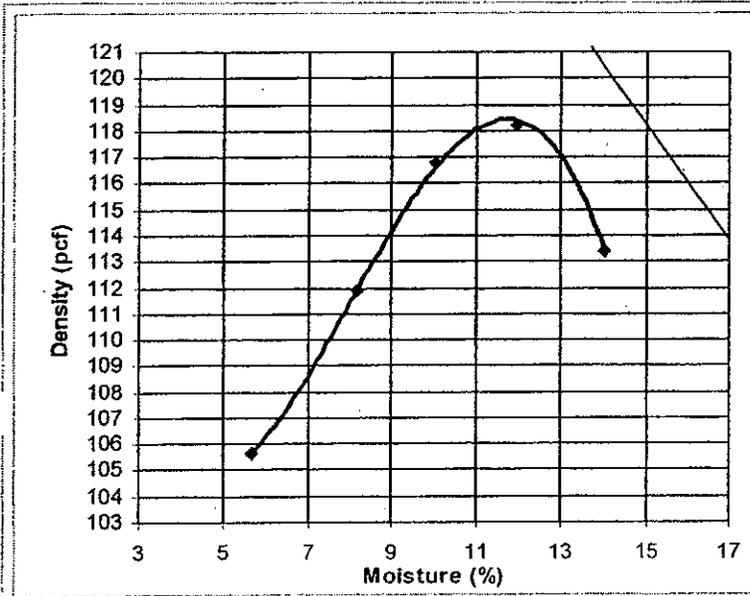
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	98%
3/8in.	98%
#4	96%
#8	93%
#10	92%
#16	90%
#30	88%
#40	86%
#50	84%
#100	73%
#200	34%



**Moisture Density Relationship: (ASTM D698-07)**      **Method: B**  
**Preparation Method:** Dry      **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 118.4  
**Optimum Moisture:** 11.7

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 24  
**Plastic Limit:** 20  
**Plasticity Index:** 4

**Preparation Method:** Dry      **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Report Date:** July 09, 2009

**Project #:** 9-517-00022D  
**Work Order #:** 13  
**Lab #:** 9-0737-02

**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Material:** Brown Silty Sand  
**Material:**  
**Sample Source:** SNL MWL 063009-26

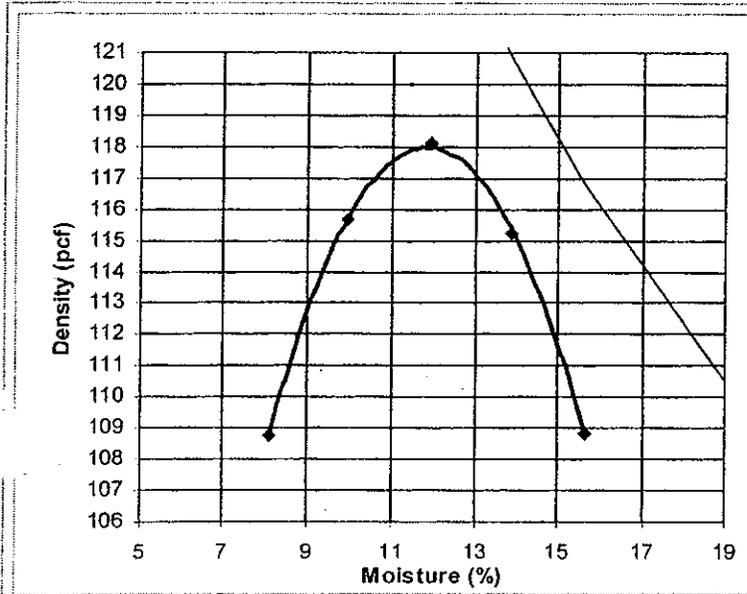
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	98%
3/8in.	97%
#4	96%
#8	94%
#10	93%
#16	91%
#30	88%
#40	87%
#50	85%
#100	74%
#200	36%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 118.0  
**Optimum Moisture:** 11.8

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 25  
**Plastic Limit:** 20  
**Plasticity Index:** 5

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06)** SC-SM

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 13  
 Lab #: 9-0737-03  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/30/2009  
 Visual Description of Brown Silty Sand  
 Material:

Sample Source: SNL MWL 063009-27

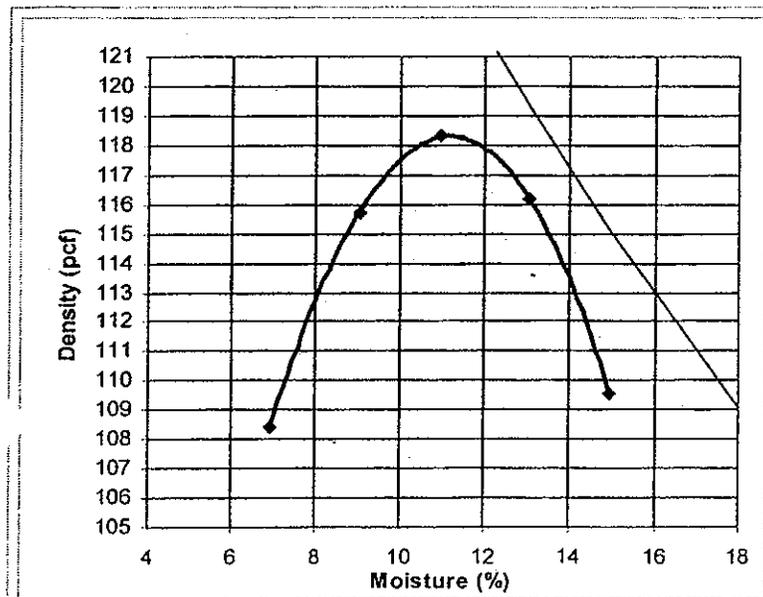
Project Manager: Vickie Maranville

SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	98%
1/2in.	97%
3/8in.	96%
#4	94%
#8	92%
#10	91%
#16	89%
#30	86%
#40	85%
#50	83%
#100	70%
#200	32%



**Moisture Density Relationship: (ASTM D698-07)**

Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed

Maximum Density: 118.3

Optimum Moisture: 11.2

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 22

Plastic Limit: 20

Plasticity Index: 2

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 09, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 13  
 Lab #: 9-0737-04  
 Sampled By: Jon Schemerhorn  
 Date Sampled: 06/30/2009

Visual Description of Brown Silty Sand  
 Material:

Sample Source: SNL MWL 063009-28

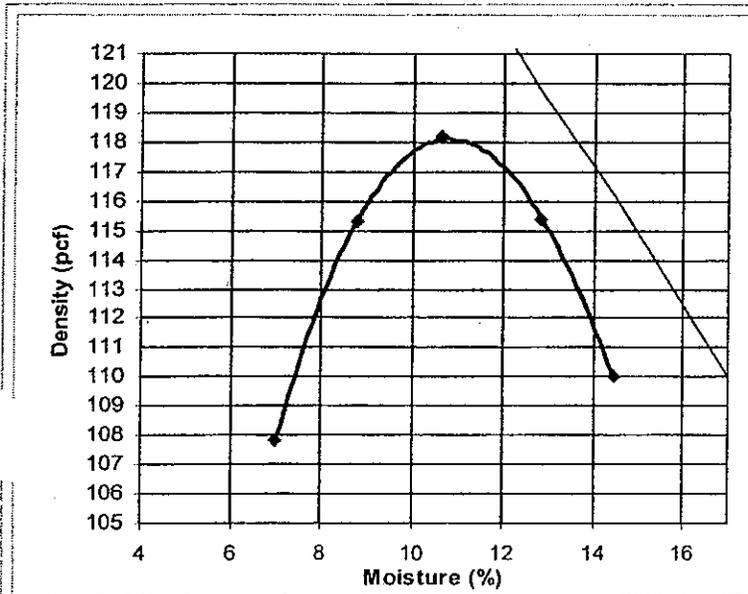
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	99%
#4	98%
#8	95%
#10	95%
#16	92%
#30	90%
#40	88%
#50	86%
#100	73%
#200	33%



Moisture Density Relationship: (ASTM D698-07)

Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed

Maximum Density: 118.1

Optimum Moisture: 10.8

Plasticity Index (ASTM D4318-05)

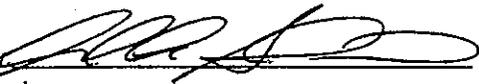
Liquid Limit: 23

Plastic Limit: 20

Plasticity Index: 3

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 09, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 13  
**Lab #:** 9-0737-05

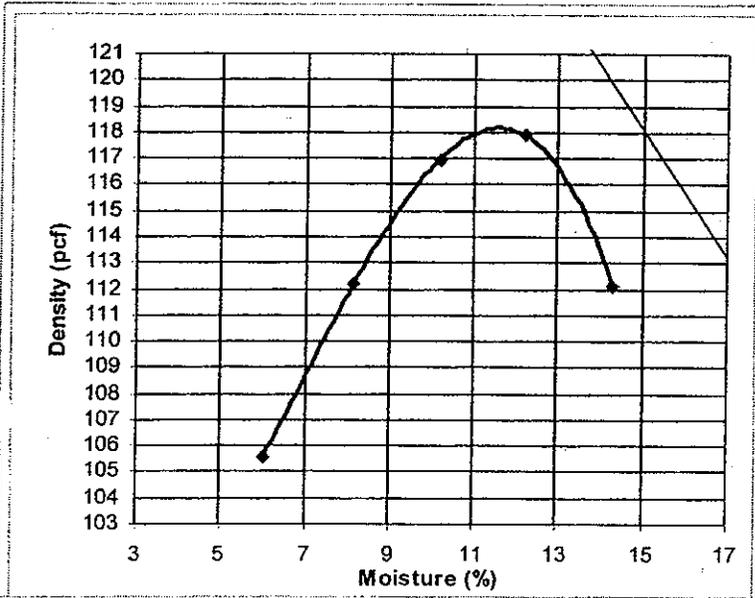
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL 063009-29

**Project Manager:** Vickie Maranville **SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure:** A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	97%
#8	95%
#10	94%
#16	92%
#30	89%
#40	88%
#50	86%
#100	72%
#200	33%



**Moisture Density Relationship: (ASTM D698-07) Method: B**  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 118.2  
**Optimum Moisture:** 11.6

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** NV  
**Plastic Limit:** NV  
**Plasticity Index:** NP

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

**Reviewed By:**   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 09, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 13  
**Lab #:** 9-0737-06

**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Material:** Brown Silty Sand

**Sample Source:** SNL MWL 063009-30

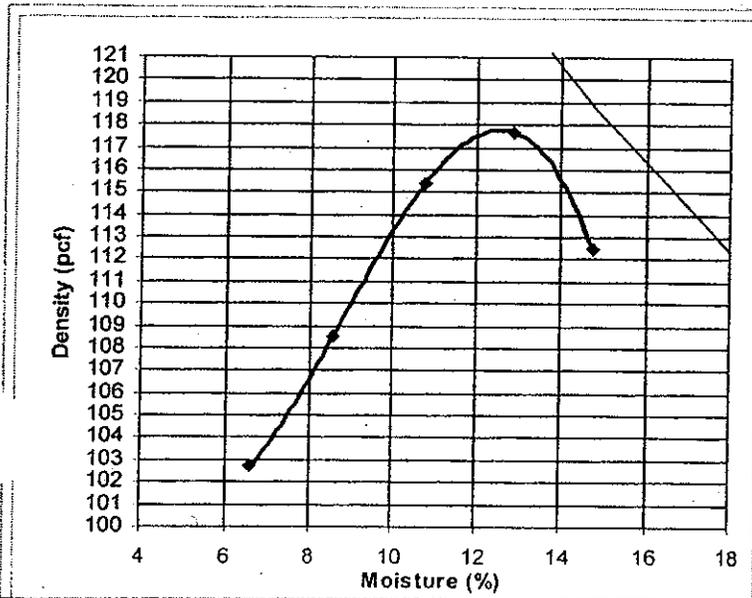
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	97%
#10	96%
#16	94%
#30	92%
#40	91%
#50	89%
#100	78%
#200	39%



**Moisture Density Relationship: (ASTM D698-07) Method: B**  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 117.8  
**Optimum Moisture:** 12.5

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 24  
**Plastic Limit:** 17  
**Plasticity Index:** 7

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

EC Earth Environmental, Inc.  
 19 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 07, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 15  
 Lab #: 9-0743-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/30/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Burn-1

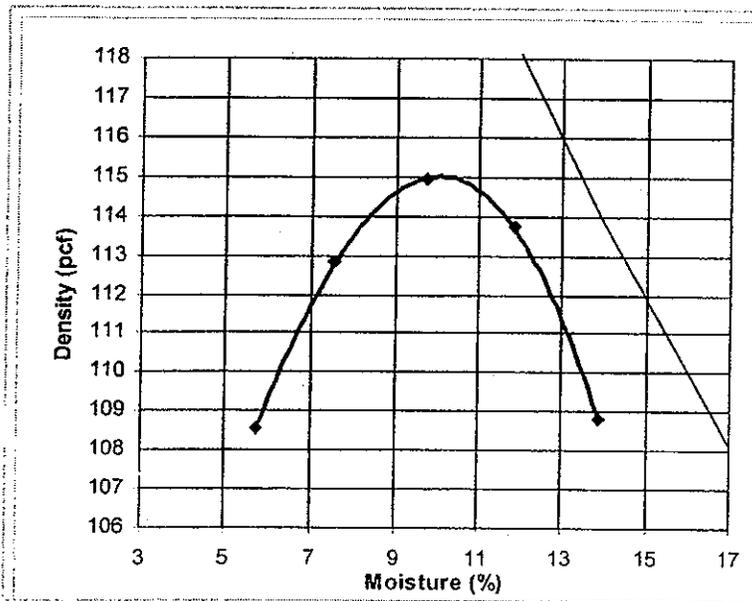
Project Manager: Vickie Maranhille

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	98%
#8	97%
#10	96%
#16	95%
#30	93%
#40	92%
#50	90%
#100	68%
#200	30%



Moisture Density Relationship: (ASTM D698-07)

Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.451 Assumed

Maximum Density: 115.0

Optimum Moisture: 10.0

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 07, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 15  
**Lab #:** 9-0743-02  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Material:** Brown Silty Sand  
**Sample Source:** SNL MWL Burn-2

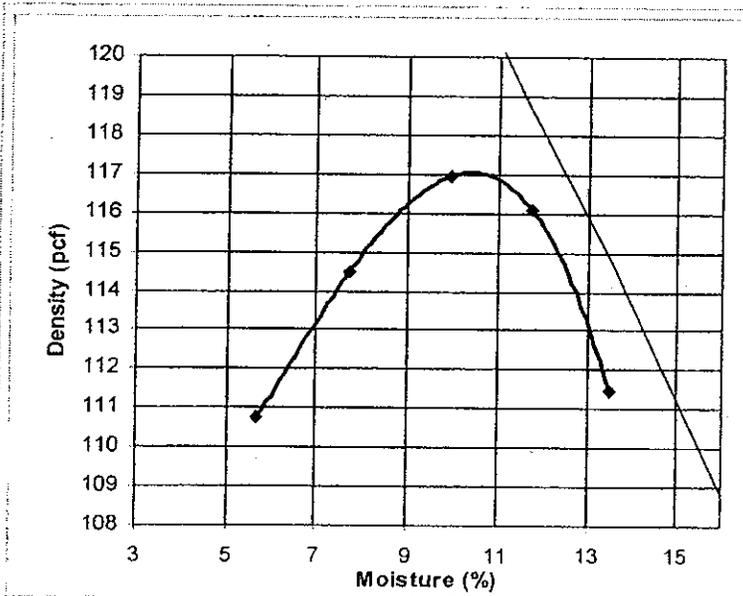
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	98%
3/8in.	97%
#4	95%
#8	93%
#10	92%
#16	90%
#30	88%
#40	86%
#50	84%
#100	65%
#200	27%



**Moisture Density Relationship:** (ASTM D698-07)      **Method:** A  
**Preparation Method:** Dry      **Rammer Type:** Mechanical  
**Specific Gravity:** 2.451 Assumed  
**Maximum Density:** 117.0  
**Optimum Moisture:** 10.4

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** NV  
**Plastic Limit:** NV  
**Plasticity Index:** NP

**Preparation Method:** Dry      **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

**Reviewed By:** [Signature]  
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

EC Earth Environmental, Inc.  
 19 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 07, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 15  
**Lab #:** 9-0743-03

**Sampled By:** Jon Schemmerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Burn-3

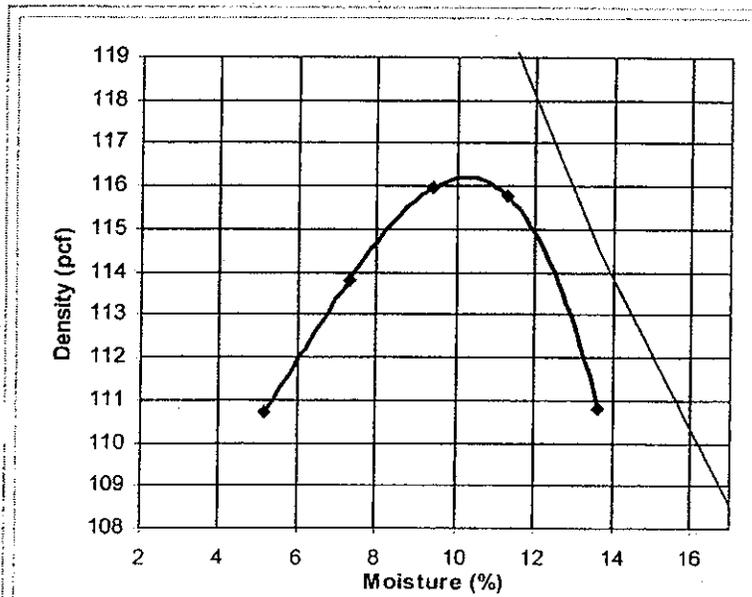
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure:** B

Sieve Size	Passing
1in.	100%
3/4in.	99%
1/2in.	97%
3/8in.	96%
#4	94%
#8	92%
#10	91%
#16	90%
#30	87%
#40	86%
#50	84%
#100	65%
#200	26%



**Moisture Density Relationship: (ASTM D698-07)**

**Method:** A

**Preparation Method:** Dry **Rammer Type:** Mechanical

**Specific Gravity:** 2.451 Assumed

**Maximum Density:** 116.2

**Optimum Moisture:** 10.2

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** NV

**Plastic Limit:** NV

**Plasticity Index:** NP

**Preparation Method:** Dry **Liquid Limit Method:** A  
**PI Air Dried.**

**Soil Classification (ASTM D2487-96) SM**

**Reviewed By:** [Signature]  
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 15, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 17  
**Lab #:** 9-0770-01

**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 07/10/2009  
**Visual Description of Brown Silty Sand Material:**

**Sample Source:** SNL MWL Berm-4

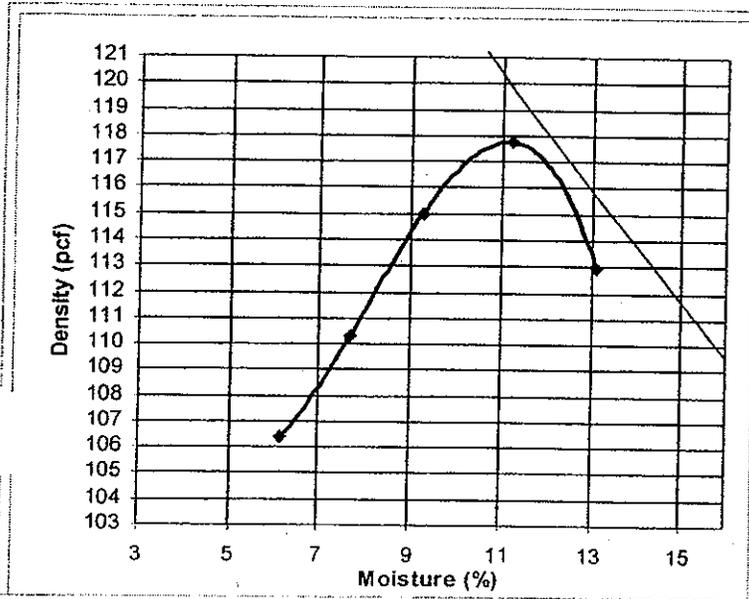
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	100%
#4	99%
#8	97%
#10	97%
#16	95%
#30	92%
#40	90%
#50	88%
#100	73%
#200	28%



**Moisture Density Relationship: (ASTM D698-07)**

**Method:** B

**Preparation Method:** Dry **Rammer Type:** Mechanical

**Specific Gravity:** 2.451 Assumed

**Maximum Density:** 117.8

**Optimum Moisture:** 11.1

**Plasticity Index (ASTM D4318-05)**

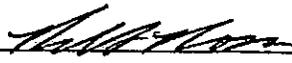
**Liquid Limit:** 25

**Plastic Limit:** 18

**Plasticity Index:** 7

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06)** SC-SM

**Reviewed By:**   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 15, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 17  
 Lab #: 9-0770-02

Sampled By: Jon Schermerhorn  
 Date Sampled: 07/10/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Berm-5

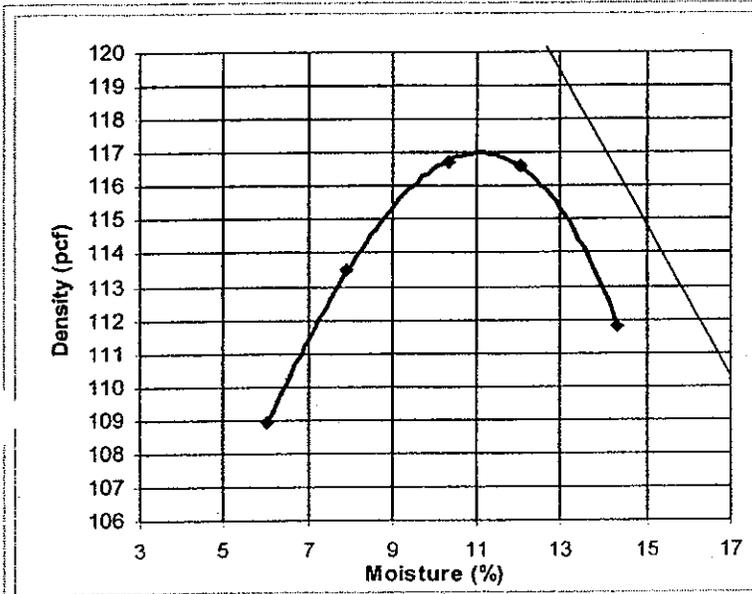
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	98%
3/8in.	97%
#4	94%
#8	92%
#10	91%
#16	89%
#30	86%
#40	85%
#50	82%
#100	65%
#200	24%



Moisture Density Relationship: (ASTM D698-07)

Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed

Maximum Density: 117.0

Optimum Moisture: 11.1

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 17, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

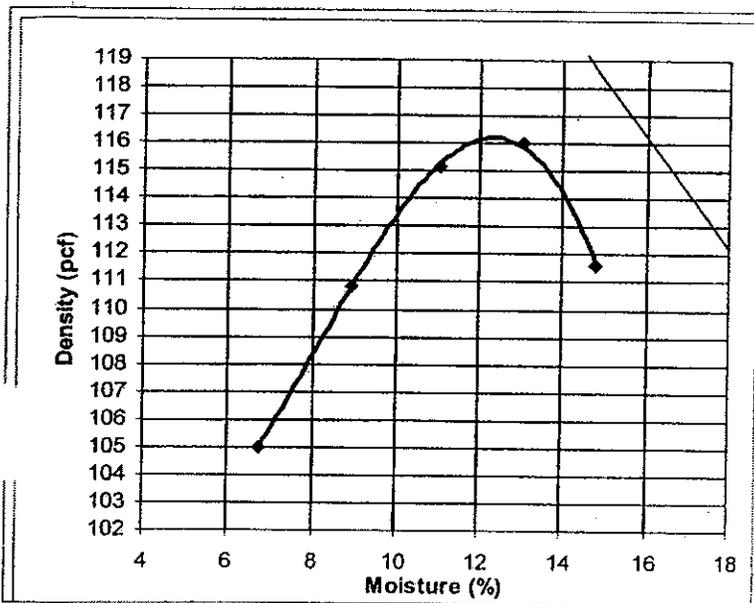
**Project #:** 9-517-00022D  
**Work Order #:** 18  
**Lab #:** 9-0781-02  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 7/14/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Berm-6

**Project Manager:** Vickie Maranville **SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	100%
#4	98%
#8	96%
#10	95%
#16	93%
#30	90%
#40	88%
#50	86%
#100	74%
#200	32%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 116.2  
**Optimum Moisture:** 12.3

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 23  
**Plastic Limit:** 21  
**Plasticity Index:** 2

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

Reviewed By: *Chris Edgmon*  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 17, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

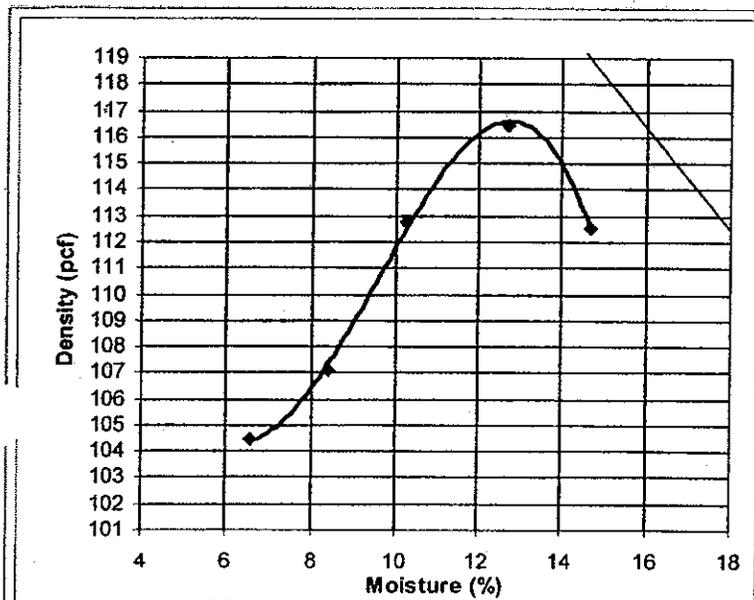
**Project #:** 9-517-00022D  
**Work Order #:** 18  
**Lab #:** 9-0781-03  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 7/14/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Bem-7

**Project Manager:** Vickie Maranville **SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	97%
#8	95%
#10	94%
#16	92%
#30	89%
#40	88%
#50	86%
#100	73%
#200	32%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 116.6  
**Optimum Moisture:** 12.7

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 23  
**Plastic Limit:** 19  
**Plasticity Index:** 4

**Preparation Method:** Dry **Liquid Limit Method:** A  
**PI Air Dried.**

**Soil Classification (ASTM D2487-06) SC-SM**

**Reviewed By:** *[Signature]*  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 20, 2009

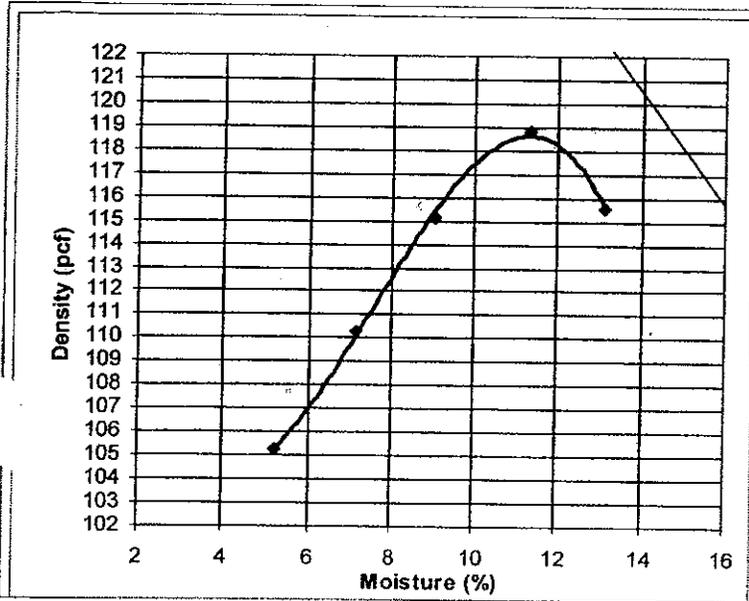
Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 18  
 Lab #: 9-0781-04  
 Sampled By: Jon Schemerhorn  
 Date Sampled: 7/14/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Berm-8

Project Manager: Vickie Maranville SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**  
 200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	99%
#4	98%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	74%
#200	36%



**Moisture Density Relationship: (ASTM D698-07)** Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 118.6  
 Optimum Moisture: 11.3

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: 21  
 Plastic Limit: 17  
 Plasticity Index: 4

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

Reviewed By: [Signature]  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 22, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 19  
 Lab #: 9-0798-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 7/16/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Berm-9

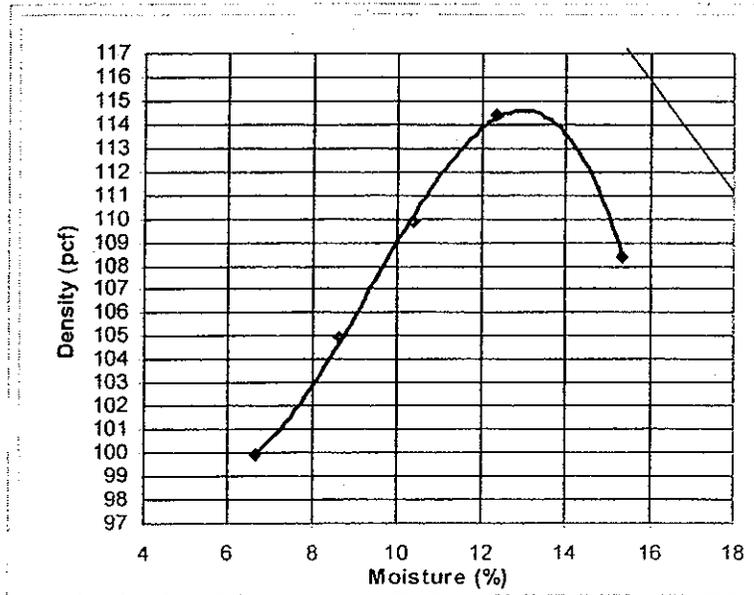
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	98%
#8	97%
#10	97%
#16	96%
#30	94%
#40	92%
#50	91%
#100	79%
#200	38%



Moisture Density Relationship: (ASTM D698-07) Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 114.6

Optimum Moisture: 13.0

Remarks: 8/3/09 Revised 1/2" screen input from 113.4 to 13.4 value

Plasticity Index (ASTM D4318-05)

Liquid Limit: 22

Plastic Limit: 18

Plasticity Index: 4

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By:   
 Jan

**Distribution:** Client  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 6519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project Manager:** Vickie Maranville

**Report Date:** July 21, 2009

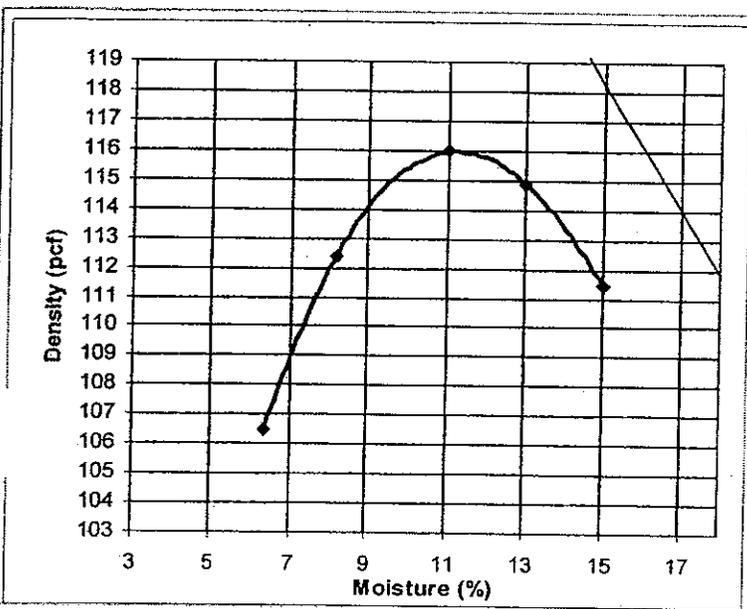
**Project #:** 9-517-00022D  
**Work Order #:** 19  
**Lab #:** 9-0798-02  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 07/16/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Berm-10

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	95%
#10	95%
#16	93%
#30	91%
#40	90%
#50	88%
#100	75%
#200	30%



**Moisture Density Relationship: (ASTM D698-07)** Method: A  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 116.0  
**Optimum Moisture:** 11.2

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** NV  
**Plastic Limit:** NV  
**Plasticity Index:** NP

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-05) SM**

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



**Client:** Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

**Report Date:** July 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 19  
**Lab #:** 9-0798-03  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 07/16/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Berm-11

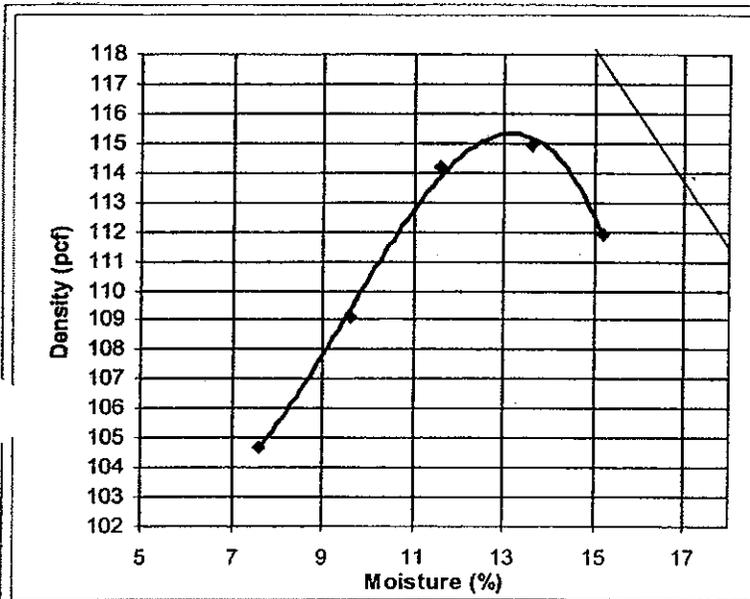
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure: A**

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	100%
#4	98%
#8	97%
#10	96%
#16	95%
#30	92%
#40	91%
#50	89%
#100	77%
#200	36%



**Moisture Density Relationship: (ASTM D698-07)**

**Method: A**

**Preparation Method:** Dry **Rammer Type:** Mechanical

**Specific Gravity:** 2.651 Assumed

**Maximum Density:** 115.3

**Optimum Moisture:** 13.2

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 23

**Plastic Limit:** 19

**Plasticity Index:** 4

**Preparation Method:** Dry **Liquid Limit Method:** A  
PI Air Dried.

**Soil Classification (ASTM D2487-06) SC-SM**

**Reviewed By:** *[Signature]*  
Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 23, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Work Order #:** 19  
**Lab #:** 9-0798-04  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 07/16/2009  
**Visual Description of Brown Silty Sand Material:**  
**Sample Source:** SNL MWL Berm-12

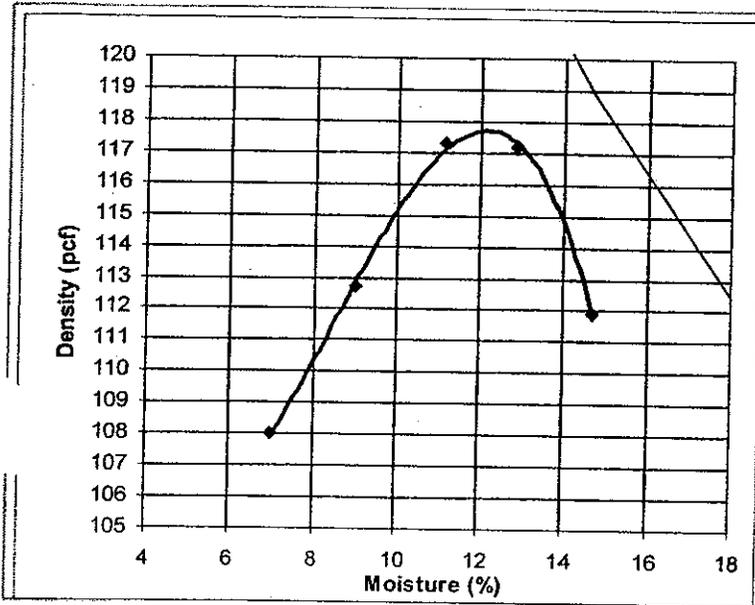
**Project Manager:** Vickie Maranville

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**

**200 Wash Procedure:** A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	98%
#4	97%
#8	95%
#10	94%
#16	92%
#30	90%
#40	89%
#50	87%
#100	74%
#200	32%



**Moisture Density Relationship:** (ASTM D698-07) **Method:** A  
**Preparation Method:** Dry **Rammer Type:** Mechanical  
**Specific Gravity:** 2.651 Assumed  
**Maximum Density:** 117.7  
**Optimum Moisture:** 12.1

**Plasticity Index (ASTM D4318-05)**

**Liquid Limit:** 24  
**Plastic Limit:** 18  
**Plasticity Index:** 6

**Preparation Method:** Dry **Liquid Limit Method:** A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06)** SC-SM

**Reviewed By:** [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 23, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 19  
 Lab #: 9-0798-05

Sampled By: Jon Schemmerhorn  
 Date Sampled: 07/16/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Bem-13

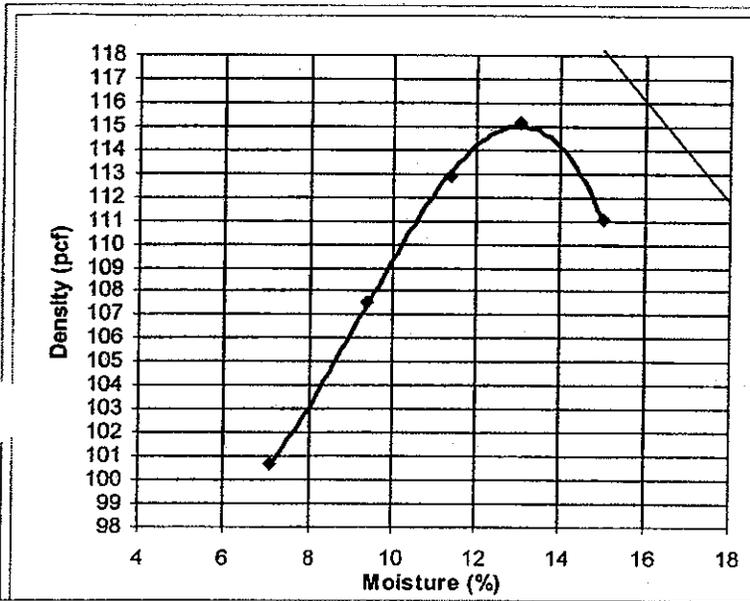
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	99%
#4	97%
#8	95%
#10	94%
#16	93%
#30	90%
#40	89%
#50	87%
#100	76%
#200	37%



Moisture Density Relationship: (ASTM D698-07)

Method: A

Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 115.0  
 Optimum Moisture: 13.0

Plasticity Index (ASTM D4318-05)

Liquid Limit: 26  
 Plastic Limit: 17  
 Plasticity Index: 9

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 23, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 19  
 Lab #: 9-0798-06  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/16/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Bem-14

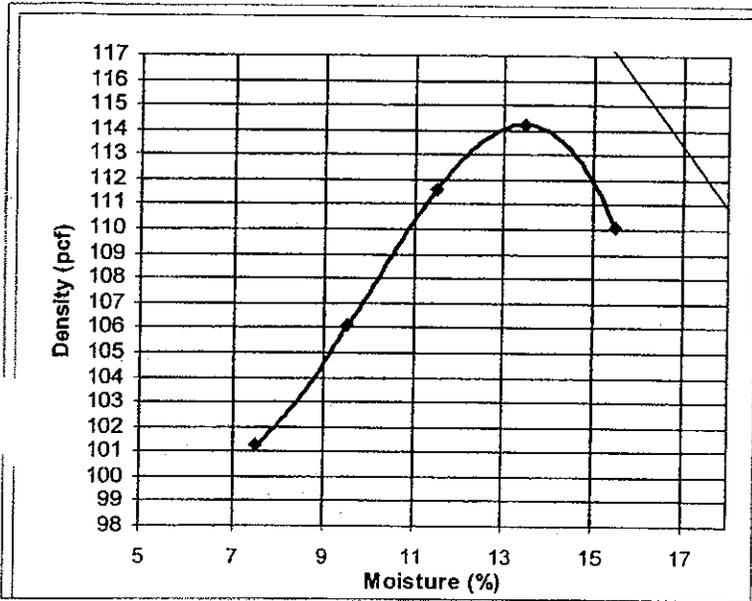
Project Manager: Vickie Maranhville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	98%
#8	97%
#10	97%
#16	95%
#30	93%
#40	92%
#50	90%
#100	78%
#200	34%



Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 114.2  
 Optimum Moisture: 13.5

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]

Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 19  
 Lab #: 9-0798-07  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/16/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Bern-15

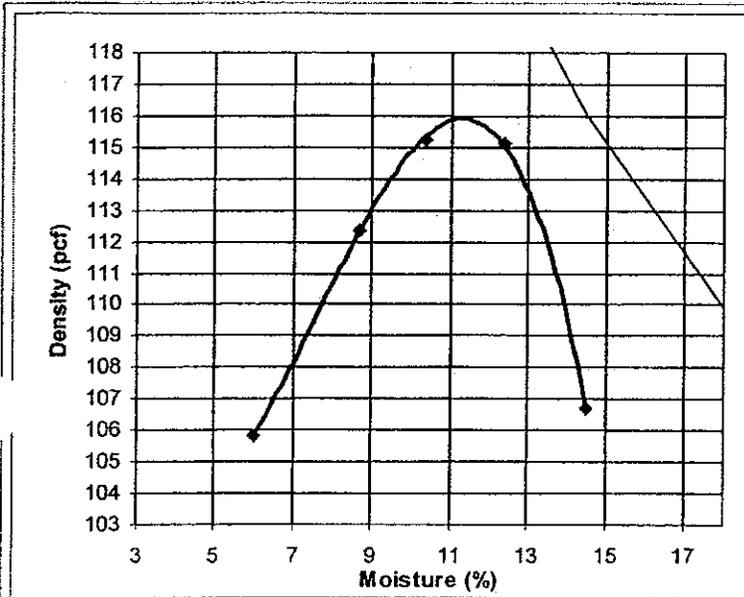
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	99%
#8	97%
#10	97%
#16	96%
#30	93%
#40	92%
#50	90%
#100	78%
#200	37%



Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 115.9  
 Optimum Moisture: 11.3

Plasticity Index (ASTM D4318-05)

Liquid Limit: 23  
 Plastic Limit: 19  
 Plasticity Index: 4

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 19  
 Lab #: 9-0798-08  
 Sampled By: Jon Schemerhom  
 Date Sampled: 07/16/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Bem-16

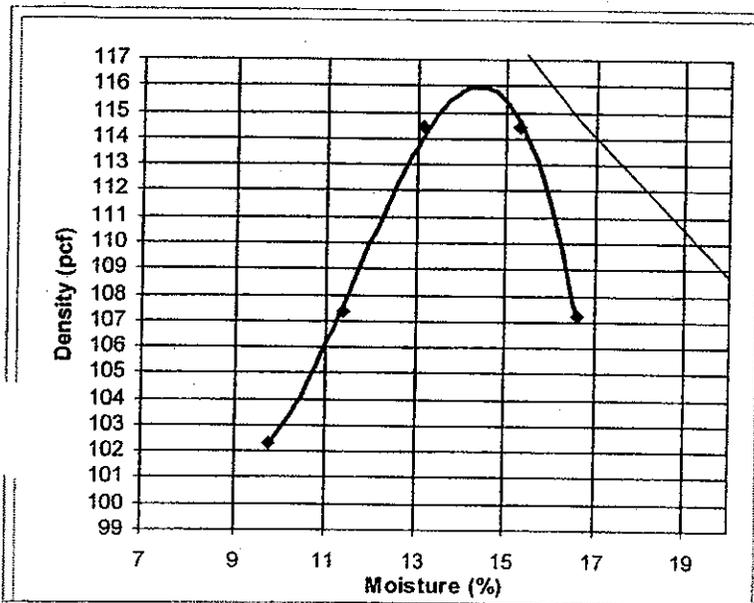
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	96%
#10	96%
#16	94%
#30	91%
#40	90%
#50	88%
#100	75%
#200	34%



Moisture Density Relationship: (ASTM D698-07)

Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 116.0

Optimum Moisture: 14.4

Plasticity Index (ASTM D4318-05)

Liquid Limit: 23

Plastic Limit: 19

Plasticity Index: 4

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5059211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0825-02  
 Sampled By: Jon Schemmerhorn  
 Date Sampled: 07/23/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Berm-17

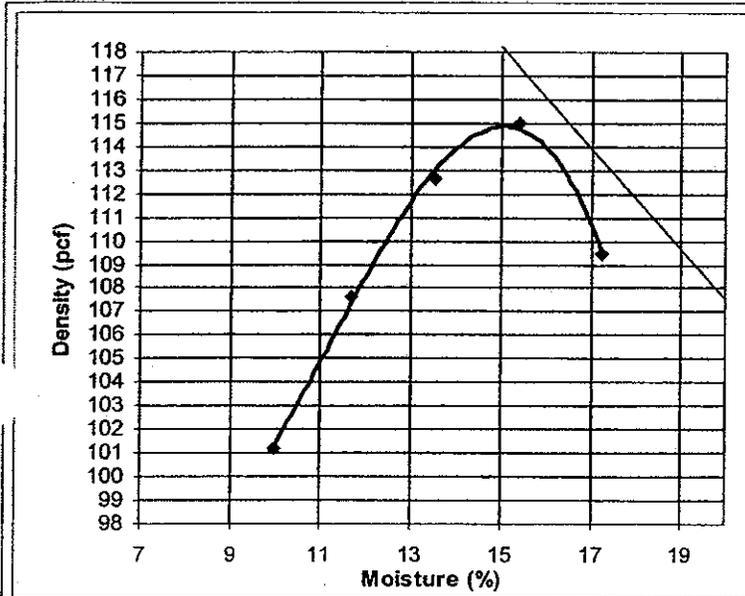
Project Manager: Vickie Maranhville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	98%
3/8in.	98%
#4	97%
#8	94%
#10	93%
#16	91%
#30	89%
#40	87%
#50	85%
#100	74%
#200	34%



Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 114.9  
 Optimum Moisture: 15.0

Plasticity Index (ASTM D4318-05)

Liquid Limit: 21  
 Plastic Limit: 19  
 Plasticity Index: 2

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0825-03  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/23/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Berm-18

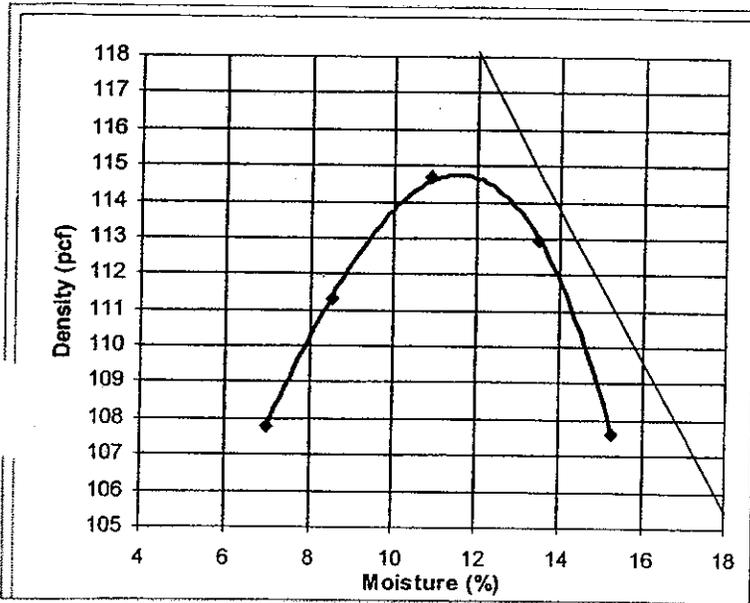
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
1 1/2in.	100%
.1in.	98%
3/4in.	97%
1/2in.	95%
3/8in.	94%
#4	93%
#8	91%
#10	91%
#16	89%
#30	87%
#40	86%
#50	84%
#100	72%
#200	26%



Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.451 Assumed  
 Maximum Density: 114.7  
 Optimum Moisture: 11.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 30, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0825-04  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/23/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL Bem-19

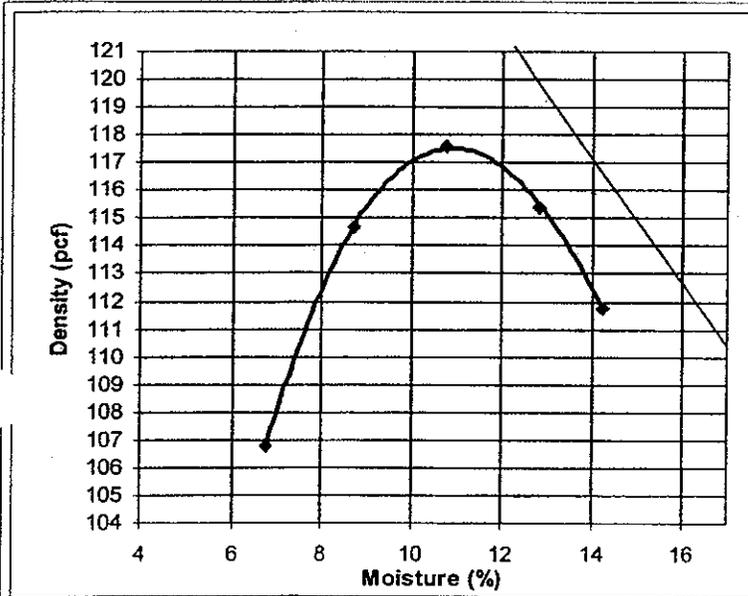
Project Manager: Vickie Maranville

SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	99%
#8	98%
#10	97%
#16	96%
#30	94%
#40	92%
#50	91%
#100	80%
#200	34%



**Moisture Density Relationship: (ASTM D698-07)**

Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed

Maximum Density: 117.5

Optimum Moisture: 10.9

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-08) SM**

Reviewed By: [Signature]  
 Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 07, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 12  
 Lab #: 9-0734-01  
 Sampled By: Client/C.Timm  
 Date Sampled: 06/02/2009

Visual Description of Silty Sand  
 Material:

Sample Source: SNLMWL-060209-4

Project Manager: Vickie Maranville

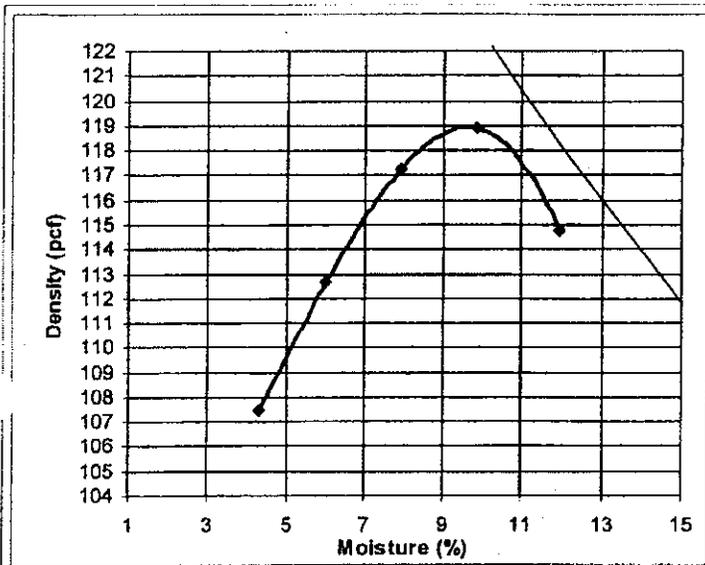
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	100%
#4	99%
#8	98%
#10	98%
#16	96%
#30	93%
#40	92%
#50	90%
#100	77%
#200	32%

*MMMM  
12/21/09*



*This Gradation test was performed as part of the Standard Proctor test. A separate Gradation test was performed to compare this topsoil material to the CMIP specifications. A separate laboratory form is provided and the corresponding Lab Number is 9-0636-04.*

Moisture Density Relationship: (ASTM D698-07) Method: A  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.451 Assumed  
 Maximum Density: 118.9  
 Optimum Moisture: 9.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: *[Signature]*

hg

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 07, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

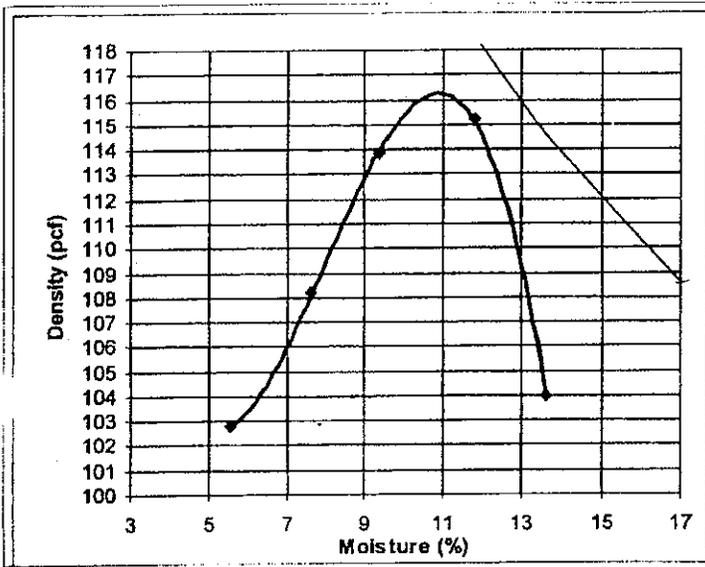
Project #: 9-517-00022D  
Work Order #: 12  
Lab #: 9-0734-02  
Sampled By: Client/C.Timm  
Date Sampled: 06/02/2009

Visual Description of Silty Sand  
Material:

Sample Source: SNLMWL-060209-6

Project Manager: Vickie Maranville

SOILS / AGGREGATES



~~Sieve Analysis (ASTM C117-04/C136-06)~~

~~200 Wash Procedure: A~~

Sieve Size	Passing
1/2in.	100%
3/8in.	100%
#4	99%
#8	96%
#10	94%
#16	90%
#30	88%
#40	86%
#50	85%
#100	72%
#200	29%

*MINUM  
12/21/09*

*This Gradation test was performed as part of the Standard Proctor test. A separate Gradation test was performed to compare this topsoil material to the CMIP specifications. A separate laboratory form is provided and the corresponding Lab Number is 9-0636-06.*

Moisture Density Relationship: (ASTM D698-07)

Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.451 Assumed

Maximum Density: 116.2

Optimum Moisture: 10.9

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: *Chris Edgmon*  
hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 15, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 17  
 Lab #: 9-0770-04  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/10/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL 071009-8

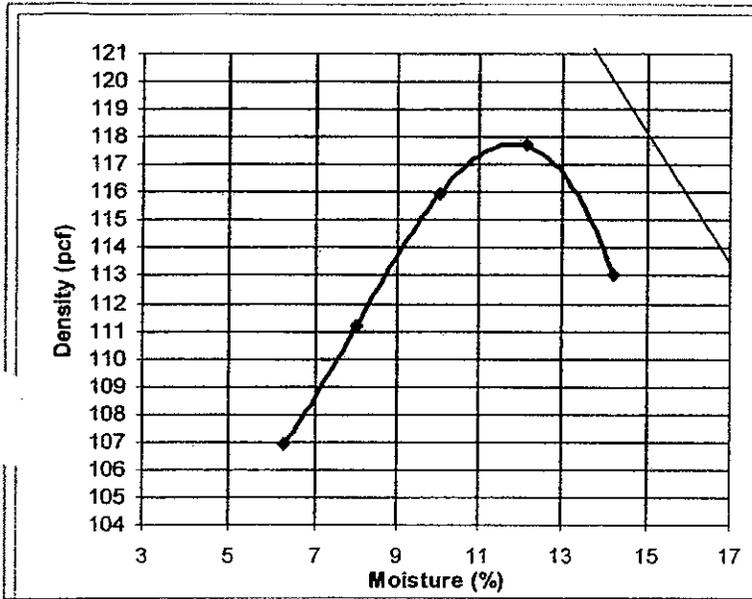
Project Manager: Vickie Maranville

SOILS / AGGREGATES

**Sieve Analysis (ASTM C117-04/C136-06)**

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	98%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	70%
#200	21%



**Moisture Density Relationship: (ASTM D698-07)**

Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 117.8

Optimum Moisture: 11.8

**Plasticity Index (ASTM D4318-05)**

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

**Soil Classification (ASTM D2487-06) SM**

Reviewed By: [Signature]

Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Attn: Chris Edgmon

Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project Manager: Vickie Maranville

Report Date: July 17, 2009

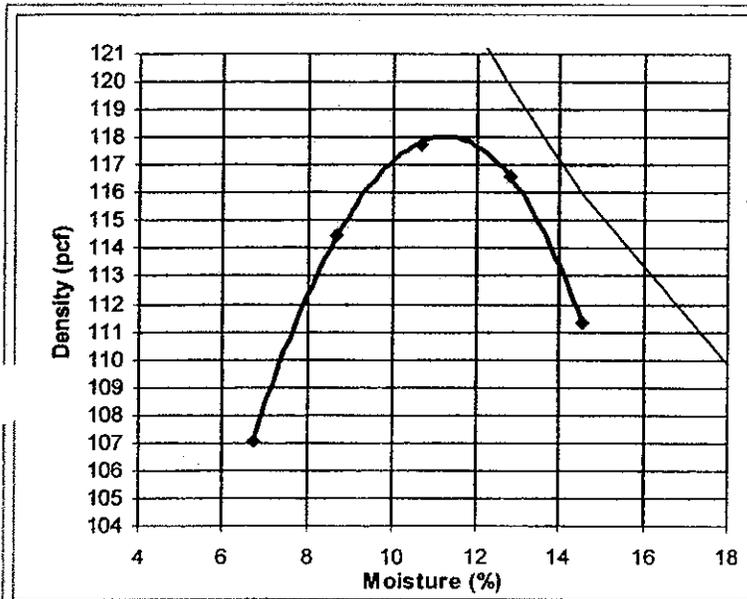
Project #: 9-517-00022D  
 Work Order #: 18  
 Lab #: 9-0781-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/14/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL 071409-10

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	97%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	74%
#200	31%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 118.0  
 Optimum Moisture: 11.2

Plasticity Index (ASTM D4318-05)

Liquid Limit: 23  
 Plastic Limit: 21  
 Plasticity Index: 2

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 hg

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com





Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: June 03, 2009

Attention: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 3  
 Sampled By: Client/C.Timm  
 Date Sampled: 06/02/2009

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)  
 Plasticity Index (ASTM D4318-05)  
 Soil Classification (ASTM D2487-06)

Sample Location	Soil Class.	L.L.	P.I.	#200	#100	#50	#40	#30	#16	#10	#8	#4	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	6"	12"	Lab Number	
SNLMWL-060209-1	SM	NV	NP	32	77	90	92	93	96	98	98	99			100											9-0636-01
SNLMWL-060209-2	SM	NV	NP	29	72	85	86	88	90	94	96	99			100											9-0636-02
SNLMWL-060209-3	SM	NV	NP	33	78	91	93	95	97	98	98	99			100											9-0636-03
SNLMWL-060209-4	SM	NV	NP	30	75	89	91	93	96	98	98	99			100											9-0636-04
SNLMWL-060209-5	SM	NV	NP	30	75	88	90	91	94	97	97	99			100											9-0636-05
SNLMWL-060209-6	SM	NV	NP	31	73	88	90	92	95	96	97	99			99	100										9-0636-06

Reviewed By: \_\_\_\_\_

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: June 03, 2009

Attention: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 3  
Sampled By: Client/C.Timm  
Date Sampled: 06/02/2009

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)  
Plasticity Index (ASTM D4318-05)  
Soil Classification (ASTM D2487-06)

Lab Number	Sample Location	Soil Class.	L.L.	P.I.	D10	D30	D60	CC	CU
9-0636-01	SNLMWL-060209-1	SM	NV	NP	0	0	0.114	0	0
9-0636-02	SNLMWL-060209-2	SM	NV	NP	0	0.074	0.122	0	0
9-0636-03	SNLMWL-060209-3	SM	NV	NP	0	0	0.113	0	0
9-0636-04	SNLMWL-060209-4	SM	NV	NP	0	0.074	0.118	0	0
9-0636-05	SNLMWL-060209-5	SM	NV	NP	0	0	0.118	0	0
9-0636-06	SNLMWL-060209-6	SM	NV	NP	0	0	0.119	0	0

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 15, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 17  
Lab #: 9-0770-03  
Sampled By: Jon Schermerhorn  
Date Sampled: 07/10/2009  
Visual Description of Brown Silty Sand  
Material:  
Sample Source: SNL MWL 071009-7

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<u>Sieve Size</u>	<u>Passing</u>
3/8in.	100%
#4	99%
#8	98%
#10	97%
#16	97%
#30	94%
#40	92%
#50	90%
#100	77%
#200	27%

Plasticity Index (ASTM D4318-05)

Preperation Method: Dry  
Liquid Limit Method: A

Liquid Limit: NV  
Plastic Limit: NV  
Plasticity Index: NP

PI Sample Was Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 15, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 17  
 Lab #: 9-0770-04  
 Sampled By: Jon Schemerhorn  
 Date Sampled: 07/10/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL 071009-8

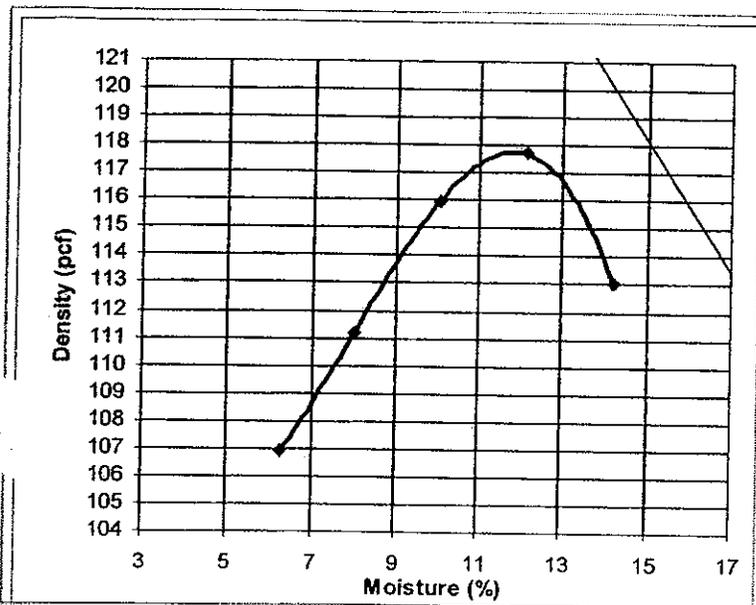
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	98%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	70%
#200	21%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.651 Assumed  
 Maximum Density: 117.8  
 Optimum Moisture: 11.8

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV  
 Plastic Limit: NV  
 Plasticity Index: NP

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 15, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 17  
Lab #: 9-0770-05  
Sampled By: Jon Schermerhorn  
Date Sampled: 07/10/2009  
Visual Description of Brown Silty Sand  
Material:  
Sample Source: SNL MWL 071009-9

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	100%
3/8in.	99%
#4	98%
#8	96%
#10	96%
#16	94%
#30	91%
#40	90%
#50	87%
#100	73%
#200	26%

Plasticity Index (ASTM D4318-05)

Preperation Method: Dry

Liquid Limit: NV

Liquid Limit Method: A

Plastic Limit: NV

Soil Classification (ASTM D2487-06) SM

Plasticity Index: NP

PI Sample Was Air Dried.

Reviewed By: [Signature]  
jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 17, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Work Order #: 18  
 Lab #: 9-0781-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/14/2009  
 Visual Description of Brown Silty Sand  
 Material:  
 Sample Source: SNL MWL 071409-10

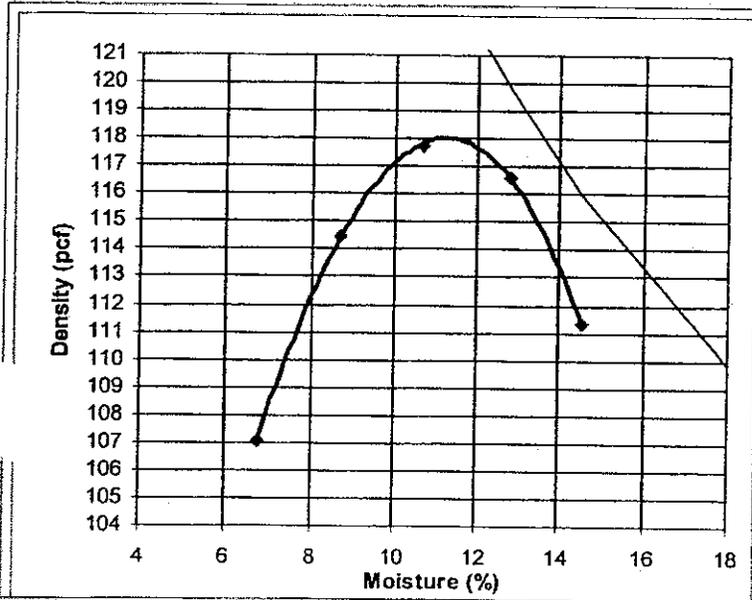
Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/4in.	100%
1/2in.	99%
3/8in.	99%
#4	97%
#8	96%
#10	95%
#16	93%
#30	91%
#40	89%
#50	87%
#100	74%
#200	31%



Moisture Density Relationship: (ASTM D698-07) Method: B  
 Preparation Method: Dry Rammer Type: Mechanical  
 Specific Gravity: 2.551 Assumed  
 Maximum Density: 118.0  
 Optimum Moisture: 11.2

Plasticity Index (ASTM D4318-05)

Liquid Limit: 23  
 Plastic Limit: 21  
 Plasticity Index: 2

Preparation Method: Dry Liquid Limit Method: A  
 PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]  
 hg

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
 Email:



Client: Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 20  
Lab #: 9-0805-01  
Sampled By: Jon Schemmerhorn  
Date Sampled: 07/16/2009  
Visual Description of Brown Silty Sand  
Material:  
Sample Source: SNL MWL 071609-11

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<u>Sieve Size</u>	<u>Passing</u>
3/8in.	100%
#4	100%
#8	99%
#10	98%
#16	97%
#30	95%
#40	94%
#50	89%
#100	80%
#200	36%

Plasticity Index (ASTM D4318-05)

Preparation Method: Dry

Liquid Limit: 24

Liquid Limit Method: A

Plastic Limit: 18

Soil Classification (ASTM D2487-06) SC-SM

Plasticity Index: 6

PI Sample Was Air Dried.

Reviewed By: [Signature]  
Jan

Distribution: Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 27, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Work Order #: 22  
Lab #: 9-0825-01  
Sampled By: Jon Schermerhom  
Date Sampled: 07/23/2009  
Visual Description of Brown Silty Sand  
Material:

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sample Source: SNL MWL 071609-12

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	98%
#8	97%
#10	96%
#16	94%
#30	92%
#40	90%
#50	88%
#100	76%
#200	29%

Plasticity Index (ASTM D4318-05)

Preperation Method: Dry

Liquid Limit: 22

Liquid Limit Method: A

Plastic Limit: 20

Soil Classification (ASTM D2487-06) SM

Plasticity Index: 2

PI Sample Was Air Dried.

Reviewed By: [Signature]

Jan

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371

www.amec.com



## **2009 Density and Moisture Tests**



## **2009 CQC Density and Moisture Tests**





Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: May 29, 2009  
 Amended Date: December 22, 2009  
 Project #: 9-517-00022D  
 Report #: 22359

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Tested By: Miguel Chavez  
 Date Tested: 5/22/2009  
 Visual Description of Landfill Cover  
 Material:

Project Manager: Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy

Nuclear Density Gauge

Make: Troxler  
 Model #: 3440  
 Serial #: 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	Gridline #5	FSG	D	6	11.6	2	2	131.6	117.9	120.1	98	90	
02-1	Gridline #9	FSG	D	6	9.7	2	2	128.9	117.5	120.1	98	90	
03-1	Gridline #12	FSG	D	6	10.2	2	2	128.0	116.1	120.1	97	90	
04-1	Gridline #11	FSG	D	6	9.8	2	2	131.5	119.1	120.1	99	90	
05-1	Gridline #8	FSG	D	6	11.5	2	2	131.6	118.0	120.1	98	90	
06-1	Gridline #3	FSG	D	6	9.8	2	2	132.9	121.0	120.1	100+	90	
07-1	Gridline #2	FSG	D	6	9.8	2	2	131.5	119.1	120.1	99	90	
08-1	Gridline #7	FSG	D	6	10.2	2	2	132.0	119.8	120.1	100	90	
09-1	Gridline #6	FSG	D	6	10.5	2	2	130.6	118.1	120.1	98	90	
10-1	Gridline #1	FSG	D	6	11.4	2	2	129.5	116.3	120.1	97	90	
11-1	Gridline #4	FSG	D	6	9.9	2	2	132.9	120.9	120.1	100+	90	
12-1	Gridline #10	FSG	D	6	11.6	2	2	129.2	115.8	120.1	96	90	
13-1	Gridline #13	FSG	D	6	10.2	2	2	129.9	117.8	120.1	98	90	

Remarks: Revised.

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 22, 2009  
**Amended Date:** December 22, 2009  
**Project #:** 9-517-00022D  
**Report #:** 22550

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 6/18/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1453140.678/411700.30, Edi North Slope Lift 6	5380.11	D	6	11.1	2	2	131.9	118.7	120.1	99	90
02-1	1453140.678/411700.30, Edi North Slope Lift 5	5380.11	D	12	11.8	2	2	129.8	116.0	120.1	97	90
03-1	1452871.387/411839.40, Edi Dog Leg Lift 2	5385.25	D	6	11.1	2	2	129.0	116.1	120.1	97	90
04-1	1452871.387/411839.40, Edi Dpg Leg Lift 1	5385.25	D	12	11.9	2	2	129.8	115.9	120.1	97	90
05-1	1452720.29/411575.421, Edi West Slope Lift 6	5379.98	D	6	11.9	2	2	131.2	117.2	120.1	98	90
06-1	1452720.29/411575.421, Edi West Slope Lift 5	5379.48	D	12	11.3	2	2	130.0	116.8	120.1	97	90
07-1	1453118.61/411913.206, Edi East Slope Lift 6	5384.43	D	6	11.7	2	2	132.3	118.4	120.1	99	90
08-1	1453118.61/411913.206, Edi East Slope Lift 5	5383.93	D	12	11.3	2	2	128.2	115.1	120.1	96	90

**Remarks:** Revised.

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22551  
**Tested By:** Miguel Chavez  
**Date Tested:** 6/19/2009  
**Visual Description of Mixed Waste Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1452857.354/411788.535, EDi Wedge Lift 1-GB #7	5386.27	D	4	11.1	2	2	127.8	115.0	120.1	96	90	
02-1	1452939.658/411787.773, EDi Wedge Lift 1-GB #8	5386.75	D	4	12.4	2	2	125.9	112.0	115.8	97	90	
03-1	1452937.721/411879.78, EDi Wedge Lift 1-GB #11	5388.28	D	4	12.2	2	2	123.2	109.1	115.8	94	90	

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 23, 2009  
**Amended Date:** December 22, 2009  
**Project #:** 9-517-00022D  
**Report #:** 22565

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 6/17/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1452921.699/411914.751, Edi East Slope Lift 4	5386.69	D	6	11.3	2	2	130.9	117.6	120.1	98	90
02-1	1452921.699/411914.751, Edi East Slope Lift 3	5386.69	D	12	12.2	2	2	131.2	116.9	120.1	97	90
03-1	1452823.77/411579.7, Edi West Slope Lift 4	5380.63	D	6	11.1	2	2	129.9	116.9	120.1	97	90
04-1	1452823.77/411579.7, Edi West Slope Lift 3	5380.63	D	12	11.1	2	2	127.7	114.9	120.1	96	90
05-1	1453138.757/411644.75, Edi North Slope Lift 4	5378.58	D	6	12.7	2	2	128.0	113.5	120.1	95	90
06-1	1453138.757/411644.75, Edi North Slope Lift 3	5378.58	D	12	11.8	2	2	129.9	116.1	120.1	97	90

**Remarks:** Revised.

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Report Date:** June 23, 2009

**Project #:** 9-517-00022D

**Report #:** 22572

**Tested By:** Miguel Chavez

**Date Tested:** 6/19/2009

**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1452928.831/411861.929, Edi Wedge Lift 2 GB #11	5388.23	D	6	11.5	2	2	123.6	110.9	115.8	96	90	
02-1	1452884.006/411800.636, Edi Wedge Lift 2 GB #7	5386.71	D	6	11.7	2	2	125.9	112.7	115.8	97	90	
03-1	1452930.863/411786.160, Edi Wedge Lift 2 GB #8	5386.69	D	6	10.6	2	2	122.5	110.8	115.8	96	90	
04-1	1453129.332/411778.762, Edi North Slope Lift 8	5382.30	D	6	14.2	2	2	122.8	107.6	115.8	93	90	
05-1	1453129.332/411778.762, Edi North Slope Lift 7	5382.30	D	12	14.3	2	2	123.7	108.0	115.8	93	90	

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 23, 2009  
**Amended Date:** December 22, 2009  
**Project #:** 9-517-00022D  
**Report #:** 22575

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 6/17/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1453138.995/411843.859, Edi North Slope Lift 2	5381.41	D	6	10.8	2	2	131.8	118.9	120.1	99	90
02-1	1453138.995/411843.859, Edi North Slope Lift 1	5381.41	D	12	11.2	2	2	129.9	116.8	120.1	97	90
03-1	1453029.223/411915.938, Edi East Slope Lift 2	5384.52	D	6	11.2	2	2	129.0	116.0	120.1	97	90
04-1	1453029.223/411915.938, Edi East Slope Lift 1	5384.52	D	12	11.0	2	2	128.9	116.1	120.1	97	90
05-1	1452969.883/411578.344, Edi West Slope Lift 2	5379.90	D	6	11.8	2	2	131.0	117.1	120.1	98	90
06-1	1452969.883/411578.344, Edi West Slope Lift 1	5379.90	D	12	11.7	2	2	128.5	115.0	120.1	96	90

**Remarks:** Revised.

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTBS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 25, 2009  
**Amended Date:** December 22, 2009  
**Project #:** 9-517-00022D  
**Report #:** 22590

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 6/24/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1452988.634/411737.606, Edi Lift #3, GB 8	5385.54	D	2	10.9	2	2	122.7	110.7	117.0	95	90
02-1	1452693.015/411774.812, Edi Lift #3, GB 6	5385.27	D	2	11.6	2	2	126.5	113.4	117.0	97	90

**Remarks:** Revised.

Reviewed By: [Signature]  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** June 25, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22591  
**Tested By:** Miguel Chavez  
**Date Tested:** 6/23/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1452875.793/411617.388, Edi NS Lift #3, GB 2	5383.35	D	2	10.3	2	2	129.8	117.9	115.8	100+	90	
02-1	1452775.977/411630.181, Edi NS Lift #3 GB #1	5383.15	D	2	10.7	2	2	131.9	119.2	115.8	100+	90	

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: Environmental Dimensions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Attn: Chris Edgmon

Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Report Date: June 30, 2009

Project #: 9-517-00022D

Report #: 22688

Tested By: Miguel Chavez

Date Tested: 6/26/2009

Visual Description of Landfill Cover  
 Material:

Project Manager: Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3440  
 Serial #: 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1452902.581/411891.485 Edi NS Lift 3, GB 11 SE	5388.43	D	2	11.4	2	2	128.7	115.6	117.0	99	90	
02-1	1452984.795/411896.276 Edi NS Lift 3 GB 11 NE	5388.55	D	2	12.4	2	2	119.9	106.6	117.0	91	90	
03-1	1452717.578/411628.846 Edi NS Lift 4 GB 1	5383.09	D	4	13.8	2	2	135.7	119.4	117.0	100+	90	
04-1	1452835.983/411659.565 Edi NS Lift 4 GB 2	5384.16	D	4	11.6	2	2	127.9	114.5	117.0	98	90	
05-1	1452941.727/411653.987 Edi NS Lift 4 GB 3	5384.26	D	4	13.8	2	2	124.6	109.5	117.0	94	90	
06-1	1453050.698/411638.477 Edi NS Lift 4 GB 4	5382.93	D	4	12.4	2	2	127.3	113.3	117.0	97	90	
07-1	1453125.331/411628.696 Edi NS Lift 4 GB 5	5380.69	D	4	12.9	2	2	127.6	113.0	117.0	97	90	
08-1	1453114.596/411738.755 Edi NS Lift 4 GB 10	5383.31	D	4	12.0	2	2	127.5	113.9	117.0	97	90	
09-1	1453049.705/411727.447 Edi NS Lift 4 GB 9	5384.54	D	4	12.0	2	2	131.7	117.7	117.0	100+	90	
10-1	1452956.112/411746.608 Edi NS Lift 4 GB 8	5385.93	D	4	12.7	2	2	135.4	117.1	117.0	100	90	
11-1	1452844.073/411750.636 Edi NS Lift 4 GB 7	5385.90	D	4	11.6	2	2	130.0	116.4	117.0	99	90	
12-1	1452717.204/411751.361 Edi NS Lift 4 GB 6	5385.40	D	4	13.5	2	2	133.3	117.4	117.0	100	90	

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes

<u>Test #</u>	<u>Location</u>	<u>Elevation</u>	<u>Test Mode</u>	<u>Probe Depth (in)</u>	<u>% Moisture Required</u>			<u>Wet Density (pcf)</u>	<u>Dry Density (pcf)</u>	<u>Maximum Density (pcf)</u>	<u>% Com-paction Required</u>	
					<u>Actual</u>	<u>(-)</u>	<u>(+)</u>				<u>Com-paction</u>	<u>Min</u>

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 02, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22709  
**Tested By:** Miguel Chavez  
**Date Tested:** 6/29/2009  
**Visual Description of Land Fill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1453087.931/411883.297, Edi NS Lift 4 GB 13	5386.64	D	4	10.9	2	2	126.2	113.8	117.0	97	90
02-1	1453011.692/411829.950, Edi NS Lift 4 GB 12	5387.18	D	4	13.1	2	2	127.3	112.2	117.0	96	90
03-1	1452942.355/411842.351, Edi NS Lift 4 GB 11	5387.98	D	4	10.1	2	2	125.7	114.1	117.0	98	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 02, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D  
 Report #: 22710  
 Tested By: Miguel Chavez  
 Date Tested: 07/01/2009  
 Visual Description of Land Fill  
 Material:

Project Manager: Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3440  
 Serial #: 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1453089.584/411865.806, Edi NS Lift 5 GB 13	5386.736	D	4	12.1	2	2	124.7	111.3	117.0	95	90
02-1	1453005.708/411862.029, Edi NS Lift 5 GB 12	5388.433	D	4	11.5	2	2	125.8	112.8	117.0	96	90
03-1	1452928.388/411870.284, Edi NS Lift 5 GB 11	5389.165	D	4	10.2	2	2	117.3	106.5	117.0	91	90
04-1	1452764.037/411801.181, Edi NS Lift 5 GB 7 East Edge (Retest)	5387.15	D	4	7.1	2	2	111.9	104.5	117.0	89	90 *
05-1	1452764.037/411801.181, Edi NS Lift 5 GB 7 East Edge (Retest of #04-1, Dated Today 7/1/09)	5387.15	D	4	10.3	2	2	123.7	112.1	117.0	96	90

Reviewed By: *JDR*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.



**Client:** Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

**Report Date:** July 06, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22744  
**Tested By:** Miguel Chavez  
**Date Tested:** 7/2/2009  
**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1453098.80/411772.287, Edi NS Lift 5, GB 10	5385.18	D	4	11.1	2	2	122.5	110.2	117.0	94	90
02-1	1453031.124/411773.428, Edi NS Lift 5, GB 9	5386.58	D	4	11.9	2	2	127.9	114.3	117.0	98	90
03-1	1452934.646/411771.944, Edi NS Lift 5, GB 8	5387.385	D	4	10.8	2	2	125.2	113.1	117.0	97	90
04-1	1452836.872/411776.795, Edi NS Lift 5, GB 7	5387.113	D	4	13.6	2	2	128.3	112.9	117.0	96	90
05-1	1452711.127/411778.989, Edi NS Lift 5, GB 6	5386.501	D	4	13.4	2	2	133.8	118.0	117.0	100+	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Report Date:** July 10, 2009

**Project #:** 9-517-00022D  
**Report #:** 22811

**Tested By:** Miguel Chavez  
**Date Tested:** 7/7/2009

**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1453106.816/411648.065, Edi NS, Lift 5, GB 5	5382.41	D	4	6.9	2	2	110.9	103.7	117.0	89	90	*
02-1	1453017.754/411680.674, Edi NS, Lift 5, GB 4	5384.76	D	4	11.9	2	2	123.8	110.6	117.0	95	90	
03-1	1452890.528/411651.069, Edi NS, Lift 5, GB 3	5384.58	D	4	12.2	2	2	117.0	104.3	117.0	89	90	*
04-1	1452807.640/411639.611, Edi NS, Lift 5, GB 2	5384.22	D	4	6.8	2	2	113.3	106.1	117.0	91	90	*
05-1	1452703.661/411666.680, Edi NS, Lift 5, GB 1	5384.08	D	4	12.3	2	2	123.6	110.1	117.0	94	90	

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**

\* Material did not fall within specified tolerances.



Client: Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

Report Date: July 10, 2009

Attn: Chris Edgmon  
 Project Name: EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

Project #: 9-517-00022D

Report #: 22812

Tested By: Miguel Chavez

Date Tested: 07/09/2009

Visual Description of Landfill  
 Material:

Project Manager: Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

Make: Troxler  
 Model #: 3440  
 Serial #: 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	
					Actual	(-)	(+)				Com-paction	Required Min Max
01-1	1453106.816/411648.065, Edi NS, Lift 5, GB 5 (Retest of #01-1, Dated 7/7/09)	5382.41	D	4	13.5	2	2	131.5	115.9	117.0	99	90
02-1	1453017.754/411680.674, Edi NS, Lift 5, GB 4 (Retest)	5384.76	D	4	12.1	2	2	132.3	118.0	117.0	100+	90
03-1	1452890.528/411651.069, Edi NS, Lift 5, GB 3 (Retest of #03-1, Dated 7/7/09)	5384.58	D	4	12.2	2	2	118.2	115.4	117.0	99	90
04-1	1452807.640/411639.611, Edi NS, Lift 5, GB 2 (Retest of #04-1, Dated 7/7/09)	5384.22	D	4	10.5	2	2	129.0	116.7	117.0	100	90
05-1	1452703.661/411666.680, Edi NS, Lift 5, GB 1 (Retest)	5384.08	D	4	10.9	2	2	123.7	111.6	117.0	95	90

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Report Date:** July 16, 2009

**Project #:** 9-517-00022D

**Report #:** 22864

**Tested By:** Miguel Chavez

**Date Tested:** 7/14/2009

**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Min	Max
01-1	1453102.8/411858.290, Edi NS, Lift 6, GB 13	5387.02	D	4	13.2	2	2	130.7	115.5	117.0	99	90
02-1	1453014.835/411888.254, Edi NS, Lift 6, GB 12	5389.19	D	4	12.7	2	2	130.6	115.5	117.0	99	90
03-1	1452927.72/411807.645, Edi NS, Lift 6, GB 11	5388.36	D	4	10.9	2	2	128.0	115.5	117.0	99	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

**Report Date:** July 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

**Project #:** 9-517-00022D

**Report #:** 22899

**Tested By:** Miguel Chavez

**Date Tested:** 7/17/2009

**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1452727.365/411659.073, Edi, NS, Lift 6, GB 10	5384.73	D	4	10.5	2	2	130.8	118.4	117.0	100+	90	
02-1	1452827.740/411597.936, Edi, NS, Lift 6, MW 4	5383.85	D	4	9.6	2	2	120.5	109.9	117.0	94	90	*
03-1	1452909.633/411610.716, Edi, NS, Lift 6, GB 8	5384.37	D	4	11.6	2	2	132.2	118.5	117.0	100+	90	
04-1	1452994.019/411636.632, Edi, NS, Lift 6, GB 7	5384.62	D	4	10.0	2	2	117.1	106.5	117.0	91	90	
05-1	1453106.027/411597.539, Edi, NS, Lift 6, GB 6	5382.05	D	4	10.7	2	2	121.7	110.0	117.0	94	90	
06-1	1452766.080/411748.630, Edi, NS, Lift 6, GB 1	5386.65	D	4	14.0	2	2	129.7	113.8	117.0	97	90	
07-1	1452874.222/411765.722, Edi, NS, Lift 6, GB 2	5387.35	D	4	14.0	2	2	128.4	112.2	117.0	96	90	
08-1	1452983.309/411717.119, Edi, NS, Lift 6, GB 3	5386.47	D	4	10.2	2	2	127.3	115.5	117.0	99	90	
09-1	1453020.845/411720.980, Edi, NS, Lift 6, GB 4	5386.19	D	4	10.1	2	2	121.3	110.2	117.0	94	90	
10-1	1453119.012/411768.980, Edi, NS, Lift 6, GB 5	5384.68	D	4	12.5	2	2	130.5	116.0	117.0	99	90	
11-1	1453020.845/411720.980, Edi, NS, Lift 6, GB 9	5386.19	D	4	12.4	2	2	131.4	117.0	117.0	100	90	

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**

**Test Mode = D for Direct Transmission and B for Backscatter Modes**

**\* Material did not fall within specified tolerances.**

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com- paction Required	
					Actual	(-)	(+)				Com- paction	Min

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes  
 \* Material did not fall within specified tolerances.



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22900

**Tested By:** Teri Godinez  
**Date Tested:** 7/21/2009

**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1453072.143/411748.214, Edi, NS, Lift 6, MW 4 (Retest of #02-1, Dated 7/17/09)	5385.71	D	4	10.3	2	2	118.0	107.0	117.0	91	90	

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

**Report Date:** July 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22901  
**Tested By:** Teri Godinez  
**Date Tested:** 7/21/2009  
**Visual Description of Landfill Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1452921.950/411855.364, Edi, NS, Lift 7, GB 11	5389.83	D	4	11.9	2	2	129.7	115.9	117.0	99	90
02-1	1452987.568/411813.348, Edi, NS, Lift 7, GB 12	5388.46	D	4	13.8	2	2	126.2	110.9	117.0	95	90
03-1	1453110.586/411868.463, Edi, NS, Lift 7, GB 13	5387.18	D	4	11.2	2	2	128.8	115.8	117.0	99	90
04-1	1453094.991/411768.119, Edi, NS, Lift 7, GB 10	5385.87	D	4	12.6	2	2	132.0	117.2	117.0	100	90
05-1	1452987.308/411767.206, Edi, NS, Lift 7, GB 9	5387.79	D	4	12.4	2	2	132.2	117.6	117.0	100+	90
06-1	1452932.077/411730.179, Edi, NS, Lift 7, GB 8	5387.26	D	4	11.0	2	2	125.0	112.6	117.0	96	90
07-1	1452835.121/411768.504, Edi, NS, Lift 7, GB 7	5387.65	D	4	12.2	2	2	133.0	118.5	117.0	100+	90
08-1	1452731.647/411796.384, Edi, NS, Lift 7, GB 6	5387.77	D	4	10.6	2	2	131.5	118.9	117.0	100+	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 22, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22906  
**Tested By:** Teri Godinez  
**Date Tested:** 7/22/2009  
**Visual Description of Landfill Cap Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	1452729.290/411635.888, Edi, NS, Lift 7, GB 1	5384.83	D	4	13.7	2	2	125.1	110.0	117.0	94	90
02-1	1452807.176/411643.682, Edi, NS, Lift 7, GB 2	5385.21	D	4	13.6	2	2	127.6	112.4	117.0	96	90
03-1	1452897.243/411705.048, Edi, NS, Lift 7, GB 3	5386.73	D	4	11.4	2	2	122.9	110.3	117.0	94	90
04-1	1453015.327/411640.438, Edi, NS, Lift 7, GB 4	5384.72	D	4	13.0	2	2	124.8	110.4	117.0	94	90
05-1	1453116.685/411630.254, Edi, NS, Lift 7, GB 5	5382.44	D	4	11.8	2	2	124.5	111.3	117.0	95	90

Reviewed By: *[Signature]*  
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** July 28, 2009

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Project #:** 9-517-00022D  
**Report #:** 22977  
**Tested By:** Teri Godinez  
**Date Tested:** 7/24/2009  
**Visual Description of Landfill Cap Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	N1453086.146, E411838.368, Edi, NS, Lift 8, GB 13	5388.09	D	4	10.9	2	2	133.6	120.5	117.0	100+	90
02-1	N1452997.104, E411841.058, Edi, NS, Lift 8, GB 12	5389.51	D	4	11.9	2	2	131.7	117.7	117.0	100+	90
03-1	N1452957.031, E411862.485, Edi, NS, Lift 8, GB 11	5390.46	D	4	10.5	2	2	131.3	118.9	117.0	100+	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

**BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep**  
**Test Mode = D for Direct Transmission and B for Backscatter Modes**



Client: Environmental Dimentions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107-

Report Date: July 29, 2009

Attn: Chris Edgmon  
Project Name: EDI SNL Mixed Waste Landfill Cover  
ABQ, NM

Project #: 9-517-00022D  
Report #: 23040  
Tested By: Teri Godinez  
Date Tested: 7/28/2009  
Visual Description of Landfill Cap Material:

Project Manager: Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

**Nuclear Density Gauge**

Make: Troxler  
Model #: 3440  
Serial #: 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com- paction	% Com- paction Required	
					Actual	(-)	(+)					Min	Max
01-1	1453102.688/411770.575, Edi, NS, Lift 8, GB 10	5386.49	D	4	7.6	2	2	122.9	114.2	117.0	98	90	*
02-1	1453070.888/411750.471, Edi, NS, Lift 8, MW 4	5386.89	D	4	8.8	2	2	124.6	114.5	117.0	98	90	*
03-1	1453026.647/411732.295, Edi, NS, Lift 8, GB 9	5387.18	D	4	10.1	2	2	131.3	119.3	117.0	100+	90	
04-1	1452947.698/411770.476, Edi, NS, Lift 8, GB 8	5388.55	D	4	8.6	2	2	124.8	114.9	117.0	98	90	*
05-1	1452846.893/411754.156, Edi, NS, Lift 8, GB 7	5387.95	D	4	10.0	2	2	133.5	121.4	117.0	100+	90	
06-1	4152692.486/411757.965, Edi, NS, Lift 8, GB 6	5387.42	D	4	10.0	2	2	129.2	117.4	117.0	100	90	
07-1	1452706.558/411649.598, Edi, NS, Lift 8, GB 1	5385.48	D	4	10.7	2	2	136.6	123.4	117.0	100+	90	
08-1	1452812.797/411637.497, Edi, NS, Lift 8, GB 2	5385.68	D	4	11.4	2	2	128.4	115.3	117.0	99	90	
09-1	1452945.200/411608.307, Edi, NS, Lift 8, GB 3	5385.29	D	4	12.5	2	2	130.0	115.5	117.0	99	90	
10-1	1453022.769/411603.527, Edi, NS, Lift 8, GB 4	5384.74	D	4	11.4	2	2	128.5	115.3	117.0	99	90	
11-1	1453110.772/411605.064, Edi, NS, Lift 8, GB 5	5383.04	D	4	13.4	2	2	128.1	113.0	117.0	97	90	
12-1	1452947.698/411770.476, Edi, NS, Lift 8, GB 8 (Retest of #04-1, Dated Today 7/28/09)	5388.55	D	4	10.3	2	2	134.7	122.2	117.0	100+	90	
13-1	1453102.688/411770.575, Edi, NS, Lift 8, GB 10 (Retest of #01-1, Dated Today 7/28/09)	5386.49	D	4	11.2	2	2	133.8	120.2	117.0	100+	90	

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
14-1	1453070.888/411750.471, Edi, NS, Lift 8, MW 4 (Retest of #02-1, Dated Today 7/28/09)	5386.89	D	4	10.3	2	2	124.8	113.2	117.0	97	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.



**Client:** Environmental Dimentions Inc  
 1901 Candelaria Rd NW  
 ABQ, NM 87107-

**Report Date:** September 09, 2009  
**Amended Date:** December 22, 2009  
**Project #:** 9-517-00022D  
**Report #:** 23464

**Attn:** Chris Edgmon  
**Project Name:** EDI SNL Mixed Waste Landfill Cover  
 ABQ, NM

**Tested By:** Miguel Chavez  
**Date Tested:** 9/3/2009  
**Visual Description of Landfill Cover Material:**

**Project Manager:** Vickie Maranville

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0734-01	118.9	9.6	ASTM D698-07 / A	Silty Sand

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction	% Com-paction Required	
					Actual	(-)	(+)					Min	Max
01-1	GB 12	FSG	D	4	4.7	2	2	111.4	106.4	118.9	89		*
02-1	GB 12	FSG	D	10	4.9	2	2	116.7	111.2	118.9	94		*
03-1	GB 8	FSG	D	4	3.9	2	2	93.1	89.6	118.9	75		*
04-1	GB 8	FSG	D	6	3.9	2	2	100.9	97.0	118.9	82		*
05-1	GB 2	FSG	D	4	3.8	2	2	109.5	105.5	118.9	89		*
06-1	GB 2	FSG	D	8	3.7	2	2	118.8	114.5	118.9	96		*
07-1	GB 5	FSG	D	4	5.4	2	2	110.2	104.6	118.9	88		*
08-1	GB 5	FSG	D	8	3.8	2	2	116.0	111.8	118.9	94		*

Reviewed By: *[Signature]*  
 mbr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (2)  
 Email:

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.



## **2009 CQA Density and Moisture Tests**



# Field Density Soils Result



**Client:** URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

**Attn:** Don Lopez

**Project Manager:** Robert Romero

**Report Date:** May 25, 2009  
**Project #:** 9-519-005363  
**Phase:** Task:  
**Project Name:** Mixed Waste Landfill 2009  
**Address:** KAFB

**Report Number:** 13718  
**Tested By:** Robert Carr  
**Date Tested:** 2009-05-22  
**Visual Material Description:** Landfill Cover Subgrade

## FIELD DENSITY TEST (ASTM D2922-05 and ASTM D3017-05)

### Moisture Density Curves Used

Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTMD698 / A	

### Nuclear Density Gauge

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	%Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Min	Max
1	Subgrade Surface, Grid Block 5	5384.06	D	6	10.6	2	2	129.7	117.3	120.1	98	95
2	Subgrade Surface, Grid Block 12	5381.71	D	6	11.0	2	2	128.9	116.1	120.1	97	95
3	Subgrade Surface, Grid Block 8	5385.04	D	6	10.0	2	2	130.8	118.9	120.1	99	95
4	Subgrade Surface, Grid Block 1	5381.04	D	6	10.0	2	2	129.6	117.9	120.1	98	95

BTSS=Below Top of Subbase, BTOT=Below Top of Fill, FBC=Final Base Course, FSG=Finished Subgrade, FBC=Finished Base Course, BOP=Bottom of Pipe, BOB=Bottom of Base, BOF=Bottom of Footing, OGP=Original Ground Prep Test Mode=D for Direct Transmission and B for Backscatter Modes

**Reviewed By:**  AS

**Distribution:** Client: File: Supplier: Other: Don Lopez (email) (1)

AMEC Earth & Environmental Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
(505) 821-1801 FAX: (505) 821-7371



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: June 23, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22570  
Tested By: Robert Carr  
Date Tested: 6/19/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
6-1811	120.1	11.6	ASTM D698-07 / a	Light Red Sandy
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	% Compaction Required	
					Actual	(-)	(+)					Min	Max
01-1	Native Soil Lift 1, Grid Block 8	5386.80	D	4	10.7	2	2	117.0	105.7	115.8	91	90	
02-1	Native Soil Lift 1, Grid Block 11	5388.33	D	4	11.0	2	2	118.9	107.1	115.8	92	90	
03-1	East Slope Lift 6	5384.57	D	6	10.1	2	2	129.3	117.4	120.1	98	90	
04-1	East Slope Lift 5	5384.07	D	12	10.3	2	2	123.9	112.3	120.1	94	90	
05-1	West Slope Lift 6	5379.92	D	6	11.1	2	2	131.0	117.9	120.1	98	90	
06-1	West Slope Lift 5	5379.42	D	12	10.6	2	2	127.6	115.4	120.1	96	90	
07-1	Native Soil Lift 2, Grid Block 11	5388.23	D	4	11.0	2	2	120.5	108.5	115.8	94	90	
08-1	North Slope Lift 8	5382.30	D	6	15.2	2	2	118.1	102.5	115.8	89	90	*
09-1	North Slope Lift 7	5381.80	D	6	14.0	2	2	121.7	106.7	115.8	92	90	

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes

\* Material did not fall within specified tolerances.



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: June 23, 2009

Attri: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22577  
Tested By: Robert Carr  
Date Tested: 6/22/2009  
Visual Description of Landfill Cap, North Slope  
Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Min	Max
01-1	North Slope Lift 8, Grid Block 13 (Retest)	5382.54	D	6	10.9	2	2	117.1	105.6	115.8	91	90
02-1	North Slope Lift 8, Grid Block 10 (Retest)	5381.31	D	6	10.5	2	2	117.0	105.9	115.8	91	90
03-1	North Slope Lift 8, Grid Block 5 (Retest)	5378.87	D	6	11.0	2	2	117.7	106.0	115.8	92	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: June 25, 2009

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Project #: 9-519-005363  
 Report #: 22595  
 Tested By: Robert Carr  
 Date Tested: 6/23/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

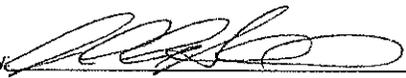
Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-04	115.8	12.3	ASTM D698-07 / A	Clayey Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Native Soil Lift 3, Grid Block 2	5383.34	D	2	10.8	2	2	124.3	112.1	115.8	97	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTBS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course,  
 BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: June 25, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22596  
Tested By: Robert Carr  
Date Tested: 6/24/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	
					Actual	(-)	(+)				Com-paction	Required Min Max
01-1	Native Soil Lift 3, Grid Block 8	5385.53	D	2	10.0	2	2	121.1	110.1	117.0	94	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: June 29, 2009

Project #: 9-519-005363  
 Report #: 22659

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Tested By: Robert Carr  
 Date Tested: 6/26/2009  
 Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	% Compaction Required	
					Actual	(-)	(+)					Min	Max
01-1	Native Soil Lift 3, Grid Block 11	5388.37	D	2	13.7	2	2	130.1	114.4	117.0	98	90	
02-1	Native Soil Lift 4, Grid Block 1	5383.83	D	4	14.0	2	2	134.2	117.7	117.0	100+	90	
03-1	Native Soil Lift 4, Grid Block 3	5383.88	D	4	13.5	2	2	125.9	110.9	117.0	95	90	
04-1	Native Soil Lift 4, Grid Block 5	5380.70	D	4	12.8	2	2	125.9	111.6	117.0	95	90	
05-1	Native Soil Lift 4, Grid Block 9	5384.69	D	4	11.5	2	2	128.3	115.0	117.0	98	90	
06-1	Native Soil Lift 4, Grid Block 7	5385.81	D	4	11.6	2	2	126.0	111.9	117.0	96	90	

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: July 02, 2009

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Project #: 9-519-005363  
 Report #: 22719  
 Tested By: Robert Carr  
 Date Tested: 6/29/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Native Soil Lift 4, Grid Block 13	5386.65	D	4	11.6	2	2	128.1	114.8	117.0	98	90
02-1	Native Soil Lift 4, Grid Block 11	5387.97	D	4	10.1	2	2	124.4	113.0	117.0	97	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: July 02, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22718  
Tested By: Robert Carr  
Date Tested: 7/1/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

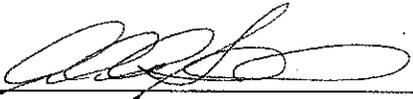
Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Native Soil Lift 5, Grid Block 12	5388.33	D	4	10.0	2	2	118.8	108.0	117.0	92	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: July 07, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22760  
Tested By: Robert Carr  
Date Tested: 7/2/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Native Soil Lift 5, Grid Block 10	5385.29	D	4	12.3	2	2	123.4	109.9	117.0	94	90
02-1	Native Soil Lift 5, Grid Block 8	5387.37	D	4	12.8	2	2	123.0	109.0	117.0	93	90
03-1	Native Soil Lift 5, Grid Block 6	5386.45	D	4	13.5	2	2	128.5	113.2	117.0	97	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: July 15, 2009

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Project #: 9-519-005363  
 Report #: 22828  
 Tested By: Robert Carr  
 Date Tested: 7/9/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com- paction	Min
01-1	Native Soil Lift 5, Grid Block 4	5385.02	D	4	10.0	2	2	128.7	117.0	117.0	100	90
02-1	Native Soil Lift 5, Grid Block 2	5384.18	D	4	10.2	2	2	124.6	113.1	117.0	97	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTBS=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: July 20, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22883  
Tested By: Robert Carr  
Date Tested: 7/14/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com- paction	Min
01-1	Native Soil Lift 6, Grid Block 11	5386.88	D	4	10.4	2	2	128.4	116.3	117.0	99	90
02-1	Native Soil Lift 6, Grid Block 13	5388.39	D	4	12.2	2	2	131.2	116.9	117.0	100	90

Reviewed By: 

jdr.

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
6501 Americas Pkwy. NE, Suite 900  
Albuquerque, NM 87110-

Report Date: July 21, 2009

Attn: Don Lopez  
Project Name: Mix Waste Landfill  
Albuquerque, NM

Project #: 9-519-005363  
Report #: 22895  
Tested By: Robert Carr  
Date Tested: 7/17/2009  
Visual Description of Landfill Cap Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Com-paction	Min
01-1	Native Soil Lift 6, Grid Block 8	5386.48	D	4	12.8	2	2	132.6	117.5	117.0	100	90
02-1	Native Soil Lift 6, Grid Block 6	5386.67	D	4	10.3	2	2	119.4	108.3	117.0	93	90
03-1	Native Soil Lift 6, Grid Block 2	5383.91	D	4	14.0	2	2	126.7	111.1	117.0	95	90
04-1	Native Soil Lift 6, Grid Block 4	5384.61	D	4	10.9	2	2	126.2	113.9	117.0	97	90
05-1	Native Soil Lift 6, Grid Block 9	5386.18	D	4	11.4	2	2	132.1	118.6	117.0	100+	90

Reviewed By:   
jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
Email:  Don Lopez (email) (1)  
Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: July 22, 2009

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Project #: 9-519-005363  
 Report #: 22915  
 Tested By: Robert Carr  
 Date Tested: 7/21/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture Required			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction Required	
					Actual	(-)	(+)				Min	Max
01-1	Native Soil Lift 7, Grid Block 11	5389.85	D	4	12.0	2	2	126.4	112.8	117.0	96	90
02-1	Native Soil Lift 7, Grid Block 13	5387.14	D	4	12.8	2	2	129.1	114.4	117.0	98	90
03-1	Native Soil Lift 7, Grid Block 9	5387.79	D	4	11.9	2	2	129.1	115.4	117.0	99	90
04-1	Native Soil Lift 7, Grid Block 7	5387.64	D	4	12.4	2	2	131.9	117.3	117.0	100	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course,  
 BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: July 24, 2009

Project #: 9-519-005363

Report #: 22946

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Tested By: Robert Carr  
 Date Tested: 7/22/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Compaction	% Compaction Required	
					Actual	(-)	(+)					Min	Max
01-1	Native Soil Lift 7, Grid Block 1	5384.90	D	4	14.0	2	2	124.1	108.9	117.0	93	90	95
02-1	Native Soil Lift 7, Grid Block 3	5386.74	D	4	10.5	2	2	119.5	108.2	117.0	92	90	95
03-1	Native Soil Lift 7, Grid Block 5	5382.35	D	4	12.2	2	2	124.5	111.0	117.0	95	90	95

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes



Client: URS  
 6501 Americas Pkwy. NE, Suite 900  
 Albuquerque, NM 87110-

Report Date: July 29, 2009

Attn: Don Lopez  
 Project Name: Mix Waste Landfill  
 Albuquerque, NM

Project #: 9-519-005363  
 Report #: 23041  
 Tested By: Robert Carr  
 Date Tested: 7/28/2009  
 Visual Description of Landfill Cap  
 Material:

Project Manager: Robert Romero

**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

Moisture Density Curves Used

AMEC Lab #	Maximum Density	Optimum Moisture	Test Type / Method	Description
9-0629-01	117.0	12.0	ASTM D698-07 / B	Silty Sand

Nuclear Density Gauge

Make: Troxler  
 Model #: 3430  
 Serial #: 35427

Test #	Location	Elevation	Test Mode	Probe Depth (in)	% Moisture			Wet Density (pcf)	Dry Density (pcf)	Maximum Density (pcf)	% Com-paction Required	
					Actual	(-)	(+)				Min	Max
01-1	Native Soil Lift 8, Grid Block 12	5389.71	D	6	10.0	2	2	128.7	117.0	117.0	100	90
02-1	Native Soil Lift 8, Grid Block 6	5387.23	D	6	10.0	2	2	127.1	115.5	117.0	99	90
03-1	Native Soil Lift 8, Grid Block 2	5385.65	D	6	10.8	2	2	128.6	116.1	117.0	99	90
04-1	Native Soil Lift 8, Grid Block 4	5384.78	D	6	12.1	2	2	127.0	113.3	117.0	97	90
05-1	Native Soil Lift 8, Grid Block 8	5388.56	D	6	10.3	2	2	129.1	117.0	117.0	100	90
06-1	Native Soil Lift 8, Grid Block 10	5386.42	D	6	11.0	2	2	129.2	116.4	117.0	99	90

Reviewed By:   
 jdr

**Distribution:** Client:  File:  Supplier:  Other: Addressee (0)  
 Email:  Don Lopez (email) (1)  
 Paul Molina (email) (1)

BTSB=Below Top of Subbase, BTOF= Below Top of Fill, FBC= Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep  
 Test Mode = D for Direct Transmission and B for Backscatter Modes

AMEC Earth Environmental, Inc.  
 8519 Jefferson NE  
 Albuquerque, NM 87113  
 Tel 5058211801  
 Fax 5058217371

www.amec.com



## **2009 Saturated Hydraulic Conductivity Tests**



**Client:** Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



**Report Date:** 8/13/2009

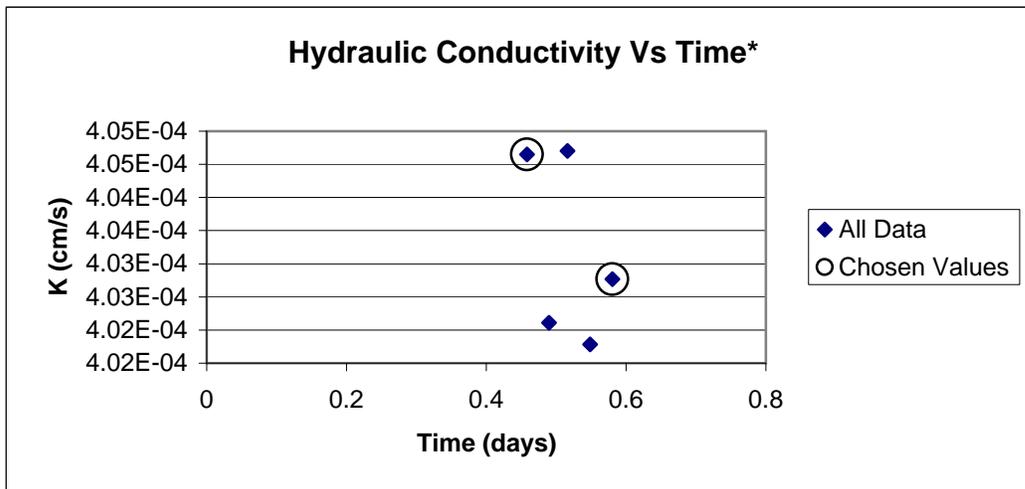
**Attn:** Chris Edgmon  
**Project Name:** EDi SNL Mixed Waste Landfill Cover

**Project #:** 9-517-00022D  
**Work Order #:** 9  
**Lab #:** 9.0715-01  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 6/19/2009  
**Visual Description of Material:** Silty Clayey Sand  
**Sample Source:** Wedge Lift 1 GB 8

**Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)**

<b>INITIAL DIAMETER</b>	6.22	<b>INITIAL GRAVIMETRIC WATER CONTENT</b>	12.0%
<b>INITIAL LENGTH</b>	7.12	<b>INITIAL DRY BULK DENSITY</b>	105.3
<b>FINAL DIAMETER</b>	6.22	<b>FINAL GRAVIMETRIC WATER CONTENT</b>	23.4%
<b>FINAL LENGTH</b>	NO DATA	<b>FINAL DRY BULK DENSITY</b>	NO DATA
<b>TEST METHOD USED</b>	A:Constant Head	<b>% OF D698 PROCTOR</b>	90.0%
<b>PERMEANT LIQUID</b>	TAP WATER	<b>SPECIFIC GRAVITY</b>	2.65
<b>PERCENT SWELL</b>	NA	<b>DEGREE OF SATURATION</b>	100.0%

<b>SPECIFIC GRAVITY ASSUMED? (Y/N)</b>	Y
<b>PERMEAMETER TOP ALLOWS SWELLING? (Y/N)</b>	N
<b>CONTROLLED VERTICAL STRESS APPLIED? (Y/N)</b>	N
<b>TOTAL PORE VOLUMES RUN THROUGH SAMPLE</b>	0.9
<b>AVERAGED <math>K_{sat}</math> VALUE OF LAST FOUR READINGS (cm/s)*</b>	4.03E-04
<b>AVERAGED <math>K_{sat}</math> VALUE OF CHOSEN READINGS (cm/s)*</b>	4.02E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by \_\_\_\_\_

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 7/24/2009

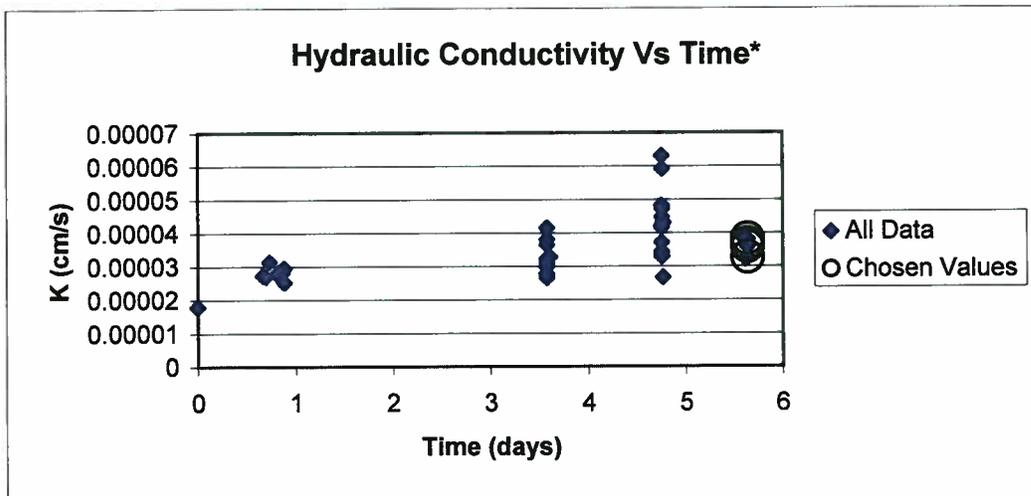
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 9  
 Lab #: 9-0715-02  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 6/22/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: Wedge Lift 2 GB 11

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.13	INITIAL GRAVIMETRIC WATER CONTENT	15.6%
INITIAL LENGTH	7.62	INITIAL DRY BULK DENSITY	104.2
FINAL DIAMETER	6.13	FINAL GRAVIMETRIC WATER CONTENT	19.2%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	C: Falling Head/Rising Tail	% OF D698 COMPACTION:	89.0%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	87.6%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	1.2
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	3.58E-05
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	3.58E-05



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *[Signature]*

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 07/24/2009

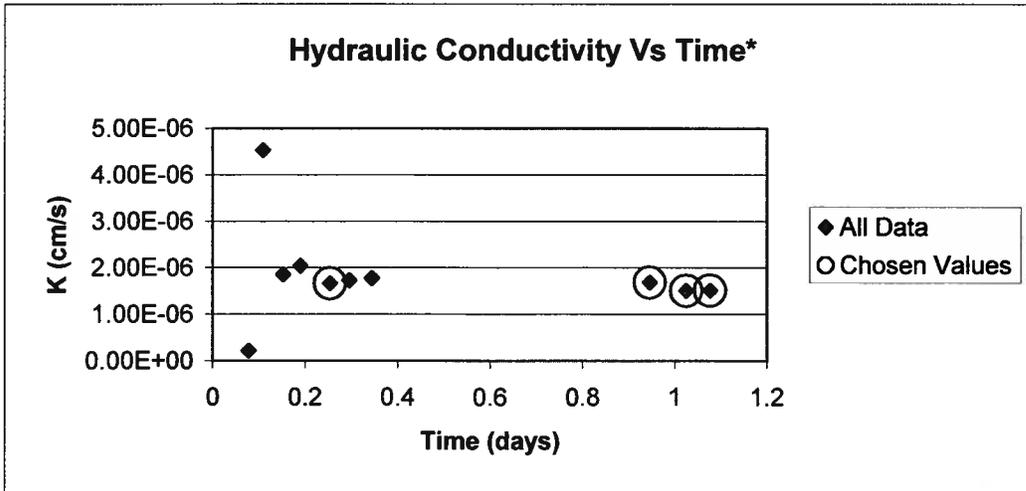
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 7  
 Lab #: 9-0694-01  
 Sampled By: Client  
 Date Sampled: 06/17/2009  
 Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 3-1

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.13	INITIAL GRAVIMETRIC WATER CONTENT	12.2%
INITIAL LENGTH	7.63	INITIAL DRY BULK DENSITY	105.5
FINAL DIAMETER	6.13	FINAL GRAVIMETRIC WATER CONTENT	20.9%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	90.2%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	99.5%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.62E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.59E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimentions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 07/24/2009

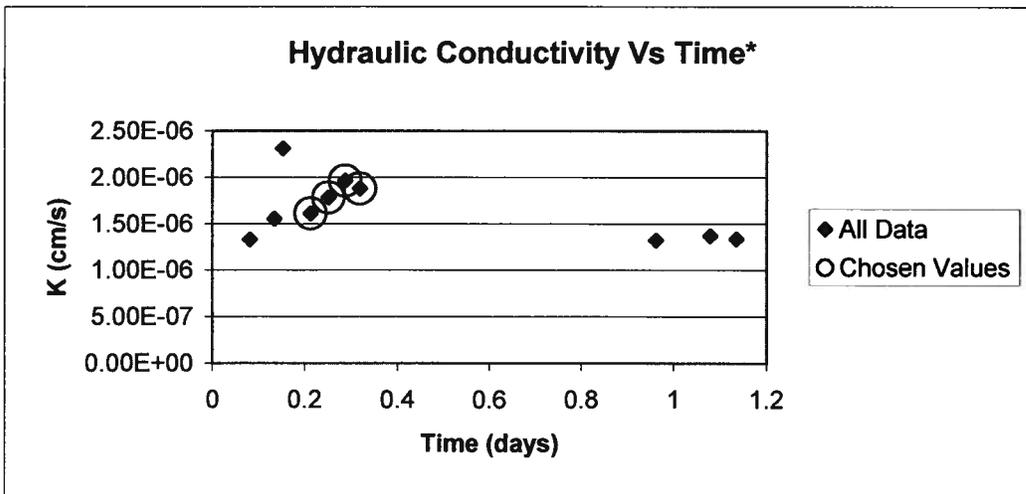
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 7  
 Lab #: 9-0694-02  
 Sampled By: Client  
 Date Sampled: 06/17/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: EDI NS Lift 3-2

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.13	INITIAL GRAVIMETRIC WATER CONTENT	12.4%
INITIAL LENGTH	7.63	INITIAL DRY BULK DENSITY	105.0
FINAL DIAMETER	6.13	FINAL GRAVIMETRIC WATER CONTENT	20.1%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	89.7%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	94.3%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.7
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.47E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.81E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 07/24/2009

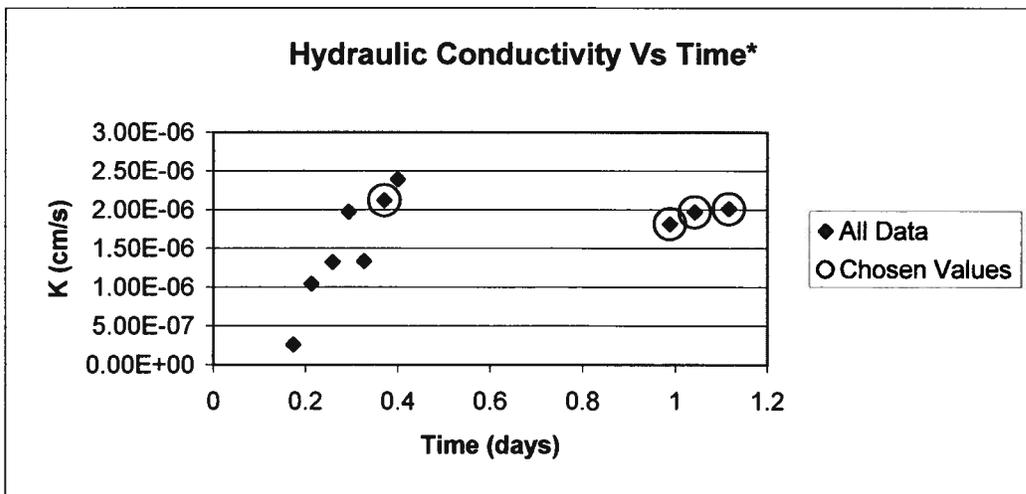
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 7  
 Lab #: 9-0694-03  
 Sampled By: Client  
 Date Sampled: 06/17/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: EDI NS Lift 3-3

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.11	INITIAL GRAVIMETRIC WATER CONTENT	11.1%
INITIAL LENGTH	7.60	INITIAL DRY BULK DENSITY	106.4
FINAL DIAMETER	6.11	FINAL GRAVIMETRIC WATER CONTENT	20.2%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	91.0%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	98.2%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.05E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.98E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *Chris Edgmon*

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 07/24/2009

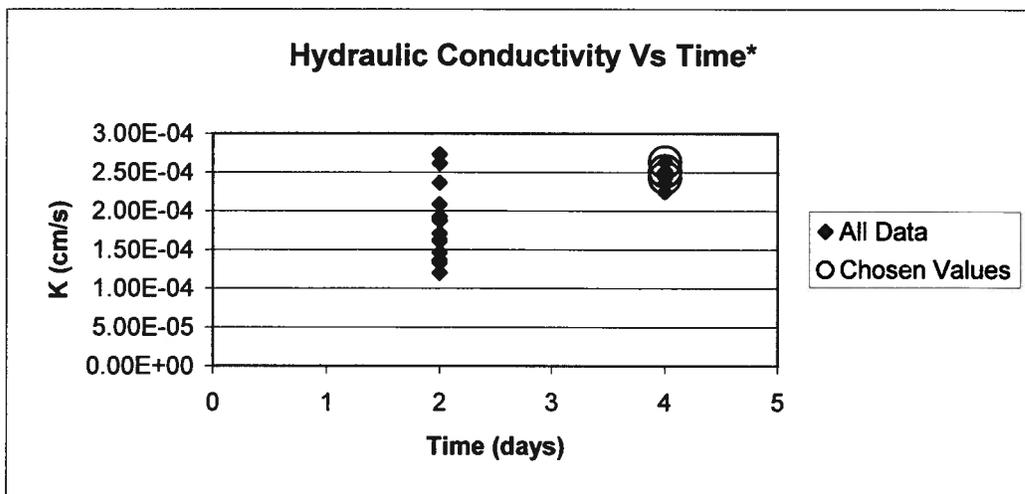
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 14  
 Lab #: 9-0742-01  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 06/30/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: EDI NS Lift 4 GB 2

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.11	INITIAL GRAVIMETRIC WATER CONTENT	12.0%
INITIAL LENGTH	7.60	INITIAL DRY BULK DENSITY	99.0
FINAL DIAMETER	6.11	FINAL GRAVIMETRIC WATER CONTENT	20.7%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	C: Falling Head/Rising Tail	% OF D698 COMPACTION:	84.6%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	83.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	1.0
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.52E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.52E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

**Client:** Environmental Dimensions, Inc.  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



**Report Date:** 07/24/2009

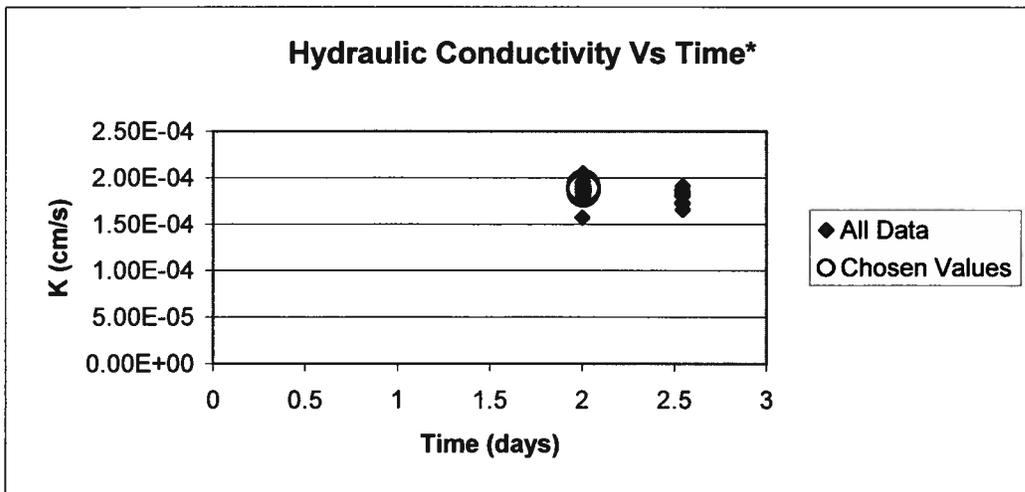
**Attn:** Chris Edgmon  
  
**Project Name:** EDi SNL Mixed Waste Landfill Cover

**Project #:** 9-517-00022D  
**Work Order #:** 14  
**Lab #:** 9-0742-02  
**Sampled By:** Jon Schermerhorn  
**Date Sampled:** 06/30/2009  
**Visual Description of Material:** Silty Clayey Sand  
**Sample Source:** EDI NS Lift 4 GB 6

**Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)**

<b>INITIAL DIAMETER</b>	6.10	<b>INITIAL GRAVIMETRIC WATER CONTENT</b>	10.9%
<b>INITIAL LENGTH</b>	7.60	<b>INITIAL DRY BULK DENSITY</b>	95.0
<b>FINAL DIAMETER</b>	6.10	<b>FINAL GRAVIMETRIC WATER CONTENT</b>	23.0%
<b>FINAL LENGTH</b>	NO DATA	<b>FINAL DRY BULK DENSITY</b>	NO DATA
<b>TEST METHOD USED</b>	B:Falling Head/Constant Tail	<b>% OF D698 PROCTOR</b>	81.2%
<b>PERMEANT LIQUID</b>	TAP WATER	<b>SPECIFIC GRAVITY</b>	2.65
<b>PERCENT SWELL</b>	NA	<b>DEGREE OF SATURATION</b>	83.7%

<b>SPECIFIC GRAVITY ASSUMED? (Y/N)</b>	Y
<b>PERMEAMETER TOP ALLOWS SWELLING? (Y/N)</b>	N
<b>CONTROLLED VERTICAL STRESS APPLIED? (Y/N)</b>	N
<b>TOTAL PORE VOLUMES RUN THROUGH SAMPLE</b>	0.8
<b>AVERAGED <math>K_{sat}</math> VALUE OF LAST FOUR READINGS (cm/s)*</b>	1.82E-04
<b>AVERAGED <math>K_{sat}</math> VALUE OF CHOSEN READINGS (cm/s)*</b>	1.87E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/13/2009

Attn: Chris Edgmon

Project #: 9-517-00022D

Work Order #: 14

Lab #: 9-0742-03

Project Name: EDi SNL Mixed Waste Landfill Cover

Sampled By: Jon Schermerhorn

Date Sampled: 06/30/2009

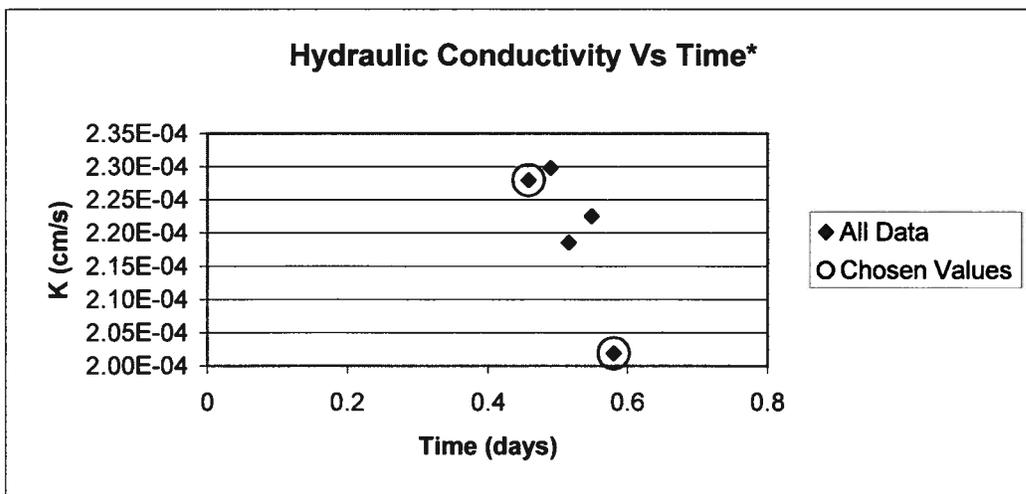
Visual Description of Material: Silty Clayey Sand

Sample Source: EDI NS Lift 4 GB 9

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.24	INITIAL GRAVIMETRIC WATER CONTENT	12.2%
INITIAL LENGTH	6.63	INITIAL DRY BULK DENSITY	105.1
FINAL DIAMETER	6.24	FINAL GRAVIMETRIC WATER CONTENT	22.5%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	89.8%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.18E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.14E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/07/2009

Attn: Chris Edgmon

Project #: 9-517-00022D

Work Order #: 16

Lab #: 9-0766-01

Project Name: EDi SNL Mixed Waste Landfill Cover

Sampled By: Jon Schermerhorn

Date Sampled: 07/09/2009

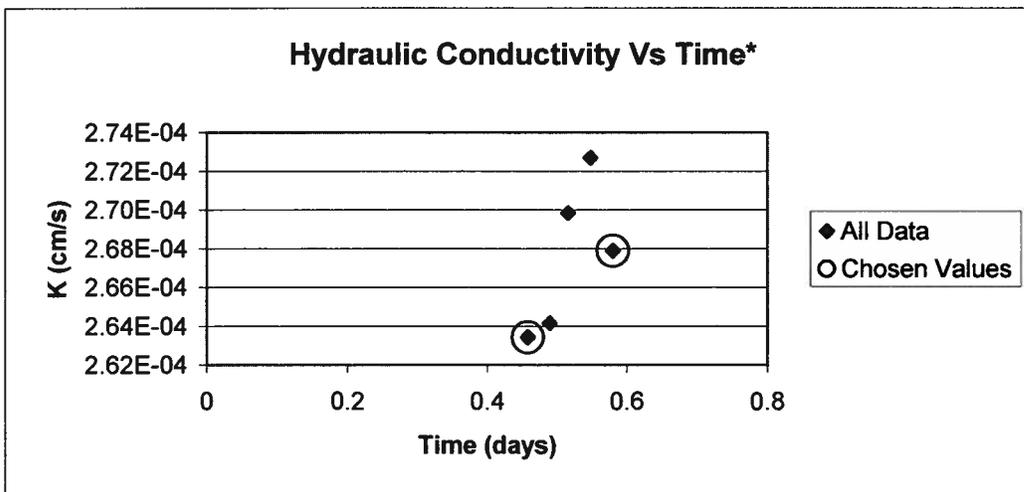
Visual Description of Material: Silty Clayey Sand

Sample Source: Edi NS Lift 5 GB 1

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.13	INITIAL GRAVIMETRIC WATER CONTENT	12.2%
INITIAL LENGTH	7.59	INITIAL DRY BULK DENSITY	105.3
FINAL DIAMETER	6.13	FINAL GRAVIMETRIC WATER CONTENT	21.1%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	90.0%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	98.3%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.6
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.69E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.66E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *Chris Edgmon*

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/24/2009

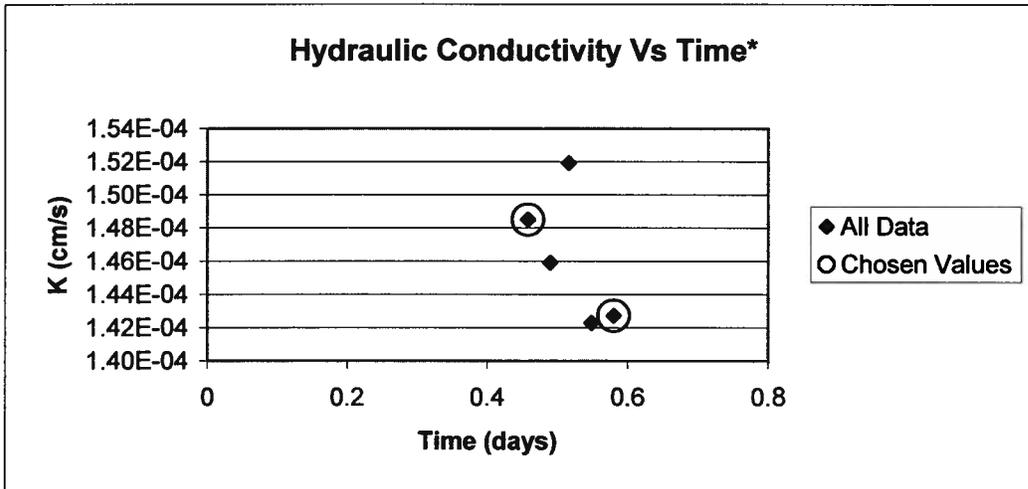
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 24  
 Lab #: 9-0968-01 "9-0766-02"  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/08/2009  
 Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 5 GB 4 Retest

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.14	INITIAL GRAVIMETRIC WATER CONTENT	11.6%
INITIAL LENGTH	7.59	INITIAL DRY BULK DENSITY	111.5
FINAL DIAMETER	6.14	FINAL GRAVIMETRIC WATER CONTENT	18.5%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A: Constant Head	% OF D698 PROCTOR	95.3%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.3
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.46E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.43E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/24/2009

Attn: Chris Edgmon

Project #: 9-517-00022D

Work Order #: 24

Lab #: 9-0968-02 "9-0766-03"

Project Name: EDi SNL Mixed Waste Landfill Cover

Sampled By: Jon Schermerhorn

Date Sampled: 07/08/2009

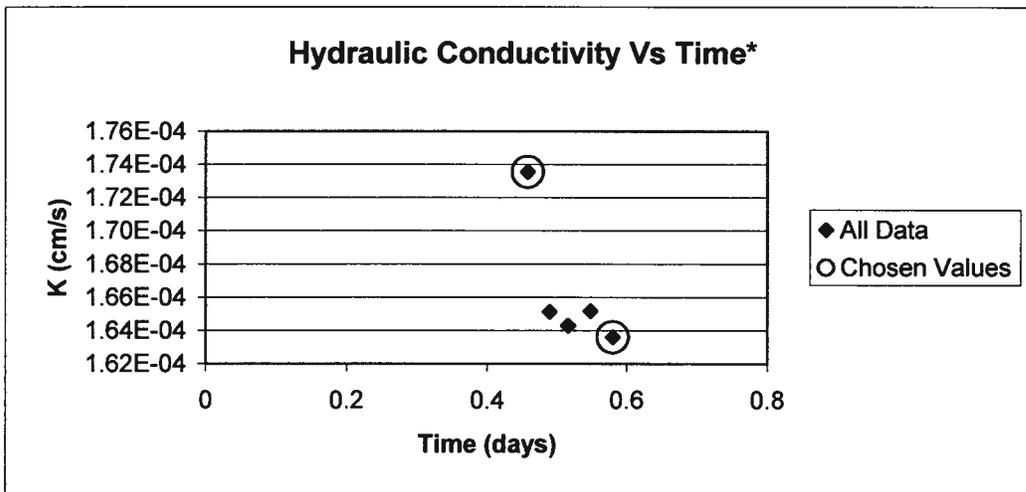
Visual Description of Material: Brown Silty Sand

Sample Source: EDI NS Lift 5 GB 8 Retest

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.14	INITIAL GRAVIMETRIC WATER CONTENT	12.2%
INITIAL LENGTH	7.58	INITIAL DRY BULK DENSITY	110.6
FINAL DIAMETER	6.14	FINAL GRAVIMETRIC WATER CONTENT	19.5%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	94.6%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.4
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.65E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.63E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by





Client: Environmental Dimensions, Inc.  
 1901Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 8/7/2009

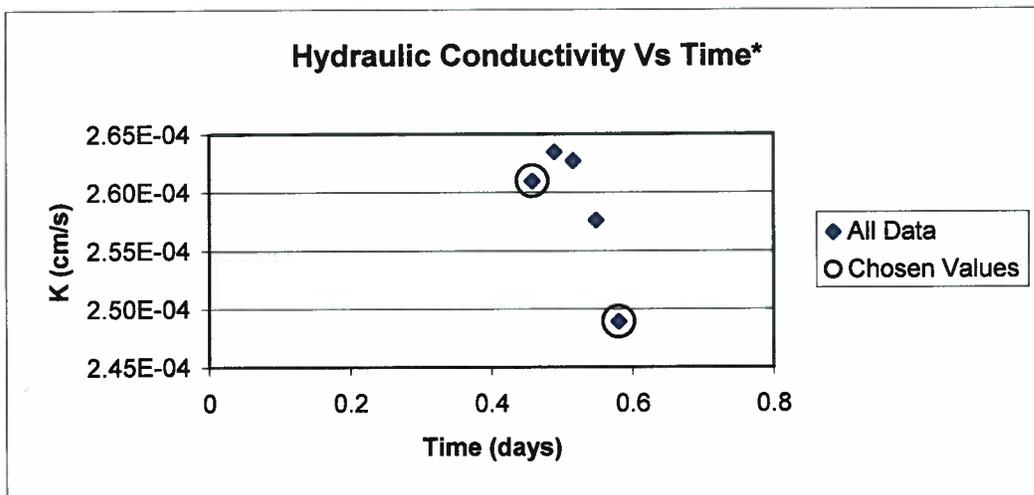
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 20  
 Lab #: 9-0805-04  
 Sampled By: Jon Schemmerhorn  
 Date Sampled: 7/17/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: Edi NS Lift 6-3

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.13	INITIAL GRAVIMETRIC WATER CONTENT	12.7%
INITIAL LENGTH	7.58	INITIAL DRY BULK DENSITY	104.7
FINAL DIAMETER	6.13	FINAL GRAVIMETRIC WATER CONTENT	21.7%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	89.5%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	99.5%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.58E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.55E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/24/2009

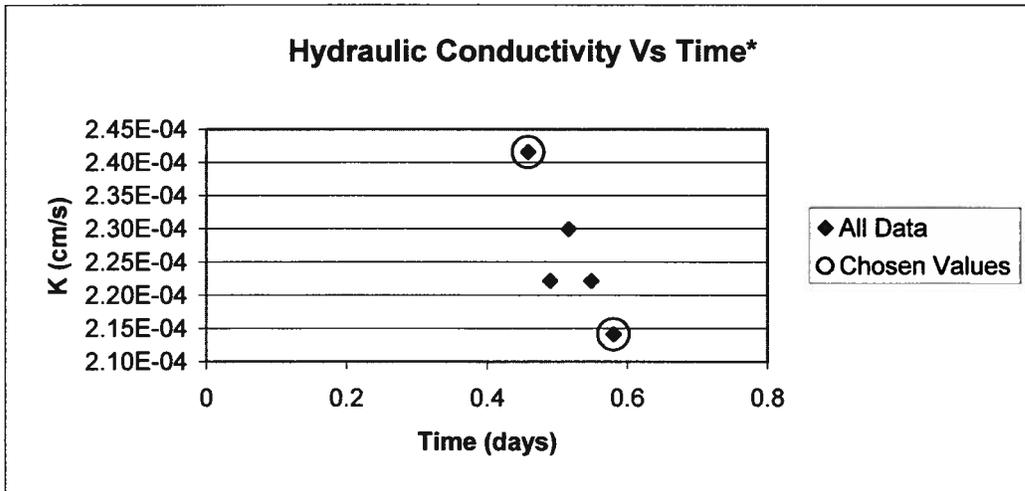
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 24  
 Lab #: 9-0968-03 "9-0817-01"  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/20/2009  
 Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 7 GB 1 Retest

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.10	INITIAL GRAVIMETRIC WATER CONTENT	11.8%
INITIAL LENGTH	7.59	INITIAL DRY BULK DENSITY	111.0
FINAL DIAMETER	6.10	FINAL GRAVIMETRIC WATER CONTENT	19.7%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	94.8%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.22E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.18E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/24/2009

Attn: Chris Edgmon

Project #: 9-517-00022D

Work Order #: 24

Lab #: 9-0968-04 "9-0817-02"

Project Name: EDi SNL Mixed Waste Landfill Cover

Sampled By: Jon Schermerhorn

Date Sampled: 07/20/2009

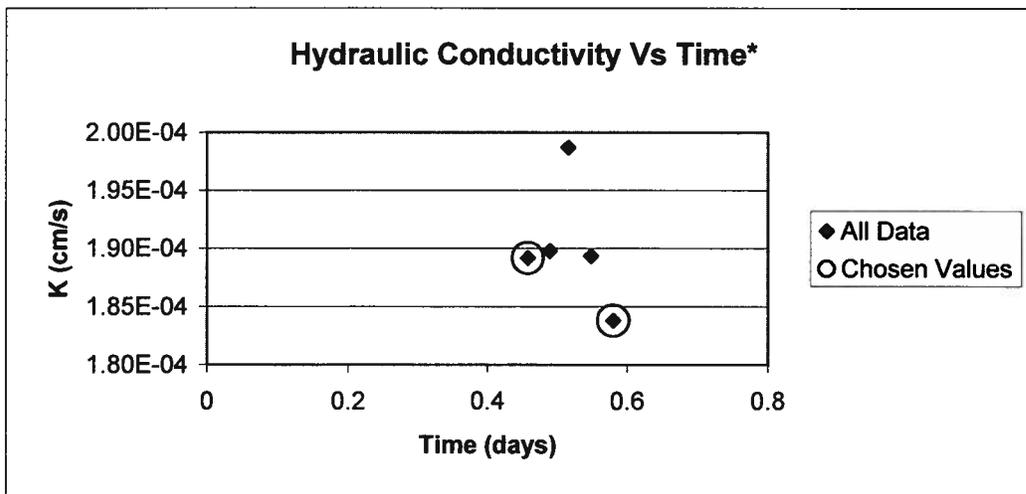
Visual Description of Material: Brown Silty Sand

Sample Source: EDI NS Lift 7 GB 5 Retest

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.11	INITIAL GRAVIMETRIC WATER CONTENT	12.2%
INITIAL LENGTH	7.58	INITIAL DRY BULK DENSITY	111.0
FINAL DIAMETER	6.11	FINAL GRAVIMETRIC WATER CONTENT	20.1%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	94.8%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.4
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.90E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.87E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *[Signature]*

Client: Environmental Dimensions, Inc.  
 1901 Candelaria Rd., NW  
 Albuquerque, NM 87107



Report Date: 08/07/2009

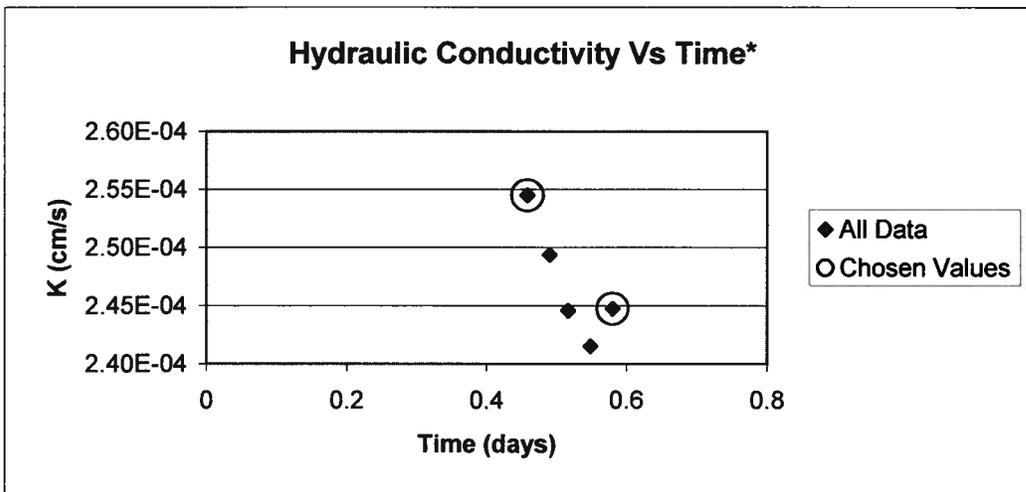
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 21  
 Lab #: 9-0817-03  
 Sampled By: Jon Schermerhorn  
 Date Sampled: 07/22/2009  
 Visual Description of Material: Silty Clayey Sand  
 Sample Source: EDi NS Lift 7 GB 13

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.12	INITIAL GRAVIMETRIC WATER CONTENT	12.6%
INITIAL LENGTH	7.58	INITIAL DRY BULK DENSITY	104.7
FINAL DIAMETER	6.12	FINAL GRAVIMETRIC WATER CONTENT	22.3%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	A:Constant Head	% OF D698 PROCTOR	89.5%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.5
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	2.45E-04
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	2.50E-04



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *[Signature]*

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 08/17/2009

Attn: Chris Edgmon

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0837-01

Project Name: EDi SNL Mixed Waste Landfill Cover

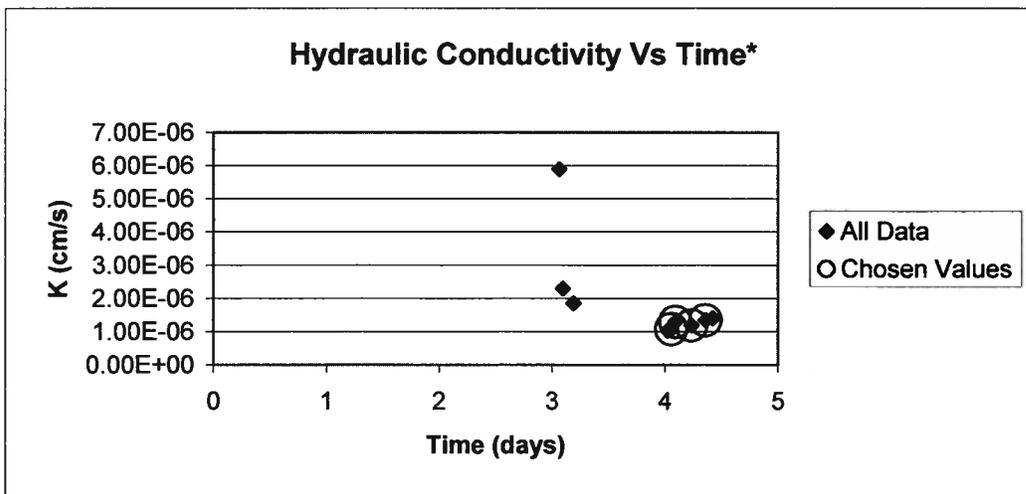
Sampled By: Client  
 Date Sampled: 07/27/2009

Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 8 GB 2

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.10	INITIAL GRAVIMETRIC WATER CONTENT	12.1%
INITIAL LENGTH	7.60	INITIAL DRY BULK DENSITY	105.8
FINAL DIAMETER	6.10	FINAL GRAVIMETRIC WATER CONTENT	23.2%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	90.4%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.3
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.17E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.22E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *Chris Edgmon*

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 08/17/2009

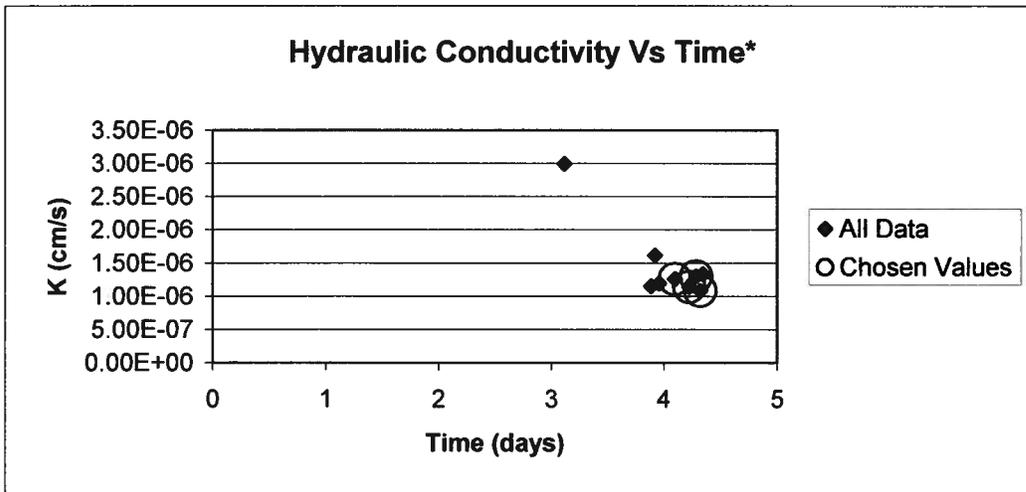
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0837-02  
 Sampled By: Client  
 Date Sampled: 07/27/2009  
 Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 8 GB 7

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.09	INITIAL GRAVIMETRIC WATER CONTENT	12.0%
INITIAL LENGTH	7.60	INITIAL DRY BULK DENSITY	105.3
FINAL DIAMETER	6.09	FINAL GRAVIMETRIC WATER CONTENT	21.4%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	90.0%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.3
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.10E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.23E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by *Chris Edgmon*

Client: Environmental Dimensions Inc  
 1901 Candelaria Rd, NW  
 Albuquerque, NM 87107



Report Date: 08/17/2009

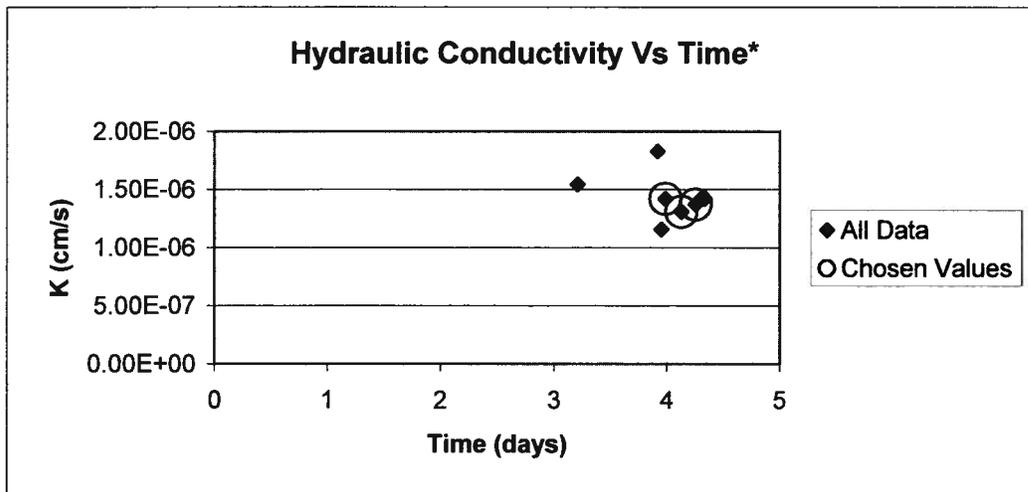
Attn: Chris Edgmon  
 Project Name: EDi SNL Mixed Waste Landfill Cover

Project #: 9-517-00022D  
 Work Order #: 22  
 Lab #: 9-0837-03  
 Sampled By: Client  
 Date Sampled: 07/27/2009  
 Visual Description of Material: Brown Silty Sand  
 Sample Source: EDI NS Lift 8 GB 9

Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER	6.09	INITIAL GRAVIMETRIC WATER CONTENT	12.5%
INITIAL LENGTH	7.60	INITIAL DRY BULK DENSITY	105.3
FINAL DIAMETER	6.09	FINAL GRAVIMETRIC WATER CONTENT	18.8%
FINAL LENGTH	NO DATA	FINAL DRY BULK DENSITY	NO DATA
TEST METHOD USED	B:Falling Head/Constant Tail	% OF D698 PROCTOR	90.0%
PERMEANT LIQUID	TAP WATER	SPECIFIC GRAVITY	2.65
PERCENT SWELL	NA	DEGREE OF SATURATION	89.1%

SPECIFIC GRAVITY ASSUMED? (Y/N)	Y
PERMEAMETER TOP ALLOWS SWELLING? (Y/N)	N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N)	N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE	0.3
AVERAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)*	1.38E-06
AVERAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)*	1.36E-06



\* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

## **ATTACHMENT 8**

### **Summary Report for the Extension of Monitoring Well MWL-MW4 at the Mixed Waste Landfill**





---

## **Sandia National Laboratories/New Mexico Environmental Restoration Project**

# **SUMMARY REPORT FOR THE EXTENSION OF MONITORING WELL MWL-MW4 AT THE MIXED WASTE LANDFILL**

**JANUARY 2010  
Revision 1**



United States Department of Energy  
Sandia Site Office

---

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

## TABLE OF CONTENTS

LIST OF FIGURES .....	ii
LIST OF TABLES.....	iii
ACRONYMS AND ABBREVIATIONS .....	iv
1.0 INTRODUCTION.....	1-1
1.1 Site Description and History .....	1-1
1.2 Objective.....	1-1
2.0 WELL MWL-MW4 CASING EXTENSION.....	2-1
3.0 VARIANCES.....	3-1
4.0 REFERENCES.....	4-1

## LIST OF FIGURES

### Figure

1-1	Location of Kirtland Air Force Base and Sandia National Laboratories, New Mexico .....	1-2
1-2	Location of Monitoring Well MWL-MW4, Mixed Waste Landfill.....	1-3
2-1	Removing the packer assembly from well MWL-MW4, May 27, 2009. View to the east. ....	2-2
2-2	Screening the MWL-MW4 packer for radiological contamination by an RCT, May 27, 2009. View to the south.....	2-3
2-3	Extending the MWL-MW4 PVC well casing, attached to the existing PVC casing with a PVC slip coupling and stainless steel screws, May 27, 2009. View to the east. ....	2-4
2-4	MWL-MW4 protective surface casing extension, welded to the existing protective surface casing, May 27, 2009. View to the east. ....	2-6
2-5	Schematic MWL-MW4 PVC Well Casing and Protective Surface Casing Extension Diagram.....	2-8
2-6	MWL-MW4 Construction Diagram.....	2-9

## LIST OF TABLES

### Table

2-1	Summary of Elevation and Depths Below Ground Surface Changes for the Original and Extended MWL-MW4 Well, Mixed Waste Landfill.....	2-7
-----	--	-----

## ACRONYMS AND ABBREVIATIONS

bgs	Below ground surface
CMIP	Corrective Measures Implementation Plan
ET	Evapotranspirative
ER	Environmental Restoration
ft	foot (feet)
KAFB	Kirtland Air Force Base
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
OD	outside diameter
PC	protective casing
PVC	polyvinyl chloride
RCT	Radiological Control Technician
SNL/NM	Sandia National Laboratories/New Mexico
WDC	WDC Exploration and Wells

## 1.0 INTRODUCTION

This report documents the activities for the extension of the well and protective casing (PC) for the existing groundwater monitoring well MWL-MW4 at the Mixed Waste Landfill (MWL) at Sandia National Laboratories/New Mexico (SNL/NM). This activity was performed in May and August 2009 by the SNL/NM Environmental Restoration (ER) Project personnel and the drilling contractor WDC Exploration and Wells (WDC) as part of the MWL Evapotranspirative (ET) Cover Construction project.

### 1.1 Site Description and History

The MWL is located in the central part of Kirtland Air Force Base (KAFB), south of the City of Albuquerque, New Mexico. Within KAFB, the MWL is located in the north-central part of SNL/NM Technical Area 3, on federally owned land controlled by KAFB and permitted to the U.S. Department of Energy (Figure 1-1). The MWL accepted low-level radioactive waste and minor amounts of mixed waste from SNL/NM research facilities from March 1959 to December 1988. Approximately 100,000 cubic feet of low-level radioactive waste (excluding packaging, containers, demolition and construction debris, and contaminated soil) containing 6,300 curies of activity (at the time of disposal) were disposed of at the MWL.

### 1.2 Objective

The objective of this project was to extend the inner polyvinyl chloride (PVC) well casing and outer PC of well MWL-MW4 so that the well could be accessed and sampled after the MWL ET Cover installation was completed. The location of MWL-MW4 and the locations of former waste burial trenches and cells are shown in Figure 1-2.

The extension of MWL-MW4 was completed in accordance with specifications contained in Section 02670 of the MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM November 2005, Appendix A), with three minor variances that are described in Section 3.0 of this report. The CMIP received conditional approval from the New Mexico Environment Department (NMED) in December 2008 (Bearzi December 2008), and all conditions related to construction of the ET Cover were incorporated into the CMIP through replacement pages that were submitted to the NMED in February 2009 (Davis February 2009).

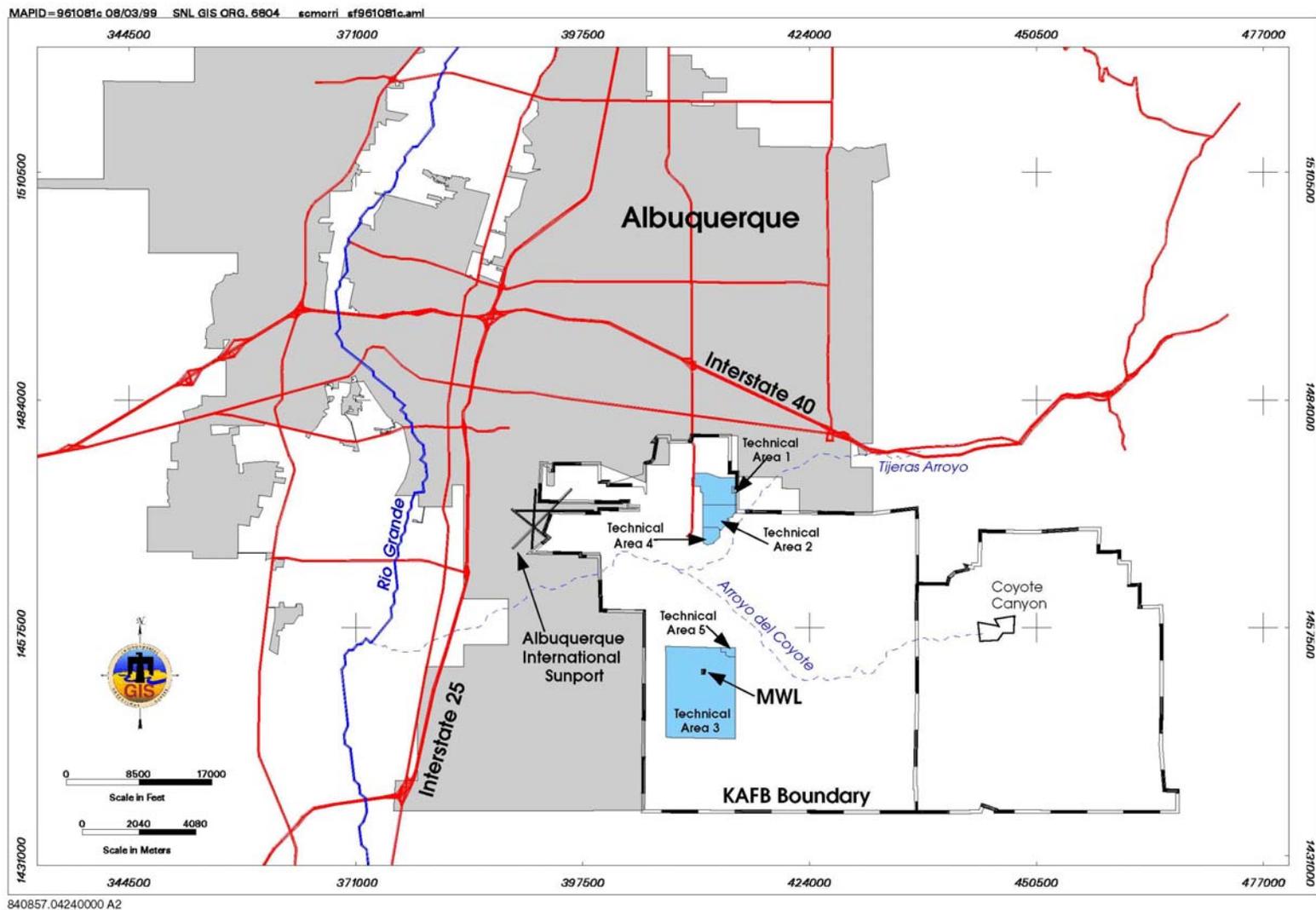
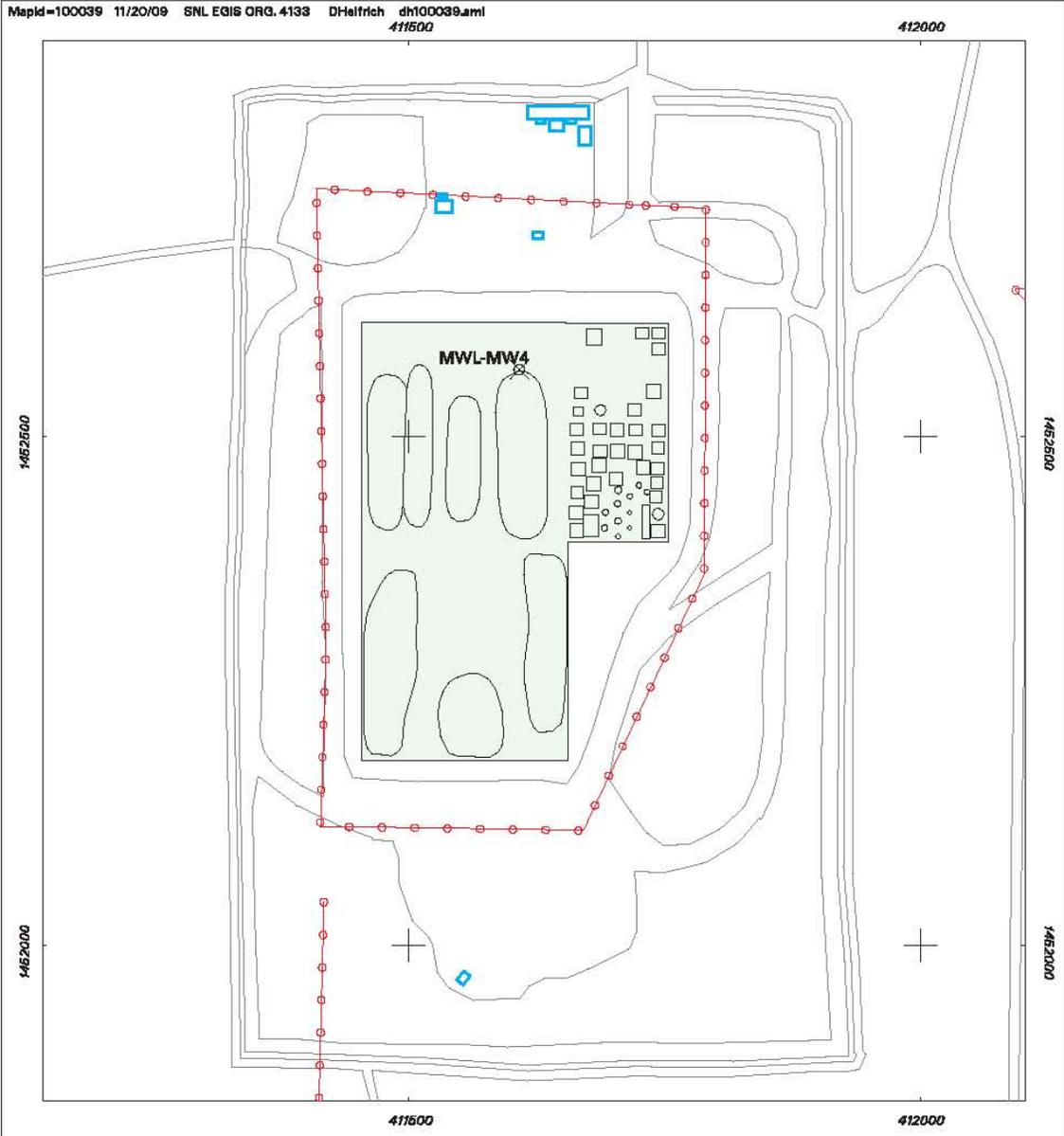


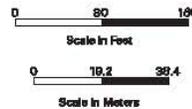
Figure 1-1  
Location of Kirtland Air Force Base and Sandia National Laboratories, New Mexico



**Legend**

-  Monitoring Well
-  Mobile Office / Shed
-  MWL Burial Pit / Trench
-  Edge of unpaved Road
-  Fence
-  MWL Disposal Area

**Figure 1-2**  
**Location of Monitoring**  
**Well MWL-MW4,**  
**Mixed Waste Landfill**



**Sandia National Laboratories, New Mexico**  
**Environmental Geographic Information System**

## 2.0 WELL MWL-MW4 CASING EXTENSION

Monitoring well MWL-MW4 was installed in February 1993, and groundwater samples are currently collected from the well on an annual basis. The added thickness of the MWL ET Cover required that the inner PVC well casing and the outer steel PC be extended above the final grade of the ET Cover in order for the well to remain accessible for sampling.

MWL-MW4 was installed at an angle of 6 degrees from vertical, and the well contains two 20-foot-long well screens. Relative to the original MWL ground surface, the upper screen was placed at 482.5 to 502.5 feet (ft) below ground surface (bgs), and the lower screen was placed at 522.5 to 542.5 ft bgs, with 20 ft of blank casing that separates the upper and lower screens. A Baski™ inflatable packer was installed in the well at a depth of approximately 510 ft below the original MWL surface to prevent cross-connection and mixing of groundwater that enters the well through the two well screens. The packer is attached to approximately 510 ft of 2-inch-diameter, galvanized pipe, which is used to remove the packer and reinstall it in the well when maintenance of the unit is required.

As part of the preparation for ET Cover construction, the Subgrade was installed on top of the original MWL surface from October through December 2006. As part the Subgrade Construction phase, the MWL-MW4 protective bollards were removed, and the original concrete well pad was buried under the Subgrade layer. No other modifications to the original MWL-MW4 well completion were made during Subgrade Construction activities.

The MWL-MW4 well extension task consisted of removing the packer and then extending both the inner PVC well casing and the outer steel PC. On May 27, 2009, personnel and a monitoring well development rig provided by WDC were mobilized to the MWL. The development rig was positioned next to MWL-MW4 so that the packer could be pulled from the well. SNL/NM personnel from the ER Field Office assisted in the packer removal operation. The packer bladder was deflated, and the packer and pipe were removed from the well. The packer removal operation is shown in Figure 2-1. An SNL/NM Radiological Control Technician (RCT) also completed a radiological screening survey of the packer and pipe to verify the absence of radiological contamination as the equipment was removed from the well (Figure 2-2). The screening survey confirmed there was no radiological contamination on the packer or pipe.

Following packer removal, preparations to extend the PVC well casing and PC commenced. At the time the extension work was completed, the existing 10.75-inch outside diameter (OD) steel PC for the well extended approximately 1.7 ft above the existing Subgrade surface, and the 5.5-inch OD, Schedule 80 PVC casing extended approximately 0.8 ft above the Subgrade surface. A cutting torch was used to cut the PC to approximately 0.5 ft above the Subgrade. This was done so the top of the PVC well casing could be accessed and extended. Once the height of the PC was reduced and the PVC casing exposed, a 5.5-inch inside diameter by 8-inch-long PVC slip coupling was placed over the existing PVC casing. A new piece of 5.57-ft-long, 5.5-inch OD, Schedule 80 PVC casing was then placed into the slip coupling, and the coupling was secured to the existing and new PVC casing with stainless steel screws (Figure 2-3). No adhesive or glue was used to extend the well casing. The final height of the extended PVC casing is 7.42 ft above the original MWL surface, and 1.53 ft above the completed ET Cover surface.



Figure 2-1  
Removing the packer assembly from well MWL-MW4,  
May 27, 2009. View to the east.



Figure 2-2  
Screening the MWL-MW4 packer for radiological contamination by an RCT,  
May 27, 2009. View to the south.



Figure 2-3  
Extending the MWL-MW4 PVC well casing, attached to the existing PVC casing with a PVC slip coupling and stainless steel screws, May 27, 2009.  
View to the east.

The final well extension step consisted of extending the steel PC above the top of the extended PVC casing. This was accomplished by lowering an approximate 8-ft-length of 10.75-inch OD steel PC over the extended PVC and welding it to the top of the PC (Figure 2-4). The final height of the extended PC is 8.39 ft above the original MWL surface, 2.50 ft above the completed ET Cover surface, and approximately 1 ft above the top of the extended PVC casing. The length of the extended PC was planned such that the new top of the PC would end up at approximately 3 ft above the final finished grade of the ET Cover. A well cap was installed to seal the PVC casing, and the outer locking well cap that was attached to the original well PC was reattached and locked with a keyed padlock.

Construction of the ET Cover commenced on May 20, 2009, and was completed on August 12, 2009. In order to avoid damaging the extended well, the various lifts of the ET Cover Native Soil Layer were compacted using a manually operated compactor within a 3-ft perimeter established around MWL-MW4.

On August 13, 2009, WDC personnel returned to the site and completed the final protective measures around the extended MWL-MW4. This was accomplished after completion of the final ET Cover layer (i.e., the Topsoil Layer) on August 12, 2009, but prior to tilling, seeding, and mulching of the Topsoil Layer. A new 4- by 4-ft by 4-inch-thick concrete well pad was constructed around the PC, and a new brass cap stamped with the well name was placed in the concrete while it was still wet. Three 5-inch-diameter by 5-ft-long protective bollards were installed around the well pad to a depth of 2 ft below the final ET Cover surface. The bollards were anchored by filling the surrounding hole with concrete. The concrete well seal was extended in the well annulus from the top of the preexisting seal up to the approximate final finished ET Cover surface grade. The bollards and surface casing were then painted with high-visibility yellow paint.

On November 12, 2009, a New Mexico-Registered Professional Surveyor with Surveying Control, Inc. established new northing and easting coordinates and elevations for the extended MWL-MW4 well. The new northing and easting coordinates were established for the center of the removable sealing cap placed in the top of the extended PVC casing. Because MWL-MW4 is an angle well, new northing and easting coordinates are slightly different from the original coordinates that were established for this well in 1993. The new elevations were established for the following points:

- Ground surface on the north side of the well pad
- Well pad (measurement taken on the brass cap)
- North side of the extended PVC well casing
- North side of the extended PC, with the locking cover removed

Table 2-1 summarizes the changes to the ground surface and top of well PVC elevations and provides screen depths, total depths, and depths to the groundwater pump inlet resulting from the ET Cover construction and extension of MWL-MW4.



Figure 2-4  
MWL-MW4 protective surface casing extension, welded to the  
existing protective surface casing, May 27, 2009. View to the east.

Table 2-1  
Summary of Elevation and Depths Below Ground Surface Changes for the  
Original and Extended MWL-MW4 Well, Mixed Waste Landfill

	Ground Surface Elevation (famsl)	Top of PVC Casing Elevation (famsl)	Depth to Tops and Bottoms of Screens (ft bgs)	Total Depth of Well (bottom of sump) (ft bgs)	Depth of groundwater sampling pump inlet (set at bottom of upper screen)
MWL-MW4 (original well)	5381.61	5383.46	482.5–502.5, 522.5–542.5	548	502.5 ft bgs, 504.35 ft btoc
MWL-MW4 (extended well)	5387.5 (5.89 ft above original MWL surface)	5389.03 (5.57 ft above top of original PVC well casing)	488.39–508.39, 528.39–548.39	553.89	508.39 ft bgs, 509.92 ft btoc

Note: Depths bgs in this table are measured along the hypotenuse of this 6-degree angled well, and are not converted to vertical distances.

bgs = Below ground surface.  
btoc = Below top of (PVC) casing.  
famsl = Feet above mean sea level.  
ft = Feet.  
MWL = Mixed Waste Landfill.  
PVC = Polyvinyl chloride.

A schematic profile diagram showing both the constructed configuration of MWL-MW4 when it was installed in 1993 and the well configuration after the PVC casing and PC were extended is provided in Figure 2-5, and a revised well construction diagram that contains the new survey coordinates and elevations is presented in Figure 2-6.

The packer will be reinstalled in MWL-MW4 by WDC in early 2010, after vegetation has been reestablished on the finished ET Cover surface, and the packer has been refurbished by the manufacturer.

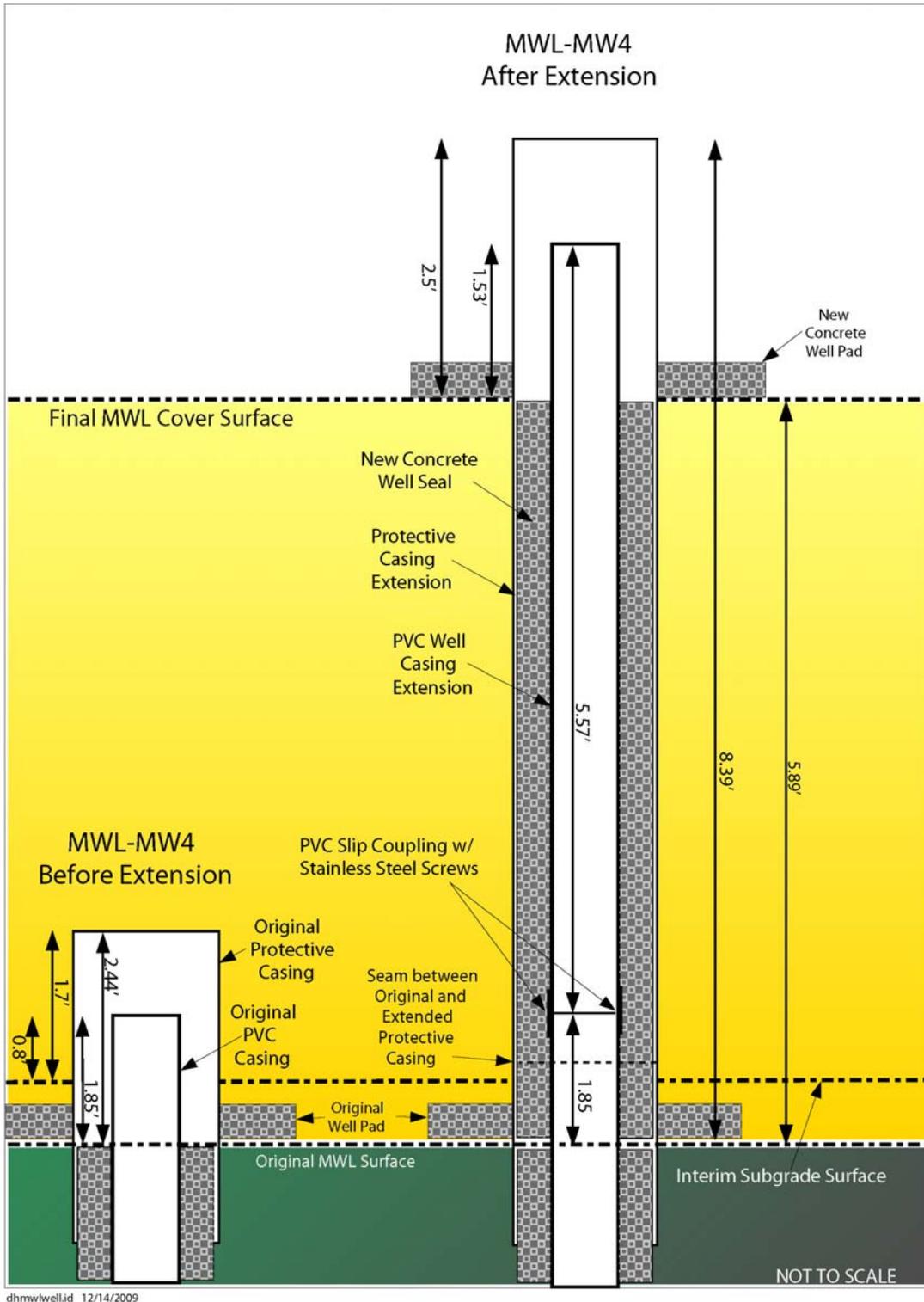


Figure 2-5  
Schematic MWL-MW4 PVC Well Casing and Protective Surface Casing Extension Diagram

## WELL DATABASE SUMMARY SHEET

<b>Project Name:</b> MIXED WASTE LANDFILL	<b>Geo Location:</b> TA III	
<b>ER ADS #:</b> 1289	<b>Well Completion Date:</b> 10-FEB-1993	
<b>Well Name:</b> MWL-MW4	<b>Completion Zone:</b> FINE MEDIUM SAND/GRAVELLY SAND	
<b>Owner Name:</b> SNL/NM	<b>Formation of Completion:</b> SANTA FE GROUP	
<b>Date Drilling Started:</b> 16-DEC-1992	<b>Well Comment:</b> MWL-MW4 IS AN ANGLE WELL, INSTALLED AT A 6-DEGREE ANGLE FROM VERTICAL. 2 SCREENED INTERVALS EXIST.	
<b>Drilling Contractor:</b> WATER DEVELOPMENT CORP.		
<b>Drilling Method:</b> SONIC/DRY		
<b>Borehole Depth:</b> 552.5 FBGS	WELL PVC & PROTECTIVE CASING EXTENDED ON 5/27/09 AND RE-SURVEYED 11/12/09. NEW N, E IS TOP CENTER OF PVC CASING.	
<b>Casing Depth:</b> 548 FBGS		

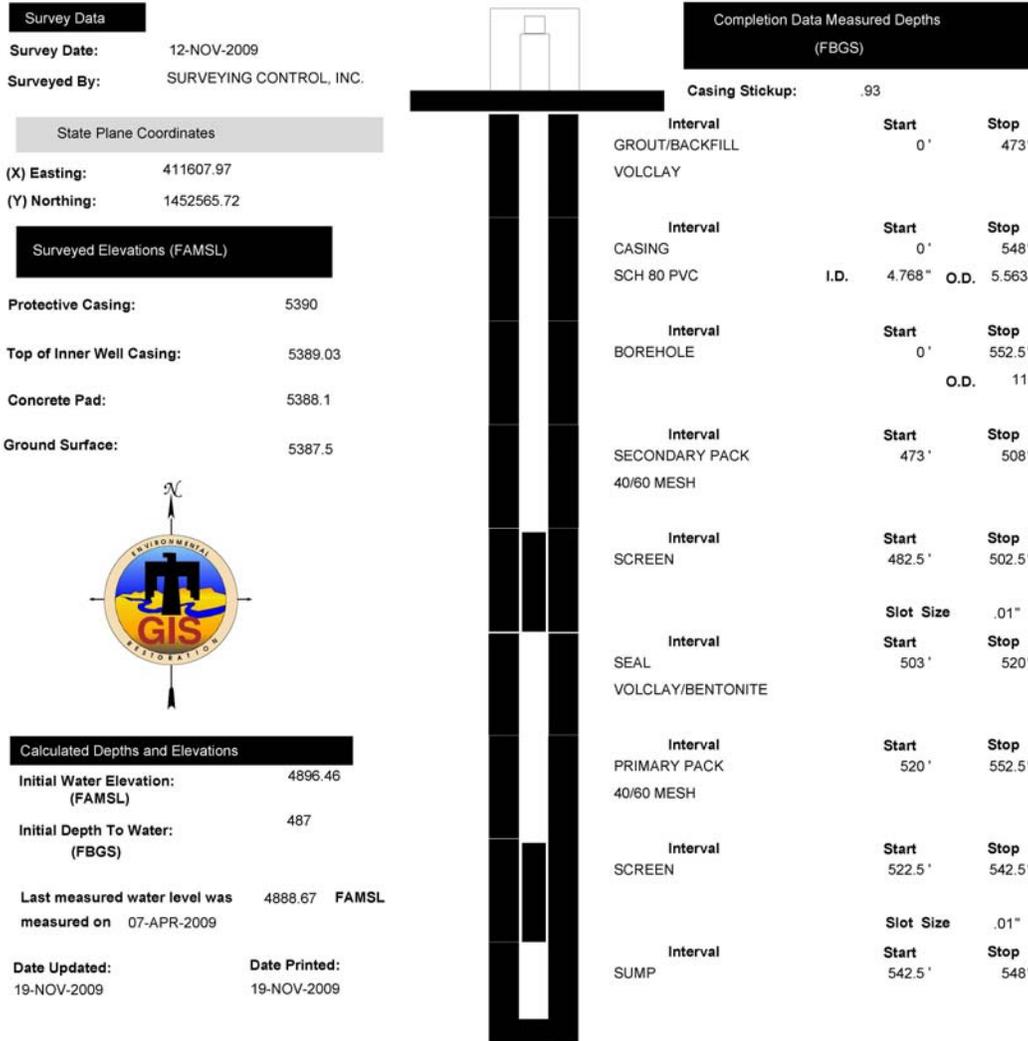


Figure 2-6  
MWL-MW4 Construction Diagram

### 3.0 VARIANCES

The scope of work for the extension of well MWL-MW4 was provided in Section 02670 of the MWL CMIP (SNL/NM November 2005, Appendix A). There were three minor variances from specifications in Part 3 (Execution) of Section 02670 of the CMIP, as follows:

- Item 1 of Section 3.1 specifies that the Contractor shall remove the existing MWL-MW4 concrete pad, stanchions, protective surface casing, and locking top cap prior to initiation of construction activities. However, when the well extension work commenced, the original concrete well pad had already been covered by the MWL ET Cover Subgrade to create a double anchor for greater stability. In addition, the original protective surface casing was not removed, rather, it was extended as described in Section 2.0 of this report. The original stanchions (bollards) were removed and recycled, and the original locking top cap was removed and reused on the extended protective surface casing. A new concrete well pad was constructed around the extended PC after the ET Cover was completed. The final result is a more stable, double-anchored configuration, with the double anchor formed by the two concrete well pads.
- Item 3 of Section 3.1 specifies that the existing MWL-MW4 Schedule 80 PVC well casing was to be extended such that the top of the PVC well casing is located a minimum of 2.5 ft above the final grade of the constructed ET Cover. As shown in Figure 2-5, the finished height of the extended PVC casing above the finished ET Cover surface is approximately 1.5 ft because the elevation of the finished ET Cover was slightly higher than originally planned (average ET cover thickness is approximately 1.2 ft greater than the minimum cover thickness specifications in the CMIP). MWL-MW4 is still fully functional, and the slightly reduced final height of the extended PVC casing above the ET Cover surface in no way hinders access to the well for future sampling.
- Item 6 of Section 3.1 specifies that the four corners of the new MWL-MW4 concrete well pad will be surveyed. However, in accordance with long-established SNL/NM monitoring well surveying procedures, and as described in Attachment B of SNL/NM FOP [Field Operating Procedure] 94-71 (SNL/NM May 1994), the elevation of the concrete pad was determined by surveying the pad at one point (on the brass cap embedded into the concrete pad), rather than at each of the four corners of the pad.

## 4.0 REFERENCES

Bearzi, J.P. (New Mexico Environment Department), December 2008. Letter to K. Davis (U.S. Department of Energy) and F. Nimick (Sandia Corporation), "Conditional Approval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, Sandia National Laboratories NM5890110518, SNL-05-025." December 22, 2008.

Davis, K. (U.S. Department of Energy), February 2009. Letter to J. Bearzi (New Mexico Environment Department), submitting requested changes in the form of replacement pages in response to the Mixed Waste Landfill Conditional Approval letter from the New Mexico Environment Department dated December 22, 2008. February 12, 2009.

Sandia National Laboratories/New Mexico, May 1994. "Land Surveying," FOP 94-71, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2005. "Mixed Waste Landfill Corrective Measures Implementation Plan," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

# **Sandia National Laboratories Albuquerque, New Mexico August 2011**

## **DOE/Sandia Responses to NMED's “Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Report, January 2010”**

### **INTRODUCTION**

This document responds to the comments received in a letter from the New Mexico Environment Department (NMED) to the U.S. Department of Energy (DOE) and Sandia Corporation (Sandia) dated May 20, 2011 regarding the Mixed Waste Landfill (MWL) Corrective Measures Implementation Report for Sandia National Laboratories (SNL). The letter is entitled “Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Report, January 2010, Sandia National Laboratories”, EPA ID NM5890110518, HWB-SNL-10-005.

The Corrective Measures Implementation (CMI) Report provides documentation that demonstrates the MWL evapotranspirative cover (i.e., ET Cover) was constructed in accordance with the specifications and requirements of the CMI Plan (SNL/NM November 2005). The CMI Report includes the stand alone MWL Alternative Cover Construction Quality Assurance (CQA) Report as Appendix A that was prepared by the CQA contractors responsible for independent third-party oversight of MWL ET Cover deployment. The Appendix A CQA Report is the comprehensive two-volume report that documents all aspects of MWL ET Cover deployment in accordance with CMI Plan requirements. Volume 1 of the CQA Report is included in the same binder as the CMI Report, along with as-built drawings, CQA verification survey plates, photographic logs, and a compact disc (CD) containing the CQA Report Volume 2 supporting attachments in electronic format. Volume 2 of the CQA Report is a separately bound volume; due to the size and nature of the information hard copies were only provided for the NMED and DOE/Sandia document repositories.

*Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.*

This DOE/Sandia response package consists of the following components:

- Comment Response document (provided in comb-bound format), which includes:
  - Restatement of each of the eight NMED comments in boldface followed by the corresponding DOE/Sandia response in normal font.
  - Cross-reference table (Table 1) that tracks revisions made in the MWL CMI Report (main text and Appendix A CQA Report) relative to each NMED comment.
  - Attachment 1 that includes revised pages of the MWL CMI Report (main text and Appendix A CQA Report) in redline-strikeout format.
  
- Attachment 2 (provided in three-ring binder), which includes replacement covers, spines, and pages to revise existing hard copies of the MWL CMI Report (main text and Appendix A CQA Report):
  - Replacement cover sheets and spine inserts for the two original January 2010 MWL CMI Report binders.
  - Replacement insert for the MWL CMI Report, in its entirety.
  - Replacement insert for the MWL CQA Report, Volume 1, main text only.
  - Replacement Table 8 for the MWL CQA Report, Volume 1 (single replacement page for the tabbed “Table” section in Volume 1).
  - Four replacement drawings for the MWL CQA Report, Volume 1 (for the tabbed “As-Built Drawings” section, 2009 Alternative Cover, in Volume 1).
  - Replacement Figure 2-5, of Attachment 8, for the MWL CQA Report, Volume 2 (Note: this is the only replacement page for Volume 2 of the CQA Report).
  - Replacement CD for the disc titled, “Mixed Waste Landfill Corrective Measures Implementation Report, January 2010, Appendix A, Volume 2 – Attachments.” The “Revision 1” replacement CD goes in the plastic sleeve located in the tabbed “Appendix A, Volume 2” section at the back of the original binder.
  
- A CD (provided in jewel case) with the revised MWL CMI Report (entire report, including Appendix A CQA Report Volumes 1 and 2) and this Notice of Disapproval (NOD) comment response document.

The revised MWL CMI Report retains the original January 2010 submittal date but is distinguished as “Revision 1” on the cover and title pages. All revised pages have “Revision 1” in the header or footer.

The revised 2009 ET Cover as-built drawings are provided to document the locations of two access gates in the perimeter security fence at the northern and southern ends of the MWL. The construction specifications for the northern access gate were shown, but the location within the perimeter fence was inadvertently left off the original drawings. DOE/Sandia requested NMED approval to install an additional access gate at the southern end of the site on April 21, 2011 to facilitate ET Cover maintenance, and NMED approved this request via email on April 28, 2011. Construction details for both gates and their location within the perimeter fence are provided on the revised as-built drawings for the 2009 ET Cover. There were no changes to the as-built drawing provided for the 2006 Subgrade.

## **Comments and Responses for the Mixed Waste Landfill Corrective Measures Implementation Report**

### **1. Construction Quality Assurance (CQA) During Subgrade Layer Construction**

The Corrective Measures Implementation (CMI) Report, Section 2.2, second paragraph, first sentence states: "During the 2006 Subgrade Construction phase, the CQA [Construction Quality Assurance] Team was responsible for all CQC [Construction Quality Control] data and CQA documentation requirements." Similarly, the first paragraph of Section 2.6 of Appendix A of the CQA Report states: "The CQA personnel roles and responsibilities were generally the same for both the 2006 and 2009 construction phases. However, some differences between the two construction phases reflect a more robust CQC and CQA program for the 2009 ET (Evapotranspiration) Cover Construction phase (i.e., construction of the Biointrusion, Native Soil, and Topsoil Layers)." The subsequent paragraph states "During the 2006 Subgrade Construction phase, the CQA Team was responsible for all CQC laboratory testing (i.e., Standard Proctor, Gradation, and Classification soil data), field testing (i.e., in-place density and moisture testing), as well as associated oversight of the testing laboratory."

The "more robust" quality assurance/quality control (QA/QC) implementation during the 2009 construction phase was actually more in accordance with the CMI Plan (CMIP) than the 2006 Subgrade Layer construction because the project requirements for independent QA testing of the Subgrade Layer were evidently not done in 2006. For example, Paragraph 3.3.4 (6) of Section 02200 Earthwork specification (Corrective Measures Implementation Plan [CMIP], Appendix A) indicates that "the Contractor shall perform field-testing of the compacted fill" and "the Contractor shall submit test results to the CQA Engineer and Operator for approval ... " Section 3.4.1 of this Specification states: "the Contractor shall be responsible for the performance of all pre-acceptance and quality control testing." However, the fourth bullet of Section 2.6.2 of the CQA Plan (Appendix B of the CMIP) states that "CQA testing will be conducted at a frequency of at least 5 percent (%) of that done by the Construction Contractor," which refers to testing by CQA Inspection personnel. Similarly, Section 5.1.2.3 of the CQA Plan states that "testing shall be performed at a minimum frequency of 5% of that done by the Construction Contractor" for the Subgrade Layer.

Similar language is also presented in the third paragraph of Section 4.0 of the CQA Report, where it is stated "In general, CQC and CQA data and documentation can be collected by either the Construction Team or the CQA Team or a combination of both." According to the CMIP Specifications and CQA Plan, this statement is not correct.

With regards to this issue, NMED notes reference to a different CQA Plan (May 2006) for the Subgrade Layer construction, but contends that a different CQA Plan should not diminish the project requirements of 5% CQA field testing for Subgrade Layer compaction and moisture content tests. Neither NMED conditional approval for the CMIP (December 2008), nor subsequent submittals (i.e., the CMIP replacement pages; Davis, February 2009) recognized a different CQA plan for the Subgrade Layer construction. However, NMED notes the efforts of the 2009 Contractor and CQA staff to re-condition, re-compact, and re-

**test (as well as re-survey) the upper surface of the Subgrade Layer during the subsequent 2009 construction phase.**

**Therefore, the fact that the Permittees did not conduct QC testing of the Subgrade Layer by the Contractor, and 5% independent QA testing by CQA personnel, should be documented as a nonconformance. As part of the resolution of this comment (i.e., documentation of the nonconformance), revise as appropriate the CMI Report and the CQA Report (Appendix A of the CMI Report).**

**Response:** The MWL CMI Report and CQA Report (Appendix A, Volume 1) have been revised to address documentation of the 2006 Subgrade in-place density and moisture field-testing program as a nonconformance, which is defined as a deviation from the CMIP specifications. In general, CQC versus CQA field tests were not clearly distinguished, and the CQA Team directed/performed all field testing. However, the number of field tests conducted exceeded the CMIP requirements. This is further clarified below.

As documented in the CMI Report (CQA Report, Appendix A, Volume 1, Section 2.0), the construction team for the 2006 Subgrade construction phase was comprised of on-site SNL/NM contractors (i.e., Shaw/GRAM, Inc.); this phase of work was not subcontracted to an outside construction company. For this reason, the decision was made to consolidate all Subgrade CQC and CQA field and laboratory testing under the direction of the CQA contractor, MKM Engineers, Inc., who functioned as a third party oversight contractor responsible for documenting and certifying all phases of Subgrade construction. The CQA Plan (SNL/NM May 2006) prepared by the CQA Team prior to Subgrade construction included the same testing requirements as the CMIP CQA Plan (Appendix B of CMIP) and was not the reason for the deviation from CMIP specifications.

The actual in-place density and moisture testing performed during Subgrade construction exceeded the CMIP specifications of 5 CQC tests per acre per lift plus at least 5% additional confirmatory CQA tests. Based upon the aerial extent of the twelve Subgrade lifts, only 48 CQC and 3 CQA field tests were required according to CMIP requirements (total of 51 tests). However, a total of 71 field tests were performed.

In the judgment of the CQA Engineers, there was no quality impact to the Subgrade of the MWL ET Cover, and therefore, no corrective action plan was required. The fact that the CQA Team performed/directed all CQC and CQA field testing represents a technically sound approach that was more conservative than required by the CMIP. The field testing performed exceeded the CMIP requirements by 20 tests. In addition, the thirteen 2009 re-testing results for the upper lift verified the Subgrade met CMIP density and moisture specifications approximately 3 years after Subgrade Layer completion.

Associated revisions to the CMI and CQA Reports are tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides replacement pages, and revised text has been incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

## **2. Hydraulic Conductivity Testing**

**CQA Report, Section 4.3.1, Saturated Hydraulic Conductivity (ASTM Method D5856-95 [2007]):** NMED agrees in general with the technical validity of the testing approach for hydraulic conductivity, and concurs that the results meet the performance specification of  $4.6 \times 10^{-4}$  centimeters per second (cm/s) or less. However, the sampling and testing approach do not appear to conform to the project Specifications, and a design change (Table 14) was not provided. It is evident that the Specifications in the CMIP intended for collection of *in situ* samples from the cover for hydraulic conductivity testing, rather than remolded samples (as was performed). Specifically, Paragraph 3.3.6(6) of the Section 02200 Earthwork specification states (regarding the Native Soil Layer):

*Samples shall be obtained by means of a thin-walled sample tube or equivalent sampling device in a manner that minimizes disturbance to the lift and in the direction perpendicular to the plane of compaction. Samples shall be sealed and carefully stored to prevent drying during storage and transport. Hydraulic conductivity testing shall be performed in the laboratory according to ASTM specifications for rigid wall testing.*

Clearly the intent of the Specification was not to use remolded samples, although there is some lack of clarity because the ASTM method was not specified, and because the term "rigid wall" was used in the Specifications.

See also the June 16, 2009, Quality Resolution Meeting minutes discussion of ASTM D-5084 flexible wall sample (undisturbed) vs. ASTM D-5856 rigid wall (remolded sample) hydraulic conductivity testing. Furthermore, it is not clear what test methods were used for the hydraulic conductivity results that were reported. Re-evaluate the hydraulic conductivity requirements and testing performed, and provide documentation of this matter as a nonconformance. Revise as appropriate the CMI Report and the CQA Report.

**Response:** The saturated hydraulic conductivity test method used (ASTM D5856-95) is stated in the CQA Report (Appendix A, Volume 1 of the CMI Report) in Section 4.3.1 *Laboratory Testing*, on page 39 and in footnote 2 of Table 8 *Mixed Waste Landfill 2009 ET Cover Construction, Saturated Hydraulic Conductivity CQC Laboratory Results*.

The ambiguity of the CMIP specifications with regards to saturated hydraulic conductivity testing was noted by the 2009 ET Cover construction project team and discussed during the referenced June 16, 2009 Quality Resolution Meeting. A considerable effort was made by the Construction Team, in coordination with SNL/NM project personnel and the CQA Team, researching saturated hydraulic conductivity testing options and the advantages and disadvantages associated with the two most appropriate ASTM methods. Based upon the physical properties of the native soil fill material and in the judgment of the CQA Engineer, ASTM D5084 flexible wall sample (undisturbed) and ASTM D5856-95 rigid wall (remolded sample) are both appropriate testing methods. After discussion that included input from the testing laboratory personnel at AMEC Earth and Environmental, Inc., all parties were in agreement that the ASTM D5856-95 rigid wall method was the best choice. The ASTM D5856-95 rigid wall method had two main advantages over the ASTM D5084 flexible wall method: 1) samples could be collected without compromising the integrity of the installed Native Soil Layer lift (i.e., without punching holes in the lift surface), and 2) compaction of the sample in the

laboratory could be controlled to accurately simulate compaction achieved in the field, especially considering the consistency of the native soil fill material. Although collection of an in situ, undisturbed sample in the field is a technically sound approach, the collection process is subject to variables that often result in some disturbance to the sampled material, which can affect the quality of the results.

The CMI Report has been revised to address this issue as a nonconformance. In the judgment of the CQA Engineer and project team, it was not possible to perform saturated hydraulic conductivity testing without some deviation from CMIP specifications. The method used was appropriate for the Native Soil Layer fill material and the results met the CMIP performance specification of  $4.6 \times 10^{-4}$  cm/s or less as noted in the NMED comment.

Associated revisions to the CMI and CQA Reports are tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides replacement pages, and the revised text is incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

### **3. Equipment List.**

**CQA Report, Section 5.2.1, 2nd paragraph and bullet list: Provide a more detailed equipment list for the 2006 Subgrade Layer work. Note the detail provided in Table 13 for the 2009 construction phase; make and model number of the 2006 earthwork equipment (or other indication of size) should be provided at a minimum. As an example illustrating this need, CQA Report, Table 14, first line, states that a smaller roller was used for landfill surface compaction than specified: however, there are no details of the actual equipment used in 2006.**

**Response:** The CQA Report (Appendix A of the CMI Report), Section 5.2.1, has been revised to provide the requested information. Associated revisions to the CQA Report are tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides replacement pages, and the revised text has been incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

### **4. Stockpiled Volume of Native Soil**

**CQA Report, Section 5.4, second paragraph, third sentence reads as follows: "Soil fill stockpiled at the Borrow Pit in 2006 based on CMIP estimates was not sufficient to complete construction of the Native Soil and Topsoil Layers." NMED suggests changing this sentence to read: "The quantity of soil fill stockpiled at the Borrow Pit... " to prevent potential confusion regarding the sufficiency of quality of the stockpiled material, which was adequate for soil fill.**

**Response:** The CQA Report (Appendix A of the CMI Report) has been revised to make the suggested clarification. The associated revision to the CQA Report is tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides the replacement page, and the revised text has been incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

## **5. Engineering Certification**

**CQA Report, Section 9: It seems odd that the certification of the subgrade is dated August 31, 2007, but also states that their original MKM Engineers, Inc. CQA Report "has been incorporated into this report," which appears to refer to the current 2010 CQA Report. NMED notes also that the 2009 CQA Engineer certified both the Subgrade Layer and the overlying ET Cover, which is appropriate given the re-testing of the Subgrade surface and oversight of the ET Cover construction.**

**Provide clarification of the engineering certification. It may be more appropriate to include a copy of the original CQA Engineer subgrade certification, without modifying it to conform to the format of the current report.**

**Response:** The MWL ET Cover was deployed in two separate construction phases, the 2006 Subgrade and the 2009 ET Cover Construction phases, as described in the CMI Report (Section 1.3, page 1-3) and the CQA Report (Section 1.1 [page 21], Section 1.3 [pages 22-23], and Section 5.0 [page 47]). Section 1.3 of the CQA Report provides a detailed description of how the 2006 Subgrade construction was documented and certified in the Draft MWL Alternative Cover Subgrade CQA Report (MKM, August 2007), which was subsequently revised to incorporate the 2009 ET Cover construction activities and certification. The Draft Subgrade CQA Report was prepared and certified in 2007 because it was not known when NMED approval to proceed with ET Cover construction would be received, and when that approval was received, if the same CQA Engineer would be available.

As a result of the delay, a new construction team and CQA Team performed the 2009 ET Cover construction work. It was always the intent of DOE/Sandia to submit one final report to NMED (i.e., CMI Report) documenting installation of the ET Cover that included the required CQA Report certified by the CQA Engineer. In order to accomplish this, the 2007 Draft Subgrade CQA Report was updated to incorporate the 2009 ET Cover Construction activities. During preparation of the 2009 CMI and CQA Reports, Dr. Kelly Peil (certifying engineer for 2006 Subgrade) was consulted and the approach to revise the 2007 Draft Subgrade CQA Report and modify his 2007 certification statement was discussed. Dr. Peil concurred with the approach and, for completeness, DOE/Sandia retained his certification for the 2006 Subgrade effort.

Based upon this information, it is the position of DOE/Sandia that the 2007 certification presented in Chapter 9 of the CQA Report is appropriate. However, as requested in this NMED comment, DOE/Sandia are replacing the modified 2007 certification statement with the original, and adding an explanatory note at the bottom of the page to address the incorporation of the referenced "CQA subgrade preparation draft report" into the January 2010 CQA Report as described in Section 1.3, page 23.

Dr. Peil and the 2009 CQA Certifying Engineer, Mr. Donald T. Lopez, have reviewed this NOD comment response document and the associated revisions to the CMI and CQA Reports. Chapter 9 of the revised CQA Report (January 2010, Revision 1) includes an updated certification statement from Mr. Lopez as the CQA Certifying Engineer for the MWL ET Cover. The statement addresses the revisions made to the January 2010 report in response to NMED NOD comments dated May 20, 2011.

The associated revisions to the CQA Report are tracked in Table 1 and documented in redline-strikeout format in Attachment 1. As revised in Attachment 1, Dr. Peil's certification statement on page 75 of 79 reflects the original wording of the August 31, 2007 certification statement. Attachment 2 of this comment response document provides replacement pages for the revised certification statement, which have been incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

#### **6. Hydraulic Conductivity Table**

**CQA Report, Table 8, 4th column: NMED suggest changing the title of the 4th column to "Sample" Compaction (to avoid confusion with in-place cover compaction) to better describe that the hydraulic conductivity tests were apparently performed on samples that were remolded in the laboratory. With the current column heading one might make the erroneous assumption that 90% compaction was not achieved at all test locations on the cover. Also, regarding Footnote 1, change "Minimum" to "Maximum" with regards to the specified comparison criteria for hydraulic conductivity results.**

**Response:** The CQA Report (Appendix A of the CMI Report), Table 8 has been revised to make the suggested changes. The associated revision to the CQA Report is tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides the replacement page, and the revised table is incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

#### **7. Disposition of Grubbed Vegetation**

**Volume 2 of the CQA Report, Attachment 1, Record of Meeting for June 5, 2006: item 9 indicated "grubbed vegetation may contain tritium, and will be mulched and stored for placement with topsoil at a later time". Indicate whether the grubbed vegetation that was removed from the MWL surface in 2006 was tested. Indicate also if this vegetation contained tritium and the disposition of this material. Note the October 2, 2006 Record of Meeting, Item 2 which indicates "shredded brush will be stored for future reuse in covered containers." However, the material is not mentioned in the February 12, 2007 minutes which indicated the project would be mothballed and stabilized due to approval delays. The following statement is made in the CQA Report (Section 5.1, second paragraph, third sentence), but no backup was provided in the attachments: "The vegetation removed from the existing MWL surface and the perimeter area was shredded and containerized for future disposition. The material was sampled for radiological contamination and approved for reuse." Provide additional clarification and supporting documentation in the CMI Report concerning the management and disposition of the grubbed vegetation.**

**Response:** Between October 5 and 16, 2006, one grab sample of a soil-vegetation mixture and one pinch sample of soil only were collected from each of the four piles of grubbed vegetation stockpiled at the MWL. The four sample pairs (8 total samples) were analyzed for gamma spectroscopy, tritium, gross alpha and gross beta. All sample results were reviewed and were below background activities, including the tritium results. The soil and vegetation were subsequently segregated and the vegetation was shredded and containerized in roll off containers (as shown in the 10/23/06 photograph in the CQA Report, Volume 1 Photographic Log). The original intent was to use this shredded vegetation to increase the organic content of the topsoil

material. However, due to the delay in NMED approval to proceed with ET Cover installation, the shredded vegetation was eventually disposed of at the Kirtland Air Force Base (KAFB) Landfill to allow the roll off containers to be used at other SNL locations. Segregated soil material was used to maintain the surface-water soil berm surrounding the MWL site. The October 2006 soil-vegetation grab sample radiological analytical results are maintained in the SNL Customer Funded Record Center.

The CQA Report (Appendix A of the CMI Report), Section 5.1, second paragraph, third sentence has been revised to clarify the disposition of the grubbed vegetation at the KAFB Landfill. This revision is tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides the replacement page, and the revised text is incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on a CD.

#### **8. Monitoring Well Extension**

**CQA Report, Attachment 8, Figure 2-5, center of figure: "PVC Slip Coupling w/ Stainless Steel Screens" should read "PVC Slip Coupling w/Stainless Steel Screws".**

**Also in Attachment 8, Section 3, first bullet provides justification of the "double anchored" well resulting from not demolishing the original well pad. The Permittees should carefully monitor and observe the upper 10 feet of the interior casing during future sample events to monitor whether this arrangement causes damage to the well casing from potential settlement of underlying waste.**

**Response:** The error in Figure 2-5 of Attachment 8 in the CQA Report (Appendix A of the CMI Report, Volume 2), has been corrected. The associated revision to the CQA Report is tracked in Table 1 and documented in redline-strikeout format in Attachment 1. Attachment 2 of this comment response document provides the replacement page, and the revised figure is incorporated into the electronic version of the CMI Report (January 2010, Revision 1) provided on both CDs.

In addition, DOE/Sandia will inspect the upper 10 feet of the interior casing during future sampling events to monitor whether this arrangement causes damage to the well casing from potential settlement of underlying waste.

**Table 1**  
**Mixed Waste Landfill Corrective Measures Implementation Report**  
**Revisions Made in Accordance with the New Mexico Environment Department**  
**Notice of Disapproval Comments Dated May 20, 2011**

<b>NOD Comment #</b>	<b>CMI Report Page Revisions</b>	<b>CQA Report, Volume 1 Page Revisions</b>	<b>CQA Report, Volume 2 Page Revisions</b>
--	Cover and title pages, page i <sup>1</sup>	Appendix A cover page, report cover and title pages (pages 1 and 3), page 15 <sup>1</sup>	No Change
1	ii, 1-9, 2-6	Pages 7, 16, 20, 41, 69 and 73	No Change
2	ii, 1-9, 2-6	Pages 7, 16, 20, 69, 70 and 73	No Change
3	No Change	Page 51	No Change
4	No Change	Page 59	No Change
5	No Change	Pages 75 and 76	No Change
6	No Change	Tables-Page 15 of 33	No Change
7	No Change	Page 49	No Change
8	No Change	No Change	Attachment 8, Page 2-8
NA	No Change	Tabbed section in back of report labeled "As-Built Drawings", Figure No. 1 – 4 depicting the 2009 As-Built Drawings <sup>2</sup>	No Change

Note: Revised CMI and CQA Report pages referenced above are provided in redline-strikeout format in Attachment 1 to document the changes made in response to NMED NOD comments #1 through 8.

<sup>1</sup> Changes made to the cover and title pages to include "Revision 1" following "January 2010." A brief note has been added to the beginning of the Executive Summaries to explain revision of the January 2010 document in response to the NMED NOD.

<sup>2</sup> Revised as-built drawings for the 2009 ET Cover are provided as part of this NOD Response to document the location of two access gates in the perimeter security fence at the northern and southern ends of the MWL not previously shown on the original drawings. These changes are not related to a specific NMED NOD comment and they are not provided in redline-strikeout format in Attachment 1.

CMI            Corrective Measures Implementation  
CQA            Construction Quality Assurance  
NA             Not applicable  
NMED         New Mexico Environment Department  
NOD            Notice of Disapproval

# **Attachment 1**

## **Revisions to the MWL CMI Report in Redline-Strikeout Format**

This Attachment Includes Revised Pages From:

- CMI Report, Main Text
- CMI Report, Appendix A - CQA Report, Volume 1, Main Text
- CMI Report, Appendix A, CQA Report, Volume 2, Attachments

Revised Pages in Redline-Strikeout Format  
MWL CMI Report Main Text



**Sandia  
National  
Laboratories**

---

---

## **Sandia National Laboratories/New Mexico Environmental Restoration Project**

# **MIXED WASTE LANDFILL CORRECTIVE MEASURES IMPLEMENTATION REPORT**

**JANUARY 2010**

**Revision 1**



United States Department of Energy  
Sandia Site Office

---

---

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

## EXECUTIVE SUMMARY

*This document represents a revision to the January 2010 Mixed Waste Landfill Corrective Measures Implementation Report in response to the New Mexico Environment Department Notice of Disapproval dated May 20, 2011.*

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base, immediately south of the city of Albuquerque in Bernalillo County, New Mexico. Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation, manages and operates SNL/NM for the U.S. Department of Energy (DOE). Sandia performs research and development in support of various energy, weapons, and national security programs. It also performs work for the U.S. Department of Defense, the U.S. Nuclear Regulatory Commission, and other government agencies.

The Mixed Waste Landfill (MWL) is located 4 miles south of SNL/NM central facilities and 5 miles southeast of the Albuquerque International Sunport. The MWL is a fenced, 2.6-acre Solid Waste Management Unit in the north-central portion of Technical Area 3 that was a disposal area for low-level radioactive and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (in 1988) were disposed of in the MWL. The New Mexico Environment Department (NMED) is authorized by the U.S. Environmental Protection Agency to implement and enforce the corrective action requirements for the MWL.

In this MWL Corrective Measures Implementation (CMI) Report, the DOE and Sandia demonstrate that the deployment of the MWL alternative evapotranspirative (ET) cover (hereafter referred to as the ET Cover) was performed in accordance with the requirements, specifications, and design drawings presented in the MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM November 2005). The MWL ET Cover was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil. The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The overall footprint of the ET Cover is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards of soil fill and 6,800 cubic yards of rock (in-place, compacted volumes) that meet CMIP specifications based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor.

This MWL CMI Report meets the requirements stipulated in the NMED Final Order In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the MWL (Final Order) (NMED May 2005); the CMIP (SNL/NM November 2005); the SNL/NM Resource Conservation and Recovery Act Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED April 2004); and the NMED conditional approval for the MWL CMIP (Bearzi December 2008). The MWL Alternative Cover CQA Report (Appendix A of this CMI Report) is certified by a New Mexico-registered Professional Engineer and provides all construction quality control and CQA data and documentation required to verify that the MWL ET Cover meets NMED requirements and the specifications of the CMIP.

On May 26, 2005, the Secretary of the NMED selected a vegetative soil cover with a biointrusion barrier (i.e., the ET cover) as the remedy for the MWL. The remedy selection was documented in the NMED Final Order for the MWL (NMED May 2005) that also required submittal within 180 days of a CMIP incorporating the selected remedy. The MWL CMIP (SNL/NM November 2005) was submitted to the NMED in November 2005 and outlines the deployment of the MWL ET Cover (Chapter 2.0), the regulatory basis (Chapter 3.0), MWL characteristics (Chapter 4.0), the technical basis for the cover (Chapter 5.0), the MWL alternative cover design (Chapter 6.0), and cover performance monitoring (Chapter 7.0). Appendices include Construction Specifications (Appendix A), a CQA Plan (Appendix B), and other supporting documentation. The MWL CMIP was conditionally approved by the NMED in December 2008 (Bearzi December 2008), and all conditions related to construction of the MWL ET Cover were addressed and incorporated into the CMIP through replacement pages (Davis February 2009).

Deployment of the MWL alternative ET Cover was conducted in two main phases. During the first phase in 2006, MWL Borrow Pit and Subgrade construction activities were conducted in preparation for ET Cover construction. Soil fill material was excavated, screened to 2-inch minus, and stockpiled at the MWL Borrow Pit from June through July 2006. Following the NMED approval in September 2006, Subgrade construction was performed from October through December 2006, and protective measures installed on the completed Subgrade surface in April 2007. After NMED conditional approval of the CMIP in December 2008 (Bearzi December 2008), the MWL ET Cover was constructed during the second phase, which took place from May through September 2009.

The MWL Alternative Cover CQA Report (Appendix A) is the comprehensive report that documents all aspects of MWL ET Cover deployment and addresses all CMI Report data and documentation requirements. All ET Cover materials and layers were approved by the CQA Engineer as specified in the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer. All nonconformances and design changes were identified; documented; resolved in consultation between the Sandia Project Staff, the Construction Team, and the CQA Team; and approved by the CQA Engineer. The design changes were implemented and resulted in a thicker, more conservative and protective MWL ET Cover.

Longer-term aspects of site revegetation, monitoring and maintenance, and institutional controls will be addressed in a revised MWL Long-Term Monitoring and Maintenance Plan that will be prepared and submitted to the NMED within 180 days of approval of this MWL CMI Report.

Construction phase CQA and CQC information. The resulting MWL Alternative Cover CQA Report (Appendix A) integrates NMED requirements, including a detailed summary of the construction activities, laboratory and field testing results, land surveying results, as-built drawings, quality assurance verification survey plates, a photographic record of the construction activities, and other CQA documentation (i.e., meetings, daily reports, inspection forms, and data and cover layer approvals).

For both the 2006 and 2009 construction phases, a representative of the CQA Team was at the construction site each workday to inspect and oversee construction activities, laboratory and field testing, and land surveying. The CQA inspections and oversight are documented in daily reports, inspection checklists/forms, and approval forms provided in the MWL Alternative Cover CQA Report (Appendix A). All ET Cover layers were approved by the CQA Engineer as stipulated by the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer. All nonconformances and design changes were identified, documented, and resolved in consultation between the Sandia Project Staff, the Construction Team, and the CQA Team. Overall, the design changes resulted in a thicker, more protective ET Cover and there were no adverse impacts to ET Cover quality as a result of the nonconformances and design changes.

Table 2-3  
MWL CMI Report Requirements – Documentation Requirements Summary and Cross-Walk

Documentation Requirement	Location in the MWL Alternative Cover CQA Report (Appendix A)		Comments
	CQA Data	CQC Data	
Daily reports of construction activities	Described in Section 4.1 Reports in Attachment 3	NA	Daily Reports were the responsibility of the CQA Team. For 2009 ET Cover Construction phase, daily reports were completed by the Construction Team but not included in the CQA Report.
Documentation of equipment used	Described in Chapter 5.0, Table 13, and Daily Reports See comments for additional information	NA	Documentation of equipment used for the 2006 Subgrade Construction phase is documented in Daily Reports (Attachment 3) and Section 5.2.1. For 2009 ET Cover Construction phase, equipment used is documented in Daily Reports and Table 13, and described in Sections 5.2.2, 5.3.2, 5.3.3, 5.4, 5.5, and 5.6.
Inspection checklists/forms <sup>1</sup>	Described in Section 4.2 Forms in Attachments 4-6	NA	Receiving, Construction, and Testing Inspection Forms and related documentation were completed by the CQA Team.
Supporting documentation for laboratory and field testing <sup>1</sup>	Described in Section 4.3 Supporting documentation in Attachment 7	Described in Section 4.3 Supporting documentation in Attachment 7	Supporting documentation for all 2006 Subgrade and 2009 ET Cover laboratory and field testing is included in Attachment 7 and represents CQA documentation. See Table 2-2 for additional information on CQA and CQC laboratory and field testing.
As-Built Drawings	Described in Sections 2.5 and 4.4	Described in Section 2.5 and 4.4 Results in Table 12 and 2006 Subgrade As-Built Drawing and 2009 As-Built Drawings in tabbed section at end of report	For 2006 Subgrade Construction phase, all surveying was for CQC and documented in the 2006 Subgrade As-Built Drawing. For 2009 ET Cover Construction phase, the Construction Team performed all required field control and final surveying and prepared the final as-built drawings. The 2009 as-built drawings are complete, final drawings documenting the MWL ET Cover. See Table 2-2, "Land Survey Data," for more information.
Photographic records	Described in Section 4.5	NA	Photographic Logs for both 2006 and 2009 phases included in a tabbed section at end of the CQA Report.
CQA Engineer Approval of all Cover Layers, Design Changes, and Final Construction	Described in Sections 3.4, Chapters 7 and 9, and Tables 3 and 14	NA	Table 3 documents approval of all Cover Layers. Chapter 7.0 and Table 14 document all <b>nonconformances and</b> design changes. Attachment 2 provides approval documentation. MWL ET Cover construction is certified by a New Mexico-registered Professional Engineer in Chapter 9.0.

<sup>1</sup> All construction materials and the completed Subgrade and ET Cover Layers were approved by the CQA Engineer as documented in Section 3.4, Chapter 7.0, and Table 3; with supporting documentation in Attachments 1, 2, and 7.

CMI Corrective Measures Implementation  
CQA Construction Quality Assurance  
CQC Construction Quality Control  
ET Evaporatranspirative  
MWL Mixed Waste Landfill  
NA Not applicable

Revised Pages in Redline-Strikeout Format  
MWL CMI Report, Appendix A - CQA Report, Volume 1  
Main Text and Table Section

## **APPENDIX A**

### **Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report January 2010**

**Revision 1**

### **Volume 1 Main Text and Tabbed Sections**

# Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report

Submitted to



**Sandia National Laboratories**

P.O. Box 5800

Albuquerque, NM 87185



**January 2010**

**Revision 1**

Submitted by

**URS**

**URS Group, Inc.**

One Park Square

6501 Americas Parkway NE, Suite 900

Albuquerque, NM 87110

**MIXED WASTE LANDFILL  
ALTERNATIVE COVER  
CONSTRUCTION QUALITY ASSURANCE REPORT**

**JANUARY 2010**

**Revision 1**

---

6.0	Monitoring Well (MWL-MW4) Extension .....	67
7.0	Cover Layer Approvals, <u>Nonconformances</u> , and Design Changes.....	69
8.0	Conclusions.....	73
9.0	Engineering Certification.....	75
10.0	References.....	77

## ***Executive Summary***

---

*This document represents a revision to the January 2010 Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report in response to the New Mexico Environment Department Notice of Disapproval dated May 20, 2011.*

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base (KAFB), immediately south of the city of Albuquerque in Bernalillo County, New Mexico. SNL/NM is owned by the U.S. Department of Energy (DOE) and managed and operated by Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation. Sandia performs research and development in support of various energy, weapons, and national security programs. Sandia also performs work for the U.S. Department of Defense, the U.S. Nuclear Regulatory Commission, and other government agencies.

The Mixed Waste Landfill (MWL) at SNL/NM is designated as an Underground Radioactive Materials Area under DOE requirements and a Hazardous and Solid Waste Amendments Solid Waste Management Unit subject to New Mexico Environment Department (NMED) corrective action regulations as delegated by the U.S. Environmental Protection Agency (EPA). The NMED is authorized by the EPA to implement and enforce the corrective action requirements for the MWL. The MWL is located within the boundaries of KAFB on federal land controlled by the DOE. The MWL consists of two distinct disposal areas; the classified area in the northeast portion occupies 0.6 acres and the unclassified area occupies 2.0 acres. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (at the time of disposal) were disposed of in the MWL from March 1959 through December 1988.

The MWL alternative evapotranspirative (ET) cover (hereafter referred to as the ET Cover) was deployed from October 2006 through September 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil (Figure ES-1). The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The overall footprint of the ET Cover is 4.1 acres including side slopes. The ET Cover was constructed with approximately 33,000 cubic yards (cy) of soil fill and 6,800 cy of rock (in-place, compacted volumes) that meet the specifications provided in the MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM, November 2005) based upon 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover

construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor.

This MWL Alternative Cover CQA Report documents the implementation of the MWL CMIP (SNL/NM, November 2005) that was conditionally approved by the NMED (Bearzi, December 2008) and addresses all requirements for the MWL Corrective Measures Implementation Report as defined in the NMED Final Order for the MWL (NMED, May 2005); the CMIP (SNL/NM, November 2005); the SNL/NM Resource Conservation and Recovery Act Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED, April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi, December 2008). The CMIP contains the Construction Specifications (Appendix A) and CQA Plan (Appendix B) that define the construction, design, and quality assurance requirements for construction of the MWL Alternative Cover (i.e., MWL ET Cover).

Deployment of the MWL ET Cover was conducted in two main construction phases, the 2006 Subgrade Construction and 2009 ET Cover Construction. The 2006 Subgrade Construction phase began on October 2, 2006, following the NMED approval received in September 2006 (Bearzi, September 2006), and was completed on April 11, 2007. This phase involved MWL Borrow Pit activities to generate soil fill material for cover construction, preparation of the existing disposal area surface, construction of the Subgrade, and installation of erosion control measures to protect the Subgrade surface while awaiting final NMED approval of the CMIP. The 2009 ET Cover Construction phase was performed from May 20 through September 3, 2009, and involved preparation of the Subgrade surface, construction of the ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers) and site drainage features, installation of the administrative security fence, and site revegetation activities. Minor variances in construction and/or design specifications that did not adversely affect the quality of the cover were documented as [nonconformances or](#) design changes and approved by the CQA Engineer. Overall, the final MWL ET Cover as constructed provides a thicker, more protective ET Cover relative to the CMIP minimum design specifications. The completed ET Cover is shown schematically in Figure ES-1.

Third-party CQA services were provided by MKM Engineers, Inc. during the 2006 Subgrade Construction phase (under subcontract to URS Group, Inc. [URS]), and by URS during the 2009 ET Cover Construction phase. This report and the attachments provide the construction quality control and CQA data and documentation required to verify that the MWL ET Cover meets the construction and design specifications of the NMED-approved CMIP (SNL/NM, November

All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party CQA contractor.

Deployment of the MWL ET Cover is detailed in this MWL Alternative Cover CQA Report (Volumes 1 and 2), which incorporates all construction quality control (CQC) and CQA data and documentation requirements for the MWL Corrective Measures Implementation (CMI) Report as defined in the NMED Final Order for the MWL (NMED, May 2005); the CMIP (SNL/NM, November 2005); the SNL/NM Resource Conservation and Recovery Act (RCRA) Permit (as modified for the MWL after the Final Order); the Compliance Order on Consent (NMED, April 2004); and the NMED conditional approval of the MWL CMIP (Bearzi, December 2008).

Volume 1 includes the main text (Chapters 1.0 through 10.0) and tabbed sections located at the end of this report. Chapter 1.0 provides background information and the purpose and scope of this report. Chapter 2.0 presents the roles and responsibilities of the organizations, contractor teams, and key personnel. Chapter 3.0 presents project communications, the construction approval process, and related CQA documentation. The CQC and CQA programs that were implemented to test, control, and verify construction of the ET Cover according to the specifications and design drawings in the CMIP are presented in Chapter 4.0, along with the associated CQC and CQA data. Chapter 5.0 provides a detailed summary of the 2006 Subgrade and 2009 ET Cover Construction earthwork. Chapter 6.0 discusses the extension of groundwater monitoring well MWL-MW4 and the installation of two required soil-vapor monitoring wells; these tasks were completed in 2009 during installation of the ET Cover. Chapter 7.0 summarizes nonconformances and design changes (i.e., minor variances in construction and/or design specifications that do not affect the quality of the cover) to the CMIP specifications and design drawings. Chapters 8.0 and 9.0 provide the conclusions and CQA Engineering Certification of ET Cover construction, respectively. Report references are provided in Chapter 10.0. Tabbed sections at the end of Volume 1 include all tables, figures, as-built drawings, quality assurance (QA) verification survey plates, and photographic logs. Volume 2 contains Attachments 1 through 8 that include supporting CQC and CQA documentation. Volume 2 is provided in electronic format (PDF files) on a compact disc (CD) at the end of this report. Separately bound hard copies of the attachments in Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico), the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico), and the SNL/NM Customer Funded Records Center (formerly known as the ES&H [Environment, Safety, and Health] and Security Records Center).

density and moisture readings were obtained to verify compaction of not less than 90 percent of the maximum dry density. After discussions with the SCR and Sandia Oversight, Construction Team, and CQA Team personnel, this approach was approved by the CQA Engineer for verification of a stable surface, rather than counting the number of passes over an area using a roller with a ballasted weight of 25 tons, as stipulated in Section 02200 in Appendix A of the CMIP (SNL/NM, November 2005). Due to moisture being added to the surface rather than mixed into the soil prior to placement, the optimum moisture content goal of +/- 2 percent could not be attained using either compaction method. However, the field-testing results provided a more quantitative method and verified adequate compaction of the existing surface.

The spatial extent of most Subgrade Construction phase lifts was highly variable due to the uneven existing surface, so many of the lifts were significantly smaller than 1 acre. Therefore, the number of tests per lift was generally less than five. The field test locations were selected to be representative of each lift and were surveyed, recorded on an inspection checklist, and plotted on maps. The actual in-place density and moisture testing performed during Subgrade construction exceeded CMIP specifications of 5 CQC tests per acre per lift plus at least 5% additional confirmatory CQA tests. Based upon the aerial extent of the twelve Subgrade lifts, only 48 CQC and 3 CQA tests were required based upon the CMIP requirements (total of 51 tests). However, a total of 71 field tests were performed. Figures 5 through 17 show the locations of all existing surface and Subgrade field tests, Table 9 summarizes the results, and Attachment 7 provides the associated field and laboratory documentation. Testing inspection forms completed in the field are included in Attachment 6.

For the 2006 Subgrade Construction phase field-testing program, the native soil fill material was tracked as it was sampled, hauled, and placed. The associated Proctor result for every 500 cy was used to support the in-place density and moisture field tests of that 500 cy of fill material as it was placed and tested. The Subgrade lifts were relatively small making this approach feasible, although verifying the Proctor result characterizing each 500 cy of fill material that was placed, compacted, and tested was challenging. In one situation, this approach could not be followed due to laboratory reporting delays. The CQA Engineer approved proceeding with the previous Proctor results because the physical properties of the native soil fill were consistent. As more Standard Proctor results became available it was evident that the Borrow Pit fill material was relatively uniform in terms of its geotechnical characteristics, especially after screening and stockpiling.

## **5.1 Existing Mixed Waste Landfill Surface**

Preparation of the existing MWL surface was conducted as the first part of the 2006 Subgrade Construction phase. From October 2 through October 26, 2006, the security fence was removed and the MWL surface was cleared of vegetation. After clearing, the existing surface was graded, watered, compacted, and tested in preparation for the Subgrade Construction phase. As part of site preparation work, an area immediately south of the MWL was cleared and used as the staging area for the soil stockpile, the roll-off containers for waste and recyclable metal, the container for shredded vegetation, and equipment storage. The work area boundary was marked with a rope and signs to designate the radiation control area that was in effect for the 2006 Subgrade Construction phase. After completion of the Subgrade Construction phase, which involved placement of clean soil fill over the disposal area surface, the radiological posting of the MWL was changed to an Underground Radioactive Materials Area. This allowed the 2009 ET Cover Construction phase to proceed without formal radiological controls, although SNL/NM Radiological Control Technicians continued to be involved in the early construction phases to confirm clean operations.

Soil berms were constructed around the perimeter work area as a best management practice required by the project SWPPP for the control of storm water run-on and to control runoff from the site. The berms were inspected after each significant rainfall event (i.e., more than 0.5 inches) or semimonthly at a minimum, according to the project SWPPP requirements, and repairs were made as necessary. The existing administrative security fencing was removed and stockpiled on site for radiological clearance before disposal or recycling. The vegetation removed from the existing MWL surface and the perimeter area was shredded and containerized for future disposition. The material was sampled for radiological contamination, ~~and~~ approved for reuse, and disposed of at the KAFB Landfill. Any material on the surface larger than 2 inches was removed and stockpiled. One remaining concrete pad pit cover was reduced to rubble in place and backfilled with stockpiled soil.

The existing surface was uneven due to the previously backfilled disposal trenches. The surface was graded, compacted with a vibratory roller, and water was added using a water truck to complete existing surface preparation activities.

### **5.1.1 Existing Surface Laboratory and Field Testing**

After the surface was graded and compacted, in-place field density and moisture testing were performed to verify compaction of not less than 90 percent of the maximum dry density. Standard Proctor soil testing to support the in-place density and moisture field testing was

The following equipment was used for 2006 Subgrade Construction phase earthwork:

- Dump trucks to haul the soil ([Volvo WG 64](#))
- Two front-end loaders to haul and spread the soil in lifts ([John Deere 644G](#))
- An excavator at the soil stockpile to mix the soil with water before placing it on the MWL surface ([John Deere 240](#))
- A grader ([John Deere 670](#)) to spread the soil to the required thickness (grader later replaced with a tracked bulldozer [[John Deere 650G](#)])
- One water truck ([2,000 gallon Ford F650](#)) to moisture-condition the soil and to control dust in the work area
- One vibratory roller for compacting the soil lifts ([Ingersoll Rand SD 70D, 8 ton gross weight, maximum centrifugal force 32,100 pounds](#))
- A skid steer to spread the soil in tight areas and around groundwater monitoring well MWL-MW4 ([Caterpillar 246B](#))

The Subgrade was installed on top of the prepared existing surface using approximately 11,000 cy (loose) of native soil fill placed in a total of 12 lifts. The subgrade soil was placed in 8-inch loose, 6-inch compacted lifts beginning with the topographically lowest areas. In general, the lower northern side of the MWL was augmented to match the higher southern grade. The goal of the Subgrade Construction phase was to establish a surface over the MWL that mirrored the final CMIP design surface of the ET Cover (i.e., a broad, central crown or high area with a 2-percent east-to-west slope across most of the MWL).

The initial seven lifts were spatially limited and largely placed to bring depressions across the site to a level grade. Lifts 8 through 12 were placed in increasingly larger areas across the MWL. A total of 12 lifts were applied, with the total depth varying from a few inches to 40 inches (approximately 3.3 feet) at the lowest spots. To guide and control lift thickness across the area, the surveyors installed grade stakes marked in 8-inch thickness levels for each lift. Each lift was compacted to meet the CMIP specification of compaction of not less than 90 percent of the maximum dry density at +/- 2 percent of optimum moisture content, as determined by ASTM D698 (Standard Proctor testing) (ASTM, 2007a). Compaction with the vibratory roller resulted in an approximate 6-inch lift. The in-place, compacted volume of the Subgrade is approximately 7,700 cy indicating a compaction factor of approximately 30 percent.

The quantity of soil was tracked by the volume per loader bucket and the number of loads per day. A total volume of soil was recorded for each lift and the locations of each laboratory and

thickness of the Native Soil Layer. The thickness of this soil layer is not considered part of the Biointrusion Layer or the Native Soil Layer, both of which meet minimum thickness specifications of the CMIP without including this layer. Grid points and surrounding areas where the thin soil layer exceeded 3 inches were rechecked and adjusted using the JD 670 motor grader where feasible. If the soil layer could not be scraped and thinned without encountering the underlying rock, no further adjustment was made.

All grid points that were altered were resurveyed, and the final average thickness of the thin soil layer overlying the Biointrusion Layer was 0.25 feet (Table 12). Final approval of the thin soil layer occurred on June 17, 2009 (Section 3.4 and Table 3).

The final average thickness of the completed Biointrusion Layer was 1.25 feet, which equals the CMIP upper tolerance thickness. The complete volume of rock used for the Biointrusion Layer is estimated at 6,800 cy. The in-place surveyed volume is approximately 5,800 cy. The 1,000-cy discrepancy (approximately 15 percent reduction) is most likely attributable to the fact that the Subgrade surface elevation was lowered approximately 1 to 2 inches during the scarification process prior to installing the Biointrusion Layer rock material. Initial volume estimates of the received rock may have also been biased slightly high.

#### **5.4 Native Soil Layer**

Construction of the Native Soil Layer was conducted from June 16 through August 4, 2009. Construction started on the side slopes around the northern end of the MWL, which were built up in lifts to meet the 6 to 1 slope requirement from June 16 through June 22, 2009. Construction of the Native Soil Layer on the surface of the MWL started on June 18, 2009, after the thin soil layer overlying the Biointrusion Layer was approved on June 17, 2009 (Table 3). Construction of the side slopes around the northern end of the MWL and the first Native Soil lift (Wedge Lift 1) on the MWL surface proceeded concurrently from June 18 through June 22, 2009.

To support construction of the Native and Topsoil Layers, additional soil fill material was excavated, screened to 2-inch minus, and stockpiled at the Borrow Pit from June 12 to July 24, 2009. During this time period, the soil berm around the MWL site originally installed as part of the 2006 Subgrade Construction phase SWPPP was excavated, hauled to the Borrow Pit, and screened for use as native soil fill (a perimeter silt fence had been installed around the berm in late May 2009). The quantity of S<sub>s</sub> soil fill stockpiled at the Borrow Pit in 2006 based on CMIP estimates was not sufficient to complete construction of the Native Soil and Topsoil Layers. During the Quality Resolution Meeting held on July 14, 2009, estimates were finalized for

## 7.0 Cover Layer Approvals, Nonconformances, and Design Changes

Documentation associated with the 2009 Quality Resolution Meetings and ET Cover layer approval is summarized in Sections 3.3 and 3.4, Table 3, and Attachments 1 and 2. Based upon the final CQC survey data (Table 12) and 2009 as-built drawings (Figures No. 2 and 3 in tabbed section at the end of this report), the final ET Cover surface meets the 2-percent east-to-west surface design slope, and all side slopes meet or exceed (i.e., are flatter) than the 6 to 1 specification. All cover layers were approved prior to starting construction of the next layer as stipulated in the CMIP CQA Plan (SNL/NM, November 2005–Appendix B).

Consistent with the CMIP CQA Plan, nonconformances are defined as deviations or changes to construction and/or design specifications. If it is determined by the CQA Engineer that a nonconformance has that have an adverse impact on quality of the ET Cover, and therefore require a corrective action plan and documentation of corrective action implementation are also required. Design changes are minor variances from construction and/or design specifications that do not have an adverse impact on quality and therefore do not require corrective action. However, nonconformances and design changes must be documented.

Two nonconformances were identified. During the 2006 Subgrade construction phase, CQC versus CQA in-place density and moisture field tests were not clearly distinguished and the CQA Team directed/performed all of the field testing instead of the construction team performing/directing the required CQC tests. The actual in-place density and moisture testing performed during Subgrade construction exceeded the CMIP specifications of 5 CQC tests per acre per lift plus at least 5% additional confirmatory CQA tests. Based upon the aerial extent of the 12 Subgrade lifts, 48 CQC and 3 CQA field tests were required; however, a total of 71 field tests were performed. In the judgment of the CQA Engineers, the testing performed exceeded requirements and there was no quality impact to the Subgrade of the MWL ET Cover.

The second nonconformance occurred during the 2009 ET Cover construction phase and involved saturated hydraulic conductivity tests performed using the ASTM D-5856 rigid wall (remolded) method on the Native Soil Layer fill material. Although the term “rigid wall” is used twice in the CMIP construction specifications (Appendix A, Section 02200 Earthwork) and is a valid method for determining the saturated hydraulic conductivity in these types of soils, the intent of the CMIP specification appears to indicate the use of the ASTM D-5084 flexible wall (undisturbed) method. After discussion at the June 16, 2009 Quality Resolution Meeting, the

project team agreed that the ASTM D5856-95 rigid wall method was the best method for two main reasons: 1) samples could be collected without compromising the integrity of the installed Native Soil Layer lift (i.e., without punching holes in the lift surface), and 2) compaction of the sample in the laboratory could be controlled to accurately simulate compaction achieved in the field. In the judgment of the CQA Engineer there was no impact on the quality of the ET Cover and a corrective action plan was not required.

~~There were no ET Cover construction nonconformances.~~ All design changes are summarized in Table 14, along with a brief explanation of why they had no adverse quality impact. For both the 2006 Subgrade and 2009 ET Cover Construction phases, all technical issues and design changes were addressed by the respective project teams and resolved through a team approach in documented meetings and project-specific approval forms as discussed in Chapter 3.0. The project teams included Sandia Oversight, CQA Team, and Construction Team representatives. The design changes were approved by the CQA Engineer and did not result in an adverse impact on the quality of the final cover. In all instances, the implemented design changes had a neutral or positive impact on ET Cover quality.

For the 2006 Subgrade construction activities, the compaction and in-place density and moisture field-testing approach for the existing MWL surface, supported by Standard Proctor results, provided a more quantitative approach for verifying adequate compaction than the CMIP-specified approach of “counting 10 passes of a roller with ballasted weight of 25 tons and a minimum tire pressure of 90 psi.” The overall relative uniformity of the Borrow Pit soil fill material, particularly after screening and stockpiling procedures, is demonstrated by the large number of Standard Proctor, Gradation, and Classification results collected throughout the 2006 and 2009 construction phases (Tables 4, 5, 6, and 7; Figure 20). These data support the conclusion that the existing MWL surface soil is very similar to the Borrow Pit soil. In addition, the data support the use of relatively few Proctors for the 2009 in-place density and moisture field-testing program, as well as the use of one Proctor to cover approximately 1,500 cy of soil fill during the 2006 Subgrade Construction phase field-testing program, as approved by the respective CQA Engineers.

On May 22, 2009, a Quality Resolution Meeting was held to discuss the 2009 existing Subgrade surface, which did not meet the 2-percent east-to-west surface design slope across the eastern side of the cover from the central portion to the southern end of the MWL (slopes ranged from 1.8 to 1.9 percent in this area). After evaluating the CQC survey data and discussing possible solutions, Sandia Oversight, Construction Team, and CQA Team representatives determined that

## 8.0 Conclusions

---

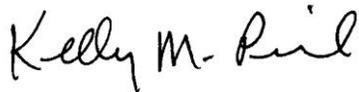
For the 2006 Subgrade Construction phase only, an independent MWL CQA Plan (SNL/NM, May 2006) was prepared that incorporated the regulatory guidance and design and specification requirements for the construction of the MWL cover as defined in the CMIP (SNL/NM, November 2005). For the 2009 ET Cover Construction phase, the CQA Plan in Appendix B of the CMIP (SNL/NM, November 2005) was used directly.

For both the 2006 and 2009 phases, a representative of the CQA team was at the site each workday to inspect and oversee construction activities and the field and laboratory testing. The results of the inspections and oversight are provided on the inspection forms, daily reports, and approval forms attached to this report. This report also presents a summary of the construction activities, CQC and CQA laboratory and field-testing results, CQC and CQA survey results, as-built drawings documenting cover construction, and photographic records of the activities.

All nonconformances and design changes are documented and were made in consultation between the Construction Team, Sandia Project Staff, and the CQA Team. These Design changes did not result in an adverse impact on the quality of the final cover, ~~were not considered nonconformances,~~ and did not require corrective action. All cover layers were approved as stipulated by the CQA Plan in Appendix B of the CMIP (SNL/NM November 2005) prior to starting construction of the next layer, and all cover-related design changes resulted in a more protective cover. This report and the attachments provide the required documentation to verify that the MWL existing surface, Subgrade, ET Cover layers (Biointrusion, Native Soil, and Topsoil Layers), and site drainage features were prepared and installed in accordance with the CMIP (SNL/NM, November 2005) construction and design specifications. A New Mexico-registered Professional Engineer has certified that the MWL alternative cover construction was performed in accordance with the plans and specifications (Chapter 9.0).

## 9.0 Engineering Certification

During construction of the ~~2006 sSubgrade installation~~, I have performed tasks required of the CQA Engineer in accordance with the CQA Plan for the MWL Alternative Cover construction at ~~SNL/NM (SNL/NM, May 2006) Sandia National Laboratories, New Mexico~~. I certify that the MWL ~~sSubgrade~~ has been prepared and constructed in accordance with construction plans and specifications ~~provided in the MWL CMIP (SNL/NM, November 2005) and the MWL Cover Construction Quality Assurance Plan~~. I certify that to the best of my knowledge the ~~“MWL Alternative Cover Construction, Subgrade, Draft Quality Assurance Report” (MKM, August 2007), which has been incorporated into this report, CQA subgrade preparation draft report~~ accurately documents the CQA activities conducted under my responsible charge as the CQA Engineer.



Kelly M. Peil, PhD, P.E.  
MKM Engineers, Inc.



Title: CQA Certifying Engineer  
Date: August 31, 2007

State: New Mexico

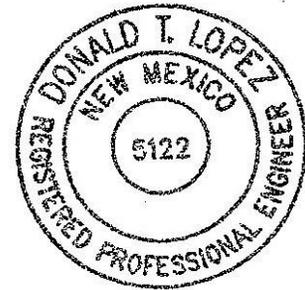
Registration No. 9718

Note: The certification statement above pertains to the 2006 Subgrade Construction effort only. The CQA subgrade preparation draft report referenced in the statement above was incorporated into this January 2010 CQA Report as explained in Section 1.3

During the construction of the 2009 ET Cover, I have performed tasks required of the CQA Engineer in accordance with the CQA Plan in Appendix B of the MWL CMIP (SNL/NM, November 2005). I was also involved in an oversight role during the 2006 Subgrade Construction phase and have reviewed the associated CQC and CQA data and documentation. I certify that both the 2006 Subgrade and the 2009 ET Cover for the MWL have been prepared and constructed in accordance with the construction plans, drawings, and specifications contained in the MWL CMIP (SNL/NM, November 2005), including Appendix A (MWL Landfill Alternative Cover Construction Specifications Revision 2 [July 29, 2005]) and Appendix B (CQA Plan). I certify that to the best of my knowledge this MWL Alternative Cover CQA Report, as revised to address NMED comments provided on May 20, 2011, accurately documents the construction, CQC, and CQA activities conducted under my responsible charge as the CQA Certifying Engineer.



Donald T. Lopez, PE  
URS Group. Inc.



Title: CQA Certifying Engineer  
Date: ~~January 14, 2010~~ July 12, 2011

State: New Mexico

Registration No. 5122

**Table 8**  
**Mixed Waste Landfill 2009 ET Cover Construction**  
**Saturated Hydraulic Conductivity CQC Laboratory Results**

<b>Sample Description</b>	<b>Location</b>	<b>Date Sampled</b>	<b>Sample Compaction</b>	<b>Average Saturated Hydraulic Conductivity<sup>1</sup> (K<sub>sat</sub>) in cm/s<sup>2</sup></b>
Native Soil Wedge Lift 1	Grid Block 8	6/19/2009	90.0%	<b>4.02E-04</b>
Native Soil Wedge Lift 2	Grid Block 11	6/22/2009	89.0%	<b>3.58E-05</b>
Native Soil Lift 3-1	Collected Prior to Placement	6/17/2009	90.2%	<b>1.59E-06</b>
Native Soil Lift 3-2	Collected Prior to Placement	6/17/2009	89.7%	<b>1.81E-06</b>
Native Soil Lift 3-3	Collected Prior to Placement	6/17/2009	91.0%	<b>1.98E-06</b>
Native Soil Lift 4	Grid Block 2	6/30/2009	84.6%	<b>2.52E-04</b>
Native Soil Lift 4	Grid Block 6	6/30/2009	81.2%	<b>1.87E-04</b>
Native Soil Lift 4	Grid Block 9	6/30/2009	89.8%	<b>2.14E-04</b>
Native Soil Lift 5	Grid Block 1	7/9/2009	90.0%	<b>2.66E-04</b>
Native Soil Lift 5	Grid Block 4 Retest	7/8/2009	95.3%	<b>1.43E-04</b>
Native Soil Lift 5	Grid Block 8 Retest	7/8/2009	94.6%	<b>1.63E-04</b>
Native Soil Lift 6-1	Grid Block 3	7/16/2009	90.2%	<b>3.05E-04</b>
Native Soil Lift 6-2	Grid Block 6	7/16/2009	90.3%	<b>3.51E-04</b>
Native Soil Lift 6-3	Grid Block 12	7/16/2009	89.5%	<b>2.55E-04</b>
Native Soil Lift 7	Grid Block 1 Retest	7/20/2009	94.8%	<b>2.18E-04</b>
Native Soil Lift 7	Grid Block 5 Retest	7/20/2009	94.8%	<b>1.87E-04</b>
Native Soil Lift 7	Grid Block 13	7/22/2009	89.5%	<b>2.50E-04</b>
Native Soil Lift 8	Grid Block 2	7/27/2009	90.4%	<b>1.22E-06</b>
Native Soil Lift 8	Grid Block 7	7/27/2009	90.0%	<b>1.23E-06</b>
Native Soil Lift 8	Grid Block 9	7/27/2009	90.0%	<b>1.36E-06</b>
<b>Average</b>			<b>90.2%</b>	<b>1.62E-04</b>
<b>Geometric Mean</b>			<b>90.2%</b>	<b>4.72E-05</b>
<b>Median</b>			<b>90.0%</b>	<b>1.87E-04</b>

<sup>1</sup> ~~Minimum-Maximum~~ Value is 4.6E-04.

<sup>2</sup> Tests were performed using ASTM D5856 Rigid Wall Method.

CQC = Construction Quality Control

ET = Evapotranspirative

Revised Pages in Redline-Strikeout Format  
MWL CMI Report, Appendix A - CQA Report, Volume 2  
Attachment 8

## **APPENDIX A**

### **Mixed Waste Landfill Alternative Cover Construction Quality Assurance Report January 2010**

**Revision 1**

### **Volume 2 Attachments**

**(provided electronically on compact disc)**

Attachments in Volume 2 of Appendix A are provided in electronic format (PDF files) on a CD. Separately bound hard copies of Volume 2 are available in the NMED Hazardous Waste Bureau document library (Santa Fe, New Mexico); the DOE/Sandia document repository (Public Reading Room, Zimmerman Library at the University of New Mexico, Albuquerque, New Mexico); and the SNL/NM Customer Funded Records Center (formerly known as the ES&H and Security Records Center).

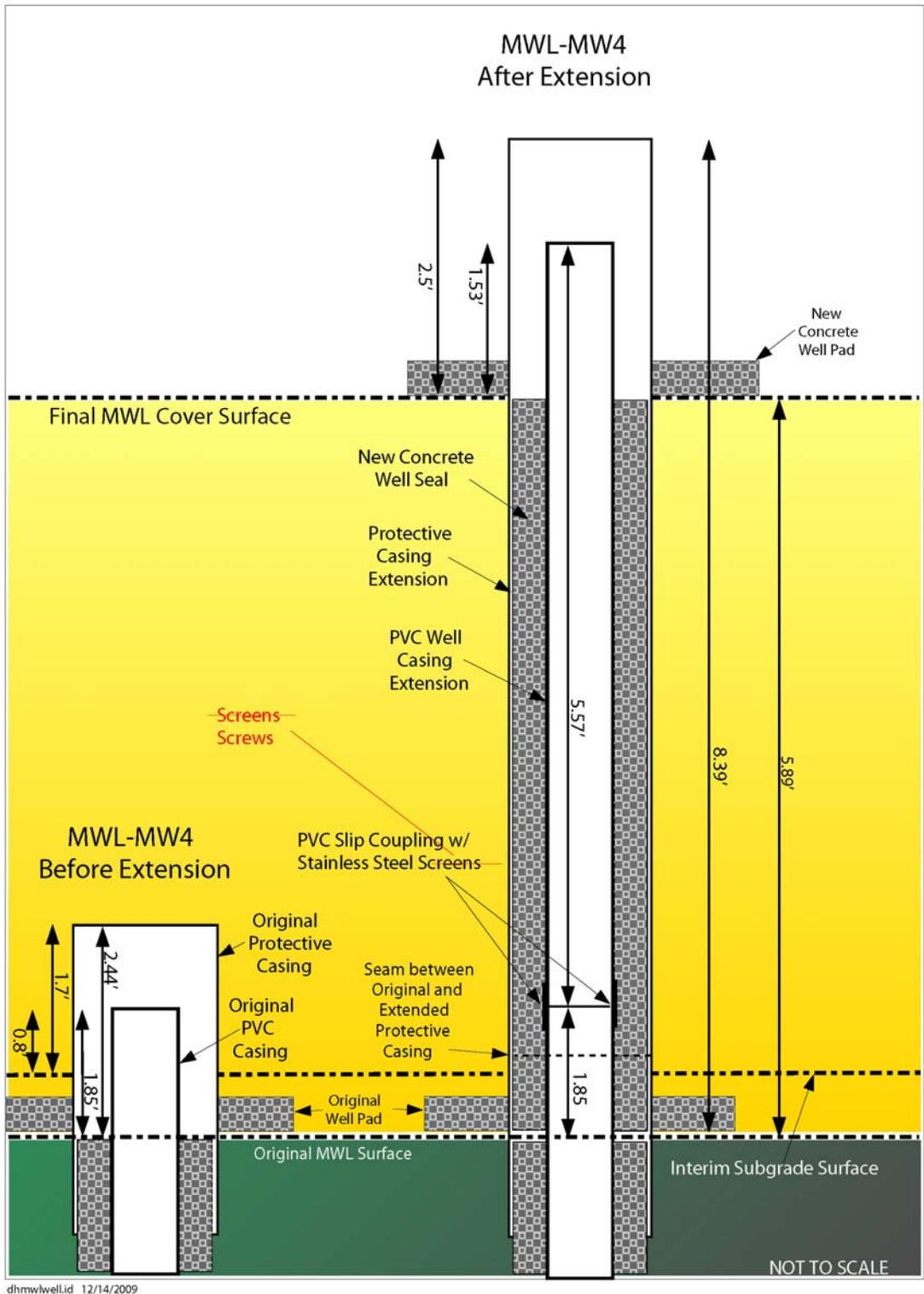


Figure 2-5  
Schematic MWL-MW4 PVC Well Casing and Protective Surface Casing Extension Diagram



## **Attachment 2**

[Replacement Inserts and Pages Provided in Hard Copy Only]

### **MWL CMI Report and CQA Report, Volume 1 & 2 Replacement Inserts, Replacement Pages, and Replacement CQA Report Volume 2 Compact Disc**

This Attachment includes the following:

#### Replacement Inserts

- Cover sheets and spine inserts for the two original January 2010 MWL CMI Report binders
- Entire CMI Report and Appendix A CQA Report Volume 1 text (includes Cover and Title Pages for both reports)

#### Individual Replacement Pages

- Table 8 of CQA Report, Volume 1 (page 15 of 33 from tabbed “Table” section in back of report)
- Revised as-built drawings for CQA Report, Volume 1 (4 drawings for 2009 ET Cover in tabbed “As-Built Drawing” section in back of report)
- Figure 2-5 of Attachment 8, CQA Report, Volume 2 (only change to this separately bound volume of the report)

#### Replacement CD

- Appendix A, CQA Report Volume 2 CD that goes in the plastic sleeve in the back of the CQA Report, Volume 1



United States Department of Energy  
Sandia Site Office

*Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.*